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A Study of the Benefits of Transnational Municipal Networks for German Climate Change Mitigation

To what extent are the expected benefits of the membership in Transnational Municipal Networks met?

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1. Abstract

Greenhouse gas (GHG) emissions and climate change are considered a global threat requiring global solutions. Because cities produce more than half of the global carbon dioxide (CO_2) emissions, the importance of municipal climate change mitigation has increased. Municipalities around the world tend to organize themselves into transnational municipal networks (TMNs) which offer certain benefits to participants and provide a platform for exchanging ideas, know-how and best-practice information. This research project examines to what extent the expected benefits of membership in TMNs are met for German municipalities that participate in the Climate Alliance. When cities decide to join a TMN they benefit from: 1) access to information and new knowledge from the network itself but also through the exchange with fellow members, 2) technical support to calculate, forecast and monitor their GHG emissions as well as to develop and evaluate climate change mitigation measures, 3) funding support, 4) networking and cooperation opportunities that TMNs actively encourage, and 5) benchmarking, certification and awards.

In order to examine these benefits in German municipalities, the study focused on the Climate Alliance, a TMN that currently counts more than 1700 members worldwide. Structured phone interviews were conducted with eleven German municipalities participating in the Climate Alliance. The transcribed interviews were coded in order to gain information on the local use of each benefit. Findings of this research suggest that some benefits are better received than others. According to the respondents, the network is primarily used for networking and information exchange purposes. Whereas the technical support is partly used, the benefits of funding support and awards and recognition are taken advantage of only in a very limited way. The main reasons for the benefits of TMNs not being used to their full potential is the lack of funding and time which German municipalities are confronted with when it comes to climate change mitigation. Moreover, the impact of TMNs is further reduced by the plethora of similar (smaller) municipal networks and organizations. Therefore TMNs need to come up with innovative ways to communicate and offer benefits for municipalities shaped by financial and personnel restrictions.

Keywords: Transnational Municipal Network, Membership, Climate Change Mitigation, Climate Alliance, Benefits, European Energy Award, Germany

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3. Abbreviations

ACR+	= Association of Cities and Regions for Recycling and Sustainable Resource Management
BMU	= Federal Environmental Ministry
CCP	= Cities for Climate Protection
CD-ROM	= Compact Disc Read-Only Memory
CDU	= Christian Democratic Party
CEMR	= Council of European Municipalities and Regions
CFC	= Chlorofluorocarbon
CO_2	= Carbon Dioxide
Difu	= German Institute for Urban Affairs
EEA	= European Energy Award
EU	= European Union
GHG	= Greenhouse Gas
GCC	= Green Climate Cities
GWP	= Global Warming Potential
ICLEI	= International Council for Local Environmental Initiatives
IdE	= Institute for decentralised Energy Technology
IFEU	= Institute for Energy & Environmental Research
LED	= Light-emitting Diode
TMN	= Transnational Municipal Network
UBC	= Union of Baltic Cities
UK	= United Kingdom of Great Britain and Northern Ireland
UNFCC	= United Nations Framework Convention on Climate Change
USA	= United States of America

4. Introduction

4.1. Problem Description

For several years now climate change has been seen as a global threat and the issue has steadily moved to the top of the global policy agenda. Due to the increasing necessity for authorities to integrate climate change mitigation within their municipal policy, many cities in Europe and around the world have started to organize themselves by creating alliances and networks to exchange ideas, know-how and best-practice information. The complex nature of climate change requires vertical and horizontal policy coordination across many sectors (Andonova et al. 2009). Furthermore, the organization and participation in networks seems attractive due to ever-decreasing municipal budgets and is facilitated by international agreements such as the Agenda 21, the voluntary action plan of the United Nations to promote sustainable development (Behringer 2003). These developments have led to the establishment of so-called transnational municipal networks (TMNs). These networks offer an international platform for the exchange of information and knowledge as well as other benefits in order to integrate a similar conception of a sustainability issue that affects urban life, such as climate change mitigation and adaptation, within every-day practice and municipal policy-making (Betsill & Bulkeley 2004). Although much is known about the different benefits TMNs offer, not much is known about the way they are used in municipalities to mitigate climate change mitigation and the challenges that city officials face in applying measures offered by such networks. Moreover, it is still not clear whether these benefits actually lead to policy change at the local level.

4.2. Transnational Municipal Networks

TMNs, which operate in a multi-level governance structure, can be a help for city authorities to enhance their ability to find solutions to sustainability problems, to deliver services to its inhabitants and to develop urban management and governance structures (Keiner & Kim 2007). Such networks have been characterized as having three defining traits: first the member city is autonomous within the network and its membership is voluntary, second the network is organized in a polycentric, horizontal and non-hierarchical manner and third member cities cooperate in a decentralized way (Kern et al. 2005; Keiner & Kim 2007). Transnational relations are interactions between (mainly) non-state actors which take place across national boundaries. The participating members usually do not work on behalf of national governments or

organizations (Bulkeley, Andonova, et al. 2012). Networking cities are not a new phenomenon and such interactions have already taken place in the form of, for example, the Hanseatic League during the Late Middle Ages or the Council of European Municipalities and Regions (CEMR) in the 1950s. Yet, most of these alliances were formed for economic reasons. It was only with the first serious growth in global and, more importantly, urban population in the 1970s and the increasing effect of globalization that networks dealing with urban issues were founded and encountered a boost in membership. Then, around the period of the Rio Summit in 1992, the first sustainability-oriented networks started appearing and TMNs rose from 8 to 49 between 1982 and 2004 (Keiner & Kim 2007). This was partly driven by the Agenda 21 that addresses the development and strengthening of programmes aimed especially at cities with great sustainable development problems. Furthermore, this action plan encouraged cities of the participating states to partake in international sustainable city networks in order to "exchange experiences and mobilize national and international technical and financial support" (Keiner & Kim 2007, p.1373).

Along these lines, cities have formed alliances in the form of networks around the issues of climate change mitigation (Toly 2008). The three major global TMNs aimed at reducing urban greenhouse gas (GHG) emission are Energie-Cités, Climate Alliance and the Cities for Climate Protection (CCP) program. Members of such networks usually benefit of tailored strategies to reduce GHG emissions as well as methods of quantification to support such strategies (Bulkeley & Betsill 2003). TMNs organize conferences, workshops and publish yearly reports in order to foster the exchange of experiences of the member cities. These are encouraged to participate in project and campaigns that are jointly developed and coordinated by the networks' executives. The respective teams are also responsible for the provision of recommendations, aids and tools for local climate change policies such as local climate plans (Climate Alliance 2014). Finally, an important role of the network is to lobby for the progress in local climate change policy on national, European and global level (Betsill & Bulkeley 2004).

4.3. Climate Change Mitigation in Germany

In Germany, many cities have decided to join TMNs that focus on climate change mitigation. Especially during the last decade with the gradual implementation of the Energiewende, sustainability in urban cities has become an issue of growing

importance. Indeed, some claim that the main motivation behind this national energy transition is the fight against climate change (Schiermeier 2013). The Energiewende became a policy in 2000 and, shortly after the nuclear disaster in Fukushima in 2011, the conservative government of Germany decided that the country should phase out nuclear power by 2022 as well as considerably reduce its GHG emissions (Strunz 2014). This new energy concept plans to generate 80% of the energy supply from renewable energy sources (Sühlsen & Hisschemöller 2014). Furthermore, the Energiewende also requires that Germany cut its GHG emissions by 40% below 1990 production levels and achieve a reduction between 80 to 95 % by 2050 (Schiermeier 2013; BMUB & BMBF 2014; Strunz 2014). German cities can greatly influence this process as they represent the administrative level closest to the citizens and because they have a role model function. They can chose to install and use renewable energy sources, support energy efficiency and saving measures, favour climate-friendly procurement, promote a green transport policy and an eco-friendly development and planning of municipal buildings and provide a platform where citizens can inform themselves as well as obtain advice and financing (DStGB 2014). Inherently, climate change mitigation can be accomplished in four main sectors: energy, traffic, waste management and urban development and planning (Kern et al. 2005).

4.4. Literature Gap

Climate change mitigation in these sectors can further be stimulated by the membership in a TMN. Indeed, in recent years tools and mechanisms that TMN use in order to impact municipal climate mitigation have been analysed (Bulkeley & Betsill 2003; Betsill & Bulkeley 2004; Kern & Bulkeley 2009; Jensen 2004; Slocum 2004; Kern & Alber 2009). Thus, cities are expected to benefit from access to information and technical support, project funding, networking and cooperation with fellow member cities and recognition, certification and benchmarking. There have been a number of studies on the special features of TMNs as well as on the methods that these networks use to achieve change on a local level (Betsill & Bulkeley 2006; Strengers 2004; Lee 2013; Betsill 2001; Lindseth 2004; Zahran et al. 2008; Bulkeley, Broto, et al. 2012). However, there are very few studies that have looked at whether these benefits are really used by the cities at the local level. Furthermore, it is still unclear to what extent these benefits influence municipal climate change policy. The few available studies raise doubt about whether the membership in TMNs leads to changes in the implementation of climate friendly initiatives and policies at the local

level (Keiner & Kim 2007; Lee 2013; Kousky & Schneider 2003; Betsill & Bulkeley 2004; Bulkeley & Betsill 2003). Moreover, the few case studies that have been published mainly consider the United States of America, the United Kingdom as well New Zealand and Australia. But since Germany remains at the European and global forefront of a new energy policy it is highly interesting to analyse whether German cities change their climate mitigation policy as a response to their membership in these networks and more importantly whether the expected benefits of the membership in TMNs are met.

4.5. Aim of Research

Therefore the aim of this research is to look at which specific tools TMNs use to enhance local action in German towns and cities and to analyse whether and how these benefits are used at the local level. A further goal is to examine whether the tools offered by TMNs have an impact at the municipal level. Lastly, this research also studies the challenges that are linked with the membership in TMNs. In order to conduct this research, German municipalities that are members of the Climate Alliance, were interviewed.

4.6. Research Questions and Sub-questions

The research question is:

To what extent are the expected benefits of the membership in transnational municipal networks met?

The sub-questions are:

1) What are the expected benefits of participating in TMNs?
2) What is the Climate Alliance and how does the membership in this network function?
3) What are the expected benefits of participating in the Climate Alliance?
4) How are the benefits of participating in the Climate Alliance perceived by the member cities?
5) Do the benefits offered by the Climate Alliance have a local impact?
6) What are the main challenges associated with the benefits offered by the Climate Alliance?

4.7. Societal Relevance

Reducing GHG emission in cities is a global priority and the participation in TMNs might be of help to mitigate climate change at the local level. Indeed, global mean temperatures have slowly been rising since the 1990s and more extreme weather phenomena have been recorded in all parts of our planet (Palmer 2014). Simultaneously, global GHG emissions, in terms of their global warming potential (GWP), have increased by 24% between 1990 and 2004 (Lidskog & Elander 2010). Moreover, between 2000 and 2004 the increase in carbon dioxide (CO_2) emissions was three times higher than the increase in emissions throughout the 1990s (Lidskog & Elander 2010). It is widely accepted that a scientific correlation between the increase in emissions and global climate change exists (Hillmer-Pegrama et al. 2012; Broto & Bulkeley 2013; Lee & Koski 2012; Bulkeley & Betsill 2003; Kousky & Schneider 2003; Kern & Alber 2009; WCED 1987; Collier & Löfstedt 1997; Sharp et al. 2010; Zahran et al. 2008). This environmental problem presents a tremendous ecological, social and economic risk, which has been tackled in various international sustainability and climate change summits, conferences and protocols. Thus, international treaties such as the Kyoto Protocol have established legally binding obligations to reduce GHG emissions for the countries that have signed and ratified the document. Therefore, the EU (European Union) and 37 industrialized countries agreed in 1997 to cap levels of GHG emissions to an average of 94.8% of 1990 emissions by the period 2008 to 2012 (Aichele & Felbermayr 2013). Nevertheless emissions have been continuously rising and in 2010 the United Nations Framework Convention on Climate Change (UNFCC) published data on GHG emissions showing that many countries have by far not reached their intended reductions (Aichele & Felbermayr 2013). In comparison to environmental issues such as ozone depletion, caused by CFC (chlorofluorocarbon), or acidification due to sulphur and nitrogenous oxides, climate change proves to be very difficult to manage. This is why cities, instead of nation states, have taken an increasingly important role in tackling this environmental problem (Lidskog & Elander 2010). Indeed, by now, more than half of the global population lives in cities making these the predominant source of GHG emissions as well as vulnerable hotspots for the negative effects of climate change (Lee 2013). Furthermore, the United Nations has estimated that by 2050 the world's population living in urban areas will double to more than six billion (United Nations 2012). The International Energy Agency recently published a survey indicating that 71% of global energy-related carbon emissions are attributed to urban areas thereby demonstrating that cities are the key players in mitigating climate

change (Rosenzweig et al. 2010). It is becoming clear that the international targets will not be met without the assistance of municipal governments. In recent years research has shown that much of the human activity leading to the increasing trend in GHG emissions are concentrated in cities (Betsill 2001; Hillmer-Pegrama et al. 2012; Broto & Bulkeley 2013; Wang 2012; Bulkeley & Schroeder 2011; Bulkeley, Broto, et al. 2012; Lee & Koski 2012; Bulkeley & Betsill 2003; Rosenzweig et al. 2010; Lee 2013; Kern & Alber 2009; Kern et al. 2005; Collier 1997; Azevedo et al. 2013; Collier & Löfstedt 1997). Thus, cities have authority over energy and waste management as well as transportation and land-use planning and are in a position to develop climate mitigation plans in order to reduce GHG emissions. This means that municipal authorities can greatly impact a city's activities such as the renovation and building of energy efficient housing, the use of resources as well as the need for (public) transportation (Azevedo et al. 2013). Finally, cities have an important role as facilitators: they can organize education campaigns on energy efficiency, on reducing, reusing and recycling waste, and promote the use of renewable energies (Kern & Alber 2009). This study elaborates on the tools that TMNs use to influence local climate mitigation action and more importantly examines whether and how the benefits offered to members are used. It shows to what extent the membership in TMNs has led to changes within the studied city or town and therefore sheds light on whether it is helpful and useful for cities to join such networks. Indeed, if the benefits that participants in TMNs expect to have are not met, then the usefulness of such programs should be questioned.

4.8. Overview

This research first looks at previous studies and research on TMNs in various countries before specifically examining the main benefits that such networks offer to their members. The methodology explains how the data has been gathered through structured interviews and how these interview questions were formulated. The eleven German cities that participated in this research are introduced as well as the coding and analysis software program, NVivo. Then, the Climate Alliance, the network that is studied during this research is introduced. The results are presented according to each benefit recognised in the scientific literature, also elaborating on the challenges that the Climate Alliance faces in Germany. These results are then discussed, including their contribution to the scientific debate, and the limitations of this study. Finally, some ideas for future research are presented and a short conclusion is given, in the form of answer to the research question.

5. Theory

5.1. Policy Transfer and Policy Learning

In order to assess to what extent participants' expectations about the benefits regarding membership in TMNs are met, one has to look at the ways in which cities make political decisions and implement changes so as to reduce their GHG emissions. TMNs wish to influence local climate change mitigation policy by enhancing policy transfer and policy learning (Marsden et al. 2011). Policy transfer is defined by Dolowitz & Marsh (2000, p.5) as "the process by which knowledge about policies, administrative arrangements, institutions and ideas in one political system (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another political system" and represents a helpful concept for improving local policy innovation. The concept of policy learning can be defined as 'lesson drawing' from previous experiences and policy failures. On the one hand, new information leads to an update of prior beliefs and on the other, policy ideas are adopted which have the highest expected utility (Takao 2014). Many TMNs that focus on climate change mitigation are based on such an approach of policy learning. The basic idea is that through the membership in a city network participants will gather information and knowledge about local emissions and disseminations of best practices and will therefore obtain local knowledge on causes of climate change. Therefore, as a result of newly gained knowledge on a specific issue, such as climate change, and its potential solutions, it is assumed that increased information will create policy change and lead to the implementation of new local policies for climate protection (Betsill & Bulkeley 2004; Sabatier 2007).

5.2. Literature Overview

In reality, however, it is not clear to what extent TMNs impact local climate-friendly and environmental policies. Much of the scientific literature focuses on the development of TMNs in specific case studies around the world and gives insight into the tools that TMNs use to influence local changes. But there is hardly any evidence that policy learning does actually take place once a city decides to participate in a city network. This chapter will therefore give an overview of the current state of literature on TMNs and their engagement in cities. It will also elaborate on the tools which cities can benefit from in their efforts to influence local policymaking. Lastly, it will present the appropriate theoretical concepts, namely the benefits that participating cities in TMNs can potentially profit from.

Several examples show how TMNs attempt to influence local action and policy making in cities around the world. The first study of transnational networks that is discussed is that involving the Polish cities of Gdansk and Szczecin (Dorsch 2003). Gdansk is an interesting case study as the city is participating in numerous city networks in Europe and the Baltic region. Indeed, Gdansk, Poland's principal seaport, once one of the main sources of environmental pollution in the entire Baltic region, has a strong interest in decreasing its environmental impact and increasing its fishing industry and tourism. Therefore, the city has been involved since the early 1990s in networks which primarily focus on environmental and social issues and as a result has developed the subject matter of water quality and air purity and generated a monitoring system (Dorsch 2003). The reason for the significant engagement within various transnational networks are identified by Dorsch (2003, p.71) as a "continuity in terms of personnel in the administration and management of the respective agency since the early 1990s". Hence, innovative ideas from other European countries were successfully implemented into local policy. Although Szcecin is also represented in a few city networks, its involvement shows differences compared to that to that of Gdansk. Environmental and sustainability issues do not have a high priority on the political agenda. Instead, the networks rather influence the city in the cultural sector. Indeed, Szcecin is a member of the Union of Baltic Cities (UBC) and this network helps to become more involved in cultural projects and activities (Dorsch 2003). A more in-depth involvement of Szcecin in transnational networks is perceived as complicated due to reduced capacities in terms of staffing and due to the lack of engaged experts with respective language skills (Dorsch 2003).
The impact of transnational networks in cities, such as Gdansk and Szcecin, seems to be dependent on a few committed individuals who envisioned some long-terms benefits for their respective municipality. The presence of such people in transnational networks have enabled Polish cities to become more active in the environmental and cultural sector and to acquire more knowledge and experience in the administration of environmental issues (Dorsch 2003).

This is also the conclusion that is drawn in a study on innovation and institutionalization in urban climate governance (Anguelovski & Carmin 2011a). Indeed, the authors claim that "the presence of local champions is central to a program being initiated and maintained over time" (Anguelovski & Carmin 2011a, p.172).

The significance of the presence of people who have important decision-making power for the way in which networks have an impact is also shown in a study on transnational networks and policy diffusion (True & Mintrom 2001). The authors argue in their research on gender mainstreaming that "actors embedded in transnational networks are having a significant impact on domestic politics and policy" (True & Mintrom 2001, p.50). Although their study does not focus on municipal networks but rather examines an issue that is not related to that of sustainability, it sheds light on the mechanisms in which such networks can have a local impact. Hence the authors show that transnational networks use information and knowledge as tools to promote policy change. They conclude that "when the political structures of nation-states are open to new voices and new ideas and when people sympathetic to those voices and ideas actually hold important decision-making power, then compelling advocacy on the part of non-state actors can result in the rapid diffusion of ideas for policy innovation" (True & Mintrom 2001, p.51). Transnational networks can therefore have a supportive role in a process of policy innovation. However their influence depends on the presence of individuals, such as politicians or municipal officers that are committed to the respective policy problem.

Much of the literature focuses on the methods which TMNs use to achieve policy change at the local level and fail to give clear examples of municipal policies that have been changed due to the membership in such networks. In Ireland Davies (2005) examined whether transnational networks improve the implementation of local climate change policy. The author reports that networking to address climate change is being encouraged and that many local energy agencies have joined transnational municipal networks such as ICLEI's (International Council for Local Environmental Initiatives) CCP and Energie Cités. In order to find out to what extent the membership in TMNs helped Irish local energy agencies in the support of GHG emission reductions, the author conducted a survey and a desk study of municipal climate change networks. She finds that participation of the local energy agencies in these networks is low, but that "there are still considerable efforts being made at the local level to work towards reducing climate change emissions" (Davies 2005, p.30). In her research, the author also interviews local energy agencies, which are not members in TMNs, and finds that the main reasons for this choice are financial restrictions, time-intensive bureaucratic processes and the missing political will from the Irish government to promote the participation of local energy agencies in such networks. However, for those local energy agencies that do participate Davies (2005) finds that transnational networks influence the policy process by encouraging

partnerships for EU-funded projects and more importantly by exchanging knowledge and experiences with other members. Hence, the networks are seen to have a vital role as information disseminators. The author states an example where one Irish local energy agency received practical solutions for problems with electricity deregulation from a German colleague and fellow member of the network (Davies 2005, p.33). Furthermore, according to the finding of this study, the participation in TMNs has an impact on climate change policy as it convinces politicians, who are often not energy experts, of the advantages of introducing climate change actions. Moreover Davies shows that the membership in networks also helps grassroots action in a more supportive way than do national funding frameworks (Davies 2005).

Research on the impact of TMNs in Australia and New Zealand was undertaken by Strengers (2004). The author examines local governments' ability to have a wide-scale culture change to achieve environmentally sustainable outcomes and looks at the role that the CCP program has had in assisting municipalities in this process (Strengers 2004). In this research the way the program approaches local governments with concrete results and by sending a strong message that reducing GHG emissions can create jobs within the community is seen as giving every member city a reason to be more sustainable. Indeed, it is expected that culture change will more likely take place when all levels of bureaucracy and leadership have understood and are committed to the concept of sustainability. The author concludes that probably a TMN such as the CCP program in Australia and New Zealand "is having a significant impact on the local government arena an its ability to adopt and implement sustainability agendas" (Strengers 2004, p.628).

The way the membership in TMNs affects the implementation of environmentally friendly policies is examined in a research on the adoption of climate policies in the USA (United States of America) (Wang 2012). The author's findings show that the "membership is a much stronger and more consistent predictor of a city's climate actions" (Wang 2012, p.608). Another conclusion is that the participation in such networks has helped cities to implement climate mitigation and adaptation policies.

Behringer (2003) looks at the policy performance of the TMNs 'Alliance in the Alps', 'Climate Alliance Austria' and 'Climate Alliance Switzerland'. The author concludes that it is not clear whether TMNs actually lead to a change in the improvement of the issue tackled. Although such networks encourage policy-making through the organization of projects, actions and programs, it is not clear, or it has not yet been

measured, how the participation in such networks can result in policy changes which lead to the reduction of emissions harmful to the climate (in the case of 'Climate Alliance Austria' and 'Climate Alliance Switzerland') and/or to a more sustainable development (in the case of the 'Alliance in the Alps') (Behringer 2003). The inability to measure the success of measures and projects in small and medium sized municipalities results, according to Behringer (2003), from the disproportionately high costs of their evaluation due to the large number of individual and locally adapted solutions. However, in her research the author finds that in most cases the membership in TMNs leads to precious development of social capital even though climate mitigation and sustainability do not have a high priority on the political agenda.

Niederhafner (2013) studies the difference between European and Asian TMNs in terms of their policy goals and their structural goals, which are less general and more closely related to the European and Asian context. Thus, the author discusses policy goals of each studied network as well as the structural goals that members aim to attain in order to influence policy-making, which he summarizes into networking, lobbying and funding categories. The networks he studies are the Association of Cities and Regions for Recycling and Sustainable Resource Management (ACR+), Energy Cities, Eurocities, Union of the Baltic Cities and the Asian city networks Asian Network of Major Cities 21, Citynet, Clean Air Initiative for Asian Cities, and lastly the Kitakyushu Initiative for a Clean Environment. All of these TMNs aim for more sustainability, although some focus more on economic goals and social goals than environmental goals, including climate change mitigation (Niederhafner 2013). Although the author focuses on the comparison of the respective European and Asian networks' goals, he shows how TMNs aim to achieve changes at the municipal level. His research describes how policy can be influenced through services that TMNs offer, which are in this case "the exchange of general expertise, concrete experiences and best practice, as well as city-to-city collaboration (…)" (Niederhafner 2013, p.392). However, the author fails to show whether the provision of such services actually leads to changes in municipal policy-making.

Although the research by Zahran et al. (2008) fails to give examples on adopted policies and the degree to which they are being implemented, it is a well-conducted analysis of the CCP program in the USA. The authors discover that the success of the support of climate mitigation policies depends on the socioeconomic makeup of the municipality. Indeed, "well-educated, politically liberal, urban communities, with a

strong record of environmental activities, appear more supportive of policies to mitigate the adverse consequences of climate change" (Zahran et al. 2008, p.559). Moreover, cities will be more active in the network when they are located in areas that are more vulnerable to climate change impacts, such as extreme weather events, temperature change and costal proximity (Zahran et al. 2008).

Research conducted by Lindseth (2004) examines how the CCP program frames the issue of climate change in order to initiate local action. He highlights the fact that the network focuses on local issues, such as air quality and related health problems in order to generate a broader concern about climate change based on the thought that people will be more concerned about local issues because it directly affects them (Lindseth 2004). The author criticises the strong focus on the co-benefits between environmental protection and climate change mitigation and argues that "prioritising climate change is also about saying 'no' to unsustainable development, and about restricting practices and policies in other sectors of society" (Lindseth 2004, p.333). After examining a milestone survey conducted by ICLEI in 1997 and noticing a lack of results, the author questions whether the strategy that highlights the co-benefits of the implementation of environmental policies, is the correct one to reduce GHG emissions.

Slocum (2004) shares this critical view of the CCP program solely focusing on actions that both lower emissions and save money, such as the procurement of new light emitting diode traffic signals and energy-efficient windows. The author conducted interviews in three American cities (Minneapolis, Tucson, and Seattle) and criticizes that this TMN continues to support neoliberal market democracy instead of encouraging active citizenship (Slocum 2004). She states that "the CCP campaign plays into the hand of the neoliberal faith in the market as the determinant of value and wellspring of solutions" (Slocum 2004, p.774). Furthermore, she also argues that although the TMN recognizes the advantage of municipalities having a close relationship to its citizens, the CCP program fails to include a wider community in its projects and focuses on the administrative level only. This does not help policies on climate change mitigation to be accepted by a broad community. The author concludes that participation of both local government and its citizens in climate change mitigation action is a key factor for the success of this network (Slocum 2004).

Another example of the engagement of TMNs in cities is shown in the research by Keiner & Kim (2007), who in a detailed and comprehensive survey on TMNs look at whether networking in sustainability issues translated into concrete urban policy. They show that such networks function best and have the greatest innovation potential when they are open and adaptable and when a high degree of collaboration between the members exists (Keiner & Kim 2007). Furthermore, whether networks successfully transfer knowledge to their members and are innovative also depends on the network managers who are responsible for the coordination of all activities. TMNs can have more influence on the municipal level with an actively involved network management. The researchers point out how TMNs have grown and evolved and have become effective influential global players. However, they conclude with the observation that "the great potential and resources of networks can only be poorly channelled and coordinated in inflexible local government structures" (Keiner & Kim 2007, p.1393). This means that networks have more impact in cities, which manage to make sustainability issues a priority. The authors conclude with the insight that the growing number of sustainability-oriented TMNs is not a proof of their effectiveness. Indeed, an appropriate internal evaluation and assessment is lacking in many networks.

In a study by Kousky & Schneider (2003) on the factors motivating municipalities to implement policy changes in order to reduce their GHG emissions, local officials from 23 municipalities that are part of the CCP network were interviewed. The authors included only two cases where political pressure stemming from the CCP program had an impact on the local officials' decision process regarding new policies and on the municipality to address climate change. However the authors find that participating in a network, such as the CCP program, "minimizes information and uncertainty barriers and often financial barriers as well" due to the provision of "information, case studies, resolution language, training, conferences, networking, occasional small grants and technical services" (Kousky & Schneider 2003, p.363). Most case studies showed that the majority of implemented climate policies were a result of existing municipal initiatives and could not be specifically linked back to the participation in the program.

Lee (2013) shares a critical view on the impact of TMNs at the local level. In his research on the influence of the level of globalization on the transnational activities of cities and the motivation of cities to join sustainability-oriented TMNs he concludes that while the growing number of members in transnational city networks shows that

local governments are important actors in international climate governance, “it does not necessarily mean that member cities are implementing comprehensive and vigorous climate change policies” (Lee 2013, p.125).

Similar findings are also presented in research on the extent of local commitment to climate protection in over thousand US municipalities. The author claims that “findings suggest that membership in climate-protection organizations, specifically the Mayors’ Climate Protection Agreement, is an inadequate indicator of the extent of climate-protection measures that cities have actually implemented” (Krause 2011, p.60). Being part of a network that promotes climate change mitigation policies does not necessarily translate into local political changes.

After having conducted interviews in cities in the UK, the USA and in Australia that were part of the CCP program, Betsill & Bulkeley (2004; 2003) further doubt that policy learning actually takes place. Indeed, besides finding that it was impossible to quantify “the exact nature and extent” of the influence, they quickly realized that in neither of the six case studies was the network institutionalized within the administrative structures (Bulkeley & Betsill 2003, p.172). They state that “the programme has not had any significant impact on either the level given to local initiatives within international policy arenas, or on the ability of local government to address climate change in the key sectors of housing, transport and land-use planning” (Bulkeley & Betsill 2003, p.183). Furthermore, newly gained knowledge on the issue and its potential solutions was shown not to lead to policy changes. Rather, “knowledge about the nature of local greenhouse emissions had been developed before they joined the program, and there was already a significant reservoir of expertise about the means through which to address the issue amongst interested individuals” (Betsill & Bulkeley 2004, p.485). Although such processes were reinforced by the participation in TMNs, expected benefits were only partly achieved. Indeed, the interviews revealed that some individuals did gain additional knowledge on the issue of GHG emission reduction, but in none of the cases did the exchange with other cities and the knowledge of best practice examples actually lead to changes in policy at the local level (Betsill & Bulkeley 2004). Instead, the exposure to additional knowledge led, in some cases, to the reframing of climate change mitigation. Indeed, in some cities the issue of climate change received became more importance in the discourse on local energy and environmental policy. Moreover, the authors found out that the participation of the selected cities in the CCP program was

seen as a way to legitimize efforts related to climate change mitigation instead of a source to change local policies (Betsill & Bulkeley 2004).

The short selected literature overview on the activity of TMNs in certain countries shows that researchers focus mainly on the tools that TMNs use in order to achieve change but fail to look in greater detail at the implementation of these tools (Davies 2005; Behringer 2003). Rather, much of the research demonstrates the conditions for networks to have more impact (Keiner & Kim 2007; Dorsch 2003; True & Mintrom 2001; Slocum 2004; Strengers 2004; Zahran et al. 2008). Thus, the presence of a committed individual with decision-making power and an active and communicative network manager seem to be a bonus for a network to have more influence at the local level. Moreover, the involvement of all levels of bureaucracy and the citizens are favourable success conditions. Success still also depends on the socio-economic makeup of a city and its geographical location. Lastly, some scientists doubt whether the participation in TMNs leads to the change and implementation of climate-friendly policies and whether mitigation action can be linked back to the participation of municipalities in such networks (Keiner & Kim 2007; Lee 2013; Kousky & Schneider 2003; Betsill & Bulkeley 2004; Bulkeley & Betsill 2003).

5.3. Transnational Municipal Network Tools

When cities decide to participate in a network there are tools made available for them to initiate climate change mitigation action. These tools represent the benefits that members of networks can expect to receive. Indeed, becoming a member in a TMN is seen to have several advantages for cities, such as the creation of links between the European and the municipal level (Kern & Bulkeley 2009). Further benefits also include the exclusive access to information on climate change mitigation, sharing knowledge with other members on best practices, technical support and project funding, networking and the ability to cooperate with other member cities on certain projects and lastly the ability to receive recognition and certifications. In order to find out to what extent these expectations are met, it is therefore important to examine scientific literature on the tools that TMNs use to impact local climate change mitigation policy. An overview of the benefits is given in table 1.

5.3.1. Information

The first benefit to be discussed is the access to information, as this represents the most important function of TMNs to steer participants towards policy action

(Andonova et al. 2009). Networks have been established to share knowledge and information between each other and to learn from best-case examples and successfully implemented climate change mitigation projects or policies (Kern & Bulkeley 2009; Jensen 2004). It is also the tool that is mentioned the most in various scientific literature sources and the benefit that is most valued by members of TMNs (Davies 2005; Kern & Bulkeley 2009). Indeed, a survey conducted for the European Commission on city networks shows that 74% of 42 city networks stated that the access to exclusive information represents the most prominent service (Labaeye & Sauer 2013). In another survey by Bulkeley et al. (2012) of 60 TMNs, information sharing is seen by 93% to be the most common function that such networks can have. Information sharing can be transmitted through multiple ways and include "cognitive, discursive, and knowledge-generating and diffusion roles" (Andonova et al. 2009, p.63). Knowledge sharing and acquisition is of crucial importance for networks to have an influence at the local level. It is assumed that municipalities are more effective in implementing local climate mitigation changes when they have sufficient knowledge of the problem of climate change (Bulkeley 2010). Many municipalities appreciate that TMNs create "knowledge about the local possibilities for addressing climate change" (Betsill & Bulkeley 2004, p.480). In order to mitigate climate change and improve urban sustainability a great amount of knowledge and information on GHG emissions, climate change and the environment is needed. However, there seems to be a "lack of knowledge or experience among local officers and councillors about the issues involved" (Bulkeley & Betsill 2005, p.47). Many networks assume that local action does not happen due to insufficient information on climate change (Betsill & Bulkeley 2004). This is where TMNs can be very helpful and provide information on the assessment of GHG emission and on "approaches designed for profiling emissions at regional and national spatial scales" (Bulkeley 2010, p.243). Indeed, whereas some networks concentrate on the role of disseminating and exchanging information and ideas, others focus on actively generating new information for their members (Keiner & Kim 2007; Lee 2013; Bulkeley et al. 2003; Bulkeley & Betsill 2003; Lipschutz 1997).

The information flow and communication from the network towards its members can happen through "online good-practice database, the dissemination of good practice CD-ROMs, the circulation of a newsletter and the organization of 'study tours' where groups of local officials and politicians can arrange to visit a city in Europe to learn first-hand how local energy policies were created" (Kern & Bulkeley 2009, p.320; Kousky & Schneider 2003). TMNs want to promote information-sharing tools so that members can internalise a common norm on how to act on climate change (Bulkeley,

Andonova, et al. 2012). The way such good practice information is shared varies from network to network. Networks can collect ideas from members and share them with the network or can develop good practices that are tailored towards a specific municipality. Such bottom-up approach does not necessarily guarantee the best quality and reproducibility of examples from one city to the other (Kern & Bulkeley 2009). Moreover it seems that best-practice information from fellow members is often not acted on but rather seen as a source of inspiration for cities' own local climate change mitigation action (Kern & Bulkeley 2009). Examples from Sweden, Mexico and South Africa have shown that access to climate change knowledge, which is provided by TMNs, is of great importance but that the successful use and implementation of such information also depends on the national and local institutional context (Bulkeley & Betsill 2013). Such context can include the affinity municipalities have towards the issue of climate change mitigation. In some cases, municipalities use the information that is provided by networks to check whether the best-practice examples presented by the network are in line with the already implemented policies in their energy or waste management sector (Betsill & Bulkeley 2004). It is often the case that cities which join TMNs have already quite some knowledge and information at hand on the issue of climate change and therefore benefit from the network in other ways (Betsill & Bulkeley 2004). Indeed, very few networks concentrate solely on information sharing and rather chose to offer other services as well (Bulkeley, Andonova, et al. 2012).

5.3.2. Technical Support

One of those additional services that some TMNs offer is technical resources and support (Bulkeley, Andonova, et al. 2012). Indeed, one of the reasons for the initial development of TMNs was also to increase the exchange of mutual technical assistance and services among local municipalities (Bulkeley 2005; Kousky & Schneider 2003). In the study for the European Commission on membership benefits in TMNs by Labaeye & Sauer (2013), 36% of the examined networks offered technical support for their members. Technical support may include "a software package to help local authorities calculate, forecast, and monitor their emissions of greenhouse gases" (Betsill & Bulkeley 2004, p.478). Such a technical tool then translates the energy use-related data from different municipal sectors that impact municipal climate change into GHG emission and can allow one to measure the effectiveness of various reduction options (Betsill & Bulkeley 2004; Bulkeley & Betsill

2003). TMNs actively develop and create new technologies in order to foster climate change mitigation at the local level (Lidskog & Elander 2010).

5.3.3. Project Funding

The third tool that is used by TMNs to motivate climate change mitigation at the local level involves project funding. Networks can facilitate climate protection improvements for municipalities by either providing "means through which members can contact each other in order to bid jointly for (usually EU) project funding, or by submitting bids themselves together with their constituent municipalities" (Kern & Bulkeley 2009, p.321). Networks therefore pool and distribute financial resources for their members (Bulkeley, Broto, et al. 2012; Bulkeley, Andonova, et al. 2012; Andonova et al. 2009). Indeed, for cities the participation in TMNs can influence the outcome of the competition and be of great advantage when applying for external funds for projects that are related to climate change mitigation (Betsill & Bulkeley 2004). The European Commission regularly provides direct funding to TMNs and also indirect funding by creating "resource opportunities for transnational networks through competitive bidding procedures for particular projects or initiatives" (Bulkeley 2005). TMNs can help cities with the application procedure for EU funding since this often requires knowledge on how and when to apply (Niederhafner 2013). Besides international agencies, city networks are also rewarded by stable funding from national governments (Kern & Alber 2009). The membership in networks can also attract investments from the private sector (Lidskog & Elander 2010; Gustavsson et al. 2009).

The access to funding is a membership benefit that is offered by 38% of 42 TMNs that have been examined in a study for the European Commission (Labaeye & Sauer 2013). The strategy involving project funding and small grants has two main advantages: firstly, it provides additional financial resources for cities without pressuring the municipal budget that is usually already very constrained and secondly, it strengthens the ties between network members since they have to work on a daily basis on the management of a joint project (Kern & Bulkeley 2009; Kousky & Schneider 2003). Furthermore, it also tightens the relationship between cities and the TMN since cities rely on the network for the acquisition of such additional funds (Kern & Bulkeley 2009). Applications for such funding options and their implementations also have shortcomings, as they require additional municipal personnel and are time-intensive and therefore usually only attract active members of TMNs that are already rather established in the field of municipal climate change

mitigation (Kern & Bulkeley 2009). Often, this also means that cities that are not that active in the field of climate change mitigation do not win in competitions for project funding and may be discouraged to continue their participation in the network (Betsill & Bulkeley 2004).

5.3.4. Networking and Cooperation with Member Cities

The fourth tool that is used by TMNs to impact climate change mitigation at the municipal level is networking and cooperation with other member. Indeed, members who cooperate on climate issues ideally use TMNs as a platform. Thus, in a study examining the European Covenant of Mayors network in Sweden by Bulkeley (2010, p.233) it is stated that 72% of 184 responding Swedish municipalities claimed to "cooperate with other actors in networks dedicated specifically to climate issues or where climate was included as on issue among others". The study for the European Commission on city networks shows that networking is indeed very much promoted by TMNs: from the examined TMNs 71% offered access to events and 26% offered exclusive networking platforms to their members cities (Labaeye & Sauer 2013; Betsill & Bulkeley 2004). Conferences and workshops which are organized by TMNs for their members are ideal places for networking (Kousky & Schneider 2003; Bulkeley & Betsill 2003). Cooperation with member cities also happens while exchanging information on previous experiences and while applying for common funds for projects (Bulkeley 2010). Indeed, for the application for EU funding it is often required to cooperate with actors from at least six different EU member states (Niederhafner 2013). Consequently, some projects are sometimes implemented in common (Jensen 2004). For example, as part of the CCP program, Stuttgart, Bremen and Dresden were involved "in a project to examine the hidden subsidies given to motorized private transport through local authority spending" (Kern & Bulkeley 2009, p.321). Such cooperative projects are seen as very beneficial for improving climate change mitigation performance.

5.3.5. Recognition, Certification, Benchmarking

Recognition, certification and benchmarking are further tools that TMNs offer to their members. These tools represent important benefits for those municipalities which are rather passive members of TMNs. Recognition can include different types of awards and acknowledgements of performance (Kern & Alber 2009). The organisation of award ceremonies can be important and simple acts like having a photo taken between a network officer and a mayor can be meaningful for future initiatives

(Strengers 2004). For example, the Climate Alliance network developed an award for achievements and good practice examples in the area of renewable energy, the so-called 'Climate Star' (Kern & Bulkeley 2009).

Certification tools are also giving municipalities incentives for behavioural changes. Although less used by TMNs, separate certification programs have been developed in recent years, such as the European Energy Award (EEA). Today, more than 600 European municipalities have received this award (European Energy Award 2014). Cities can participate in this certification scheme if they want to improve their energy efficiency and strengthen their climate change mitigation policy. Once part of the scheme, they are presented with a management tool and a list of measures to be implemented. Depending on the implementation status of the given measures cities can either receive an EEA-partner certification, or an EEA-partner with distinction certification and finally an EEA-partner with gold distinction certificate (European Energy Award 2014).

Lastly, benchmarking and target-setting can also be a tool that pushes climate change mitigation ahead (Bulkeley 2010). This performance-based strategy with standards, which are clearly defined, tries to include all members of specific TMNs. Some networks, such as the CCP program, use milestones that involve conducting an energy and emissions inventory and forecast, establishing an emission target, developing a local action plan to achieve that target, implementing policies and measures, and monitoring and verifying results in order to motivate their members one step at a time (ICLEI Europe 2014). Others, such as the Climate Alliance network, have developed an action list of ten steps, a catalogue of measures and the Climate Alliance indicators (Kern & Bulkeley 2009). Tools like these are great incentives for cities to act and simultaneously represent a way for the management and secretariat of TMNs to assess current developments (Kern & Bulkeley 2009). Recognition, certification and benchmarking tools have two important purposes: first, they motivate cities to actively change policies and implement climate-friendly initiatives since only a limited amount of municipalities can be awarded, and secondly they are helpful for the public image of a green and clean city and promote them as environmental forerunners (Betsill & Bulkeley 2004). Indeed, the branding and creation of such a positive green image, showing that local economic development can be combined with the reduction of GHG emissions, is desirable for many municipalities and can be instrumental in putting a name on the global map of sustainable cities (Bulkeley 2010; Jensen 2004; Lidskog & Elander 2010).

Table 1: Scientific Literature Overview of Benefits

Benefit/Tool	Literature
Information	Andonova et al. 2009; Betsill & Bulkeley 2004; Bulkeley 2010; Bulkeley et al. 2003; Bulkeley et al. 2012; Bulkeley & Betsill 2005; Bulkeley & Betsill 2003; Bulkeley & Betsill 2013; Davies 2005; Jensen 2004; Keiner & Kim 2007; Kern & Bulkeley 2009; Kousky & Schneider 2003; Labaeye & Sauer 2013; Lee 2013; Lipschutz 1997
Technical Support	Betsill & Bulkeley 2004; Bulkeley et al. 2012; Bulkeley 2005; Bulkeley & Betsill 2003; Kousky & Schneider 2003; Labaeye & Sauer 2013; Lidskog & Elander 2010
Project Funding	Andonova et al. 2009; Betsill & Bulkeley 2004; Bulkeley, Andonova, et al. 2012; Bulkeley 2005; Bulkeley, Broto, et al. 2012; Gustavsson et al. 2009; Kern & Alber 2009; Kern & Bulkeley 2009; Kousky & Schneider 2003; Labaeye & Sauer 2013; Lidskog & Elander 2010; Niederhafner 2013
Networking and Cooperation with Member Cities	Betsill & Bulkeley 2004; Bulkeley 2010; Bulkeley & Betsill 2003; Jensen 2004; Kern & Bulkeley 2009; Kousky & Schneider 2003; Labaeye & Sauer 2013; Niederhafner 2013
Recognition, Certification, Benchmarking	Betsill & Bulkeley 2004; Bulkeley 2010; European Energy Award 2014; ICLEI Europe 2014b; Jensen 2004; Kern & Alber 2009; Kern & Bulkeley 2009; Lidskog & Elander 2010; Strengers 2004

6. Methodology

6.1. Qualitative Research

Qualitative research is of particular importance for the study of social relations (Flick 1995). It allows for flexibility in all parts of the research process and focuses on the nature and variation of a problem rather than on the extent (Kumar 2005). Thus, rather than quantifying the extent of variation in an issue, this study describes the nature of an issue, namely the benefits of the membership in TMNs. This qualitative research is based on the underlying philosophy of empiricism and relies on the description of variables (Kumar 2005). The sample size is much smaller than for quantitative research and instead of focusing on a limited extent of inquiry, qualitative research covers multiple issues from fewer respondents (Kumar 2005). Findings of qualitative research have a more descriptive and narrative nature (Kumar 2005). Qualitative research is used for this study because the main aim is to obtain a comprehensive understanding of the benefits provided by TMNs at the municipal level.

6.2. Collection of Data

Data was obtained by carrying out structured expert interviews on the phone with city officials of German cities that are part of the Climate Alliance. An interview is defined as any person-to-person interaction between two or more individuals with a specific purpose in mind (Kumar 2005). There is a clear distinction between a flexible and an inflexible (also referred to as structured) interview, the latter one being that the interviewer must strictly follow the questions that have been decided beforehand (Kumar 2005). The interview questions and their wording as well as the content are rather rigid. For this study a set of predetermined open-ended questions was asked using the same wording and order of questions as specified in the interview schedule (Kumar 2005).

The main advantage of a structured interview is that uniform information is provided assuring the possibility of data comparison (Kumar 2005). An interview schedule has been preferred to a questionnaire since an interview is more appropriate for complex situations. It is useful for collecting in-depth information, information can be supplemented through additional questions and questions can be explained to the respondents (Kumar 2005). All of these advantages are very important for the study on TMNs. The main disadvantages and challenges are that interviews are time-consuming, the quality of the obtained data very much depends on the quality of the interaction and lastly the questions may be framed in such way that a certain amount

of bias is introduced (Kumar 2005). The questions were formulated as open-ended. This means that possible responses are not given and answers are recorded and transcribed verbatim (Kumar 2005). Open-ended questions were used during this research since they are very useful for seeking opinions, attitudes and perceptions, which is what this study aims for (Kumar 2005).
The interviews were conducted with so-called experts, namely people who have specific role knowledge and special competences (Przyborski & Wohlrab-Sahr 2014). The interviews were recorded using a voice recorder and then transcribed verbatim. Citations that were used for the results were then translated form German into English. The transcriptions of all eleven interviews can be found in the Annex.

6.3. Data Source

It was originally planned to interview all eleven German cities that are part of the CCP program. However, after a phone call with local authorities from each city, it became apparent that either they had not been active in the network for the last ten to fifteen years or they had never officially signed up to be part of the network. Indeed one city official explained it had once signed a convention that was organised by ICLEI and this might have been how the name of the respective city had landed on the participants' list of the CCP Germany program. Since most cities had not been active for more than a decade and positions had since been filled with new employees, it did not seem very useful to ask these cities about their involvement in the CCP program. Moreover some cities were not willing to be interviewed due to their tight schedule or because they did not want to talk about their membership in TMNs. Luckily, most cities that were initially contacted were also part of the Climate Alliance. Since only five of the eleven German "CCP-members" were able to be interviewed another six Climate Alliance participants were chosen randomly out of the cities that were portrayed on the 'Our Members' Activities' site of the Climate Alliance's homepage. Interviews were conducted with one city official from each selected city. The city officials usually worked in the climate change mitigation management office of the respective city's Environmental Agency and had in common that they were responsible for the cooperation of the city with sustainability networks and TMNs such as the Climate Alliance. In smaller towns it was often the case that only one person was responsible for all things related to climate change mitigation. However, in one of the larger cities, the climate change mitigation management unit had five full-time employees. Over a period of two weeks between November and December 2014 a total of eleven interviews were performed with

experts in Augsburg (Mr. Koch), Bad Hersfeld (Mr. Spohr), Berlin (Ms. Conrad-Beck), Dessau-Rosslau (Ms. Behrend), Dresden (Mr. Frenzel), Emden (Mr. Gerdes), Gelsenkirchen (Mr. Hardes), Hannover (Ms. Heda), Heidelberg (Mr. Bermich), Leipzig (Mr. Simowitsch), and Wuppertal (Ms. Brendel).

6.4. Measurement and Definition of Concepts

The scientific literature sheds light on the tools that TMNs use to achieve change at the local level, including the access to information, technical support and project funding, networking and the cooperation with fellow network members and lastly recognition, certification and benchmarking instruments. When cities join TMNs they expect certain benefits of their membership in such networks. As previously mentioned (7.2.), several studies raised doubt as to whether these tools actually have an impact in municipalities and therefore whether these benefits are used to their maximal potential (Keiner & Kim 2007; Lee 2013; Kousky & Schneider 2003; Betsill & Bulkeley 2004; Bulkeley & Betsill 2003). The interviews shed light on the use of each benefit and examine potential shortcomings of the implementation of these tools. The interview started with some basic questions concerning reasons for joining the Climate Alliance and the activity level of each respective interviewed city. Then the technical support of the Climate Alliance specifically was examined while asking questions on the implementation of the three instruments that the network provides to its members (Climate Compass, Climate Cities Benchmark and Carbon Calculator). Thereafter, questions regarding the use of information, technical support, project funding, networking and member cooperation, and recognition, certification and benchmarking were asked. These benefits were defined the following way:

Information:
TMNs provide cities with information on the assessment of GHG emissions. Cities receive new information from the network and exchange information with fellow members. This process happens through online good-practice databases, informative CD-ROMs or other online files, newsletters and study tours.

Technical Support:
Cities benefit of software packages which can calculate, forecast, and monitor GHG emissions. This software is used with data related to energy use from different municipal sectors and measures effective policy options.

Project Funding:

TMNs provide cities with a platform through which they can apply for funds jointly with other network members. Cities can therefore benefit from financial resources for specific projects. They can also benefit from the network's expertise with application procedures for EU, national or international funds as well as financial help from the private sector.

Networking and Member Cooperation:

Cities attend conferences and workshops organized by TMNs and exchange best practice information and previous experiences with fellow cities. They benefit from the membership in TMNs in applying for common funds with other member cities and cooperating and implementing project together.

Recognition, Certification, Benchmarking:

TMNs can reward cities with recognition, certification and benchmarking instruments. Cities can benefit from acknowledgements for certain climate change mitigation achievements. Cities can also become part of certification schemes and earn awards depending on the implementation status of specific lists of measures. TMNs offer benchmarking tools to their members to document their development. All these tools motivate cities in their activities and are helpful for their green and climate-friendly image.

Furthermore questions were asked regarding the impact the membership had on policies and on specific municipal sectors, such as the energy sector. The respondents were asked to give specific examples where such an impact had been noticeable. Moreover whether the membership was used for improving the sustainable and green image of a city was also examined. Lastly, in order to analyse why certain members are not as active as they could be, questions regarding the challenges that exist for members in TMNs were asked. A detailed interview scheme can be found in the Appendix.

6.5. Interview Transcription

The interviews were then transcribed and numbered from T1 to T11 for coding and citation purposes. Furthermore, all data and characteristics that allow inferences on specific persons or cities were rendered anonymous. The transcription is a necessary step before the analysis of the data and the basis of empirical research

(Flick 1995; Patton 2002; Przyborski & Wohlrab-Sahr 2014). Indeed, the audio recordings present verifiable data (Przyborski & Wohlrab-Sahr 2014). No official standard exists on how to transcribe audio recordings but according to Flick (1995) it is reasonable to only transcribe as much and as precisely as the research question requires. Transcription of the interviews followed clear rules for the statements of the respondents and the interviewer. Such systematic transcription allows for observations to be understandable and for interpretations to be clearly attributed to the corresponding text (Przyborski & Wohlrab-Sahr 2014).

6.6. Analysis

The qualitative data was analysed according to a process called content analysis (Kumar 2005). The first step involved identifying the main themes. This included the examination of the descriptive responses of the interviews to understand the meaning they communicated (Kumar 2005; Patton 2002). Broad themes and concepts that reflect these meanings were then developed. Then, the transcribed data was coded. For this purpose the responses were classified under the main themes using the qualitative data analysis software NVivo 10 (QSR International 2014). Themes were found by creating so-called nodes (categories) that were used to highlight patterns and uncover reoccurring statements from different interviews. The concepts that were used to code the interviews were categorized according to the relevance for the research question and sub-questions (Flick 1995). Each main benefit, such as information or technical support, was a main category that each had subcategories. For each category suitable interview sections were chosen to provide evidence. Furthermore core and sub-categories were identified and relating interview sections from all transcripts were linked to the different categories (Flick 1995; Oktay 2012).

6.7. Validity and Reliability

6.7.1. Validity

According to Kumar (2005, p.153) “validity is the ability of an instrument to measure what it is designed to measure”. It is therefore important to examine whether a researcher sees what he or she thinks he/she sees (Flick 1995). During this process three types of problems can occur. A correlation may be observed that is not applicable, a correlation might be rejected where it is applicable and finally the wrong questions might be asked (Flick 1995).

There are two approaches to establish the validity of a research method: statistical and logical evidence (Kumar 2005). Statistical evidence, also known as construct validity, defined as “calculating the coefficient of correlations between the questions and the outcome variables”, is not of use for this specific study since statistics do not constitute the core of the research method (Kumar 2005, p.154). Moreover the small sample size does not allow for a meaningful statistical analysis. Instead logical evidence is used to establish validity. This implies the “justification of each question in relations to the objectives of the study” (Kumar 2005, p.154). Indeed, there needs to be a logical link between the main questions of the study and the objective of the study. This link, also known as face validity, shows that the interview questions of this research all have a link to the actual research. This is the case for this specific study since the interview questions are built on a common-sense design and are based on everyday structures and standards of communication (Przyborski & Wohlrab-Sahr 2014). Furthermore, it is also important to establish so-called content validity, meaning that the interview questions should cover all issues being measured. Such is the case in this study since the interview questions address all issues discussed in the introduction and theoretical part of this study and are linked to the sub-questions of the research question.
It is important to keep in mind that establishing validity in qualitative research has a major limitation: the subjective judgement cannot guarantee a definite conclusion and “different people may have different opinions about the face and content validity of an instrument” (Kumar 2005, p.155).

6.7.2. Reliability

In order for the measurement of a research method to be reliable, the research tool has to be consistent, stable, predictable and accurate (Kumar 2005). This means that the measured results and their interpretation need to be reproducible (Przyborski & Wohlrab-Sahr 2014).
Factors that can affect the reliability of a research instrument, such as an interview, are the wording of questions, the physical setting, the respondents’ mood and the nature of interaction between the respondent and the interviewer (Kumar 2005). In fact the development of a fully reliable research instrument is not possible. Thus, ambiguity in the phrasing can result in the respondent having a different interpretation of the question and therefore lead to different responses. In order to avoid such problems, the interview questions were tested with friends and colleagues. Questions that were unclear were rephrased. Furthermore, whether the

respondents are at the office or at home during the phone interview may also have an impact on the responses. All interviews were therefore conducted at a time that was suitable for the respondents while these were at their workplace. A further factor is the mood and mind-set of the respondents at the time of the interview. Indeed, if a respondent is having a bad day, this might very well reflect during the interview process. The way the interviewer and the respondent interact during the interview further affects the reliability of the research instrument since responses might be different depending on how easy the interaction is (Kumar 2005).

The reliability of data and their interpretation was enhanced through a verbatim transcription of the interviews. Moreover, the questions from the interviewer and the statements in italic from the respondents can easily be told apart.

7. Climate Alliance

7.1. Background

The Climate Alliance is a TMN that was founded in Frankfurt, Germany in 1990 (Climate Alliance 2015). The idea for an alliance between European cities and Amazonian Indians to protect the Earth's atmosphere first originated in 1989 at the Berlin Amazon days. In 1991 the Climate Alliance manifesto was presented for the first time to the European public and immediately several environmental organizations adopted the idea and approached cities in their respective countries to join (Climate Alliance 2015). By 1992 more than 120 cities had already signed the manifesto and during the inaugural meeting delegates from 16 cities from Austria, Germany, Italy and the Netherlands signed the founding declaration and the official statutes (Climate Alliance 2015). This declaration included the main three goals of the Climate Alliance: the reduction of GHG emissions, the support of indigenous people and the preservation of the tropical forest and its biodiversity.

For the European municipalities, the main effort represents the reduction of GHG emissions. Indeed, the cities participating in the Climate Alliance commit to reducing CO_2 emissions every five years by 10% in order to reach a reduction of 50% by 2030 of the per capita emissions (base year 1990) (Climate Alliance 2015). Moreover, one of the long-term aims for cities is to reduce the equivalent of 2.5 tons of CO_2 per capita and per year (Climate Alliance 2015). Therefore the Climate Alliance identified specific areas of action and measures to mitigate climate change. These included the promotion of energy savings, efficiency improvements, rational energy use and the development of renewable energies. Furthermore cities were also encouraged to pursue a transport policy that reduces motorized transport and rewards climate-friendly mobility. Additionally, the Climate Alliance pushed for an urban development planning which included the consequent and forward-looking implementation of sustainable goals of the transport and energy sector. Moreover, another measure included the recognition and taking into account climate change mitigation in the areas of public procurement, waste and water management as well as agriculture, forestry and tourism. Lastly, in order to reach its GHG emission reduction targets, the Climate Alliance tries to involve private households and public and private companies in the efforts to mitigate climate change and to renounce the use of any substances that deplete the ozone layer and therefore are contrary to the climate change mitigation aims. These goals require the interaction between all decision-making levels (EU, nation state, regions, municipalities) and regular reports that document the progress of Climate Alliance members.

By 2014 the Climate Alliance has grown to a network of more than 1700 municipalities as well as associated members such as federal states, provinces, regions, associations and organisations from 24 countries (Climate Alliance 2014). The alliance is managed by an international board of directors and is coordinated by a European secretariat, which is supported by a Climate Alliance office in Brussels as well as national and regional coordination sites. All these different Climate Alliance offices support and advise members in joint projects, work on recommendation papers and implement a variety of campaigns for the mitigation of climate change and the protection of the environment. Once a year members are invited to the international annual conference and general assembly, which serves primarily as a forum to discuss key issues of the association, its priorities and political positions which are then summarized in resolutions which are later published on the website. Moreover, in Germany the member municipalities meet yearly as well. The 14th municipal climate change protection conference took place November 2014 in Lübeck (Climate Alliance 2014). Besides the regular conferences the network also provides consulting guides for energy saving and the procurement of highly efficient household appliances, a variety of best-practice examples and a regular newsletter, the so-called eClimail. The short articles in the newsletters inform members about projects and campaigns that are organized by the network and provide news from other members and event dates.

7.2. Tools and Methods

The three technical tools that are offered by the Climate Alliance are the “climate compass”, ECORegion and Climate Cities Benchmark (Climate Alliance 2014).

The development of a climate change mitigation action plan, the “climate compass”, supports municipalities in becoming active in local climate protection and in identifying measures that can be implemented in a short amount of time. Additionally, the “climate compass” creates a basis for more long-term measures. The comprehensive method includes a variety of climate change mitigation activities that impact many municipal sectors such as the energy sector or the urban development sector. One of the characteristic features of this instrument is the fact that it includes current local climate policy developments and experiences. The “climate compass” comprises five steps from the process initiation up to the evaluation. Furthermore, the Climate Alliance also provides a catalogue of potential measures in order to plan

future municipal activities. The first of the five modules is the kick-off, which includes the clarification of local needs, interests and requirements for municipal climate change mitigation. During the second module, the inventory, local (special) conditions and characteristics are identified and existing measures are compiled. During this step existing data is gathered for the energy and transport sector of the respective municipality. The third module, the institutionalisation of the climate change mitigation action plan, involves setting up organisational structures and a working group as well as the designation of responsibilities. The fourth module, the actual implementation of the climate action plan, includes the definition of long-term targets of the municipal climate change mitigation policy, the selection of initial measures and the identification and formulation of strategic resolutions on municipal standards. The final module, monitoring and evaluation, is meant for the development of a set of indicators that evaluate and measure the implemented measures as well as the collection of data for the CO_2 emission monitoring. This last module also entails the organization and preparation for future reports and publications.
The Climate Alliance offers a list of potential measures which forms the basis of the "climate compass" method. Thus, it serves as a help to recognize past activities in the field of climate protection, to assess future activities and to select potential measures for an appropriate municipal climate change mitigation policy. The catalogue of measures is divided into the four different roles that a municipality can act in – consumer and role model, planner and regulator, supplier and provider, and consultant and promoter – and in the different municipal sector such as urban planning, energy, and forestry.

ECORegion is a tool that is offered to Climate Alliance members to monitor and ultimately reduce CO_2 emissions. It was developed in cooperation with the EEA and a Swiss company, Ecospeed, and launched in 2008 in Switzerland and Germany. This internet-based tool allows for regular municipal energy and CO_2 balances from the point of views of the energy source or of the household, industrial and transport sector. ECORegion is able to produce balances retroactively up to the year 1990 (the official base year for the emission reduction target of the network). The tool shows total CO_2 reductions for a specific time period and is useful for monitoring as well as for comparison with other municipalities. Local energy consumption data are needed in order to employ ECORegion. Indeed, the significance and validity of CO_2 inventories are increased if local data are of high quality and were obtained from different sources. The Climate Alliance also offers workshops to explain how to use

the tool and to obtain initial and final inventories as well as how to calculate CO_2 emission parameters for municipal power generation. Registration fees for these workshops are currently 215€ for Climate Alliance members and 540€ for non-members. Moreover, the use of ECORegion costs annually between 350€ for municipalities with less than 2.000 inhabitants and 1800€ for municipalities with more than 500.000 inhabitants (ECOSPEED AG 2013). These costs increase for 'pro' and 'premium' versions.

The Climate Cities Benchmark was developed for cities that are interested in regularly evaluating and improving their climate change mitigation activities and includes elements of both the "climate compass" and ECORegion. It was developed as part of a research project funded by the Federal Environmental Ministry (BMU) in cooperation with the Institute for Energy and Environmental Research (IFEU). The goal of this benchmarking instrument is the comparison of positions in relation to climate change mitigation between municipalities. Local authorities can assess achievements and obtain important information about the strengths and weaknesses of their climate protection efforts. This allows for incentives for further improvements. The benchmark consists of four elements: a fact sheet, an activity profile, a CO_2 emission display and a set of indicators. The fact sheet includes the most important municipal characteristics. The activity profile represents and depicts 26 qualitatively detectable climate change mitigation efforts with the help of an enquiry matrix in four sectors: climate policy, energy, transport, and waste management. This is based on the measures presented in the development of a municipal climate action plan. The CO_2 emission display shows the results that have been calculated with the ECORegion tool. Lastly, with a series 17 parameters, the set of indicators shows the progress which is not depicted in the ECORegion inventory. Hereby the municipal sectors can be detected in which much progress has been achieved and the local situation can be assessed by comparing it with average values of Germany, of all municipalities and with the best value of a municipality of similar size.

7.3. Projects and Campaigns

Over the last two decades the Climate Alliance has implemented projects and campaigns all over Europe and in Germany. Currently, the repowermap project and the Climate Star are two important international projects of the Climate Alliance (Climate Alliance 2014).

The repowermap is a continuously updated European map for renewable energies and energy efficiency that makes the Energiewende visible and promotes it. Thus, it shows which municipalities use what kind of renewable energies, informs on events and job opportunities, and shows actors and agencies that are active in the area of renewable energies. The Climate star rewards projects from municipalities in four categories (up to 10.000 inhabitants, up to 100.000 inhabitants, over 100.000 inhabitants, local authority associations) and is seen by the Climate Alliance as a motivation and an encouragement to become more engaged in climate change mitigation. During the last ceremony in May 2014 in Luxemburg, 17 projects ranging from a climate-neutral wastewater treatment plant project to an energy coaching project for businesses, from nine different countries, received an award.

The Climate Alliance, in cooperation with the IFEU and the Institute for decentralised Energy Technology (IdE), also develops projects specifically for Germany. One of these projects is the climate protection planner which aims to establish a standardised set of instruments that will help to motivate municipalities and regions all over Germany to actively mitigate climate change and will assist in the development and implementation of climate protection concepts. The climate protection planner will merge and be an updated version of the three technical tools that are currently being offered by the network ("climate compass", ECORegion, Climate Cities Benchmark). It includes an emission inventory, a scenario model, and a benchmark. Currently this tool is being tested by a number of Climate Alliance members and by 2016 is planned to be gradually introduced it to all German municipalities so as to increase the efficiency and the effectiveness of local climate change mitigation work.

Lastly, the Climate Alliance developed several campaigns that aim to include and engage the citizens in the challenge to protect the climate. One of the more prominent campaigns is the so-called 'City Cycling' competition which encourages all citizens to gather as many kilometres by biking as possible. The aim is to raise awareness for an increased use of bicycles and to make bicycle traffic planning a more prominent issue in city councils. Another interesting campaign that was launched by the network is the so-called 'City Tours' campaign which aims at giving tours in respective participating cities thereby showing citizens local initiatives who commit to mitigating climate change by acting in a more sufficient way and making their respective municipality more resilient. Examples of such initiatives include urban gardens, repair-cafes and urban beekeeping.

7.4. Climate Alliance Benefits

The main benefits are shown in the table below.

Table 2: Climate Alliance Benefits

Benefit/Tool	Climate Alliance Benefits
Information	- Campaigns (repowermap, City Cycling, City Tours) - Newsletter eClimail - Consulting guides on specific issues - Best-practice examples - Thematic working groups
Technical Support	- “climate compass” - ECORegion - Climate Cities Benchmark
Project Funding	- Possibility to connect with other German/European cities
Networking and Cooperation with Member Cities	- Yearly international/national conferences - Thematic working groups
Recognition, Certification, Benchmarking	- Climate Star - Climate Cities Benchmark - Possibility to advertise activities on Climate Alliance website

8. Results

8.1. Reasons to Join Climate Alliance

8.1.1. Information and Knowledge Exchange

One of the most often stated reasons to join a network such as the Climate Alliance was the platform it provides for the national knowledge and information exchange between cities (T2, T4, T7, T8, T9, T10). For more than half of the cities interviewed it was important to see what other German cities are doing in order to mitigate climate change and which measures are being implemented. Moreover, there was an urge to learn from each other which measures work and can be successfully implemented and which ones do not (T2). While one respondent claimed, “there is no need to reinvent the wheel over and over again”, another one stated, “no city is an island”. Others may already have tried many measures and therefore cities can learn a lot from successful or failed implementations (T7, T10). One city noted that because members meet regularly, this created another basis for discussion. Instead of a standard conference where participants meet once in a while, listen to a few presentations in which performances of cities are sugar coated, meetings organised by the Climate Alliance have a more meaningful and intimate touch to them (T10). According to one respondent, this makes the exchange of information much more effective and participants can openly talk about ways to effectively implement mitigation and about similar problems and challenges (T2, T10). Members did not join only because of information and knowledge exchange at the national level but also in order to benefit from the connections of the network at the European level (T2). With a membership in the Climate Alliance cities expected more interactions with European cities and the possibility of developing joint European projects (T2).

8.1.2. Climate Change Mitigation Goal

Another reason to join was the former need for a well-defined climate change mitigation goal that would act as an orientation point to promote climate protection (T1). Indeed, when the Climate Alliance was formed, the goal set by the Alliance was more stringent than that of the German government, the European Union and the global community. Several cities which joined the network stated that they wanted to do more than the normal city and wanted to commit to clear and ambitious climate change mitigation goals that are in line with the global environmental objectives of, in particular, climate protection (T1, T4, T5, T6, T8, T9). Indeed, several respondents

expressed the initial wish for long-term thinking and planning of climate change mitigation strategies and the support of the policy goals of the network (T2).

8.1.3. Public Acknowledgement and Credibility

In line with the wish to have a clearly defined climate change mitigation goal, cities also stated that an important reason to join a network such as Climate Alliance was the wish to publicly commit to the mitigation of climate change (T3, T5). One city official explained that the commitment to the network was also important to position oneself politically and to be able to say that the membership was strengthening the local contribution to climate protection (T5). Another respondent declared that the city had joined the network because it wanted to give credentials to its climate change mitigation ambitions (T11). A further city claimed one of the reasons it had joined the alliance was the wish to advertise one's own measures in the field of climate change mitigation to the country, hereby politically representing the city's activities beyond the city boundaries (T10).

8.1.4. Other Reasons

Further reasons to initially join such network include to be part of a group that committed to the same climate change mitigation goals and not to be struggling alone with implementation problems (T1, T11). One participant explained that the city administration had chosen to join the Climate Alliance instead of other TMNs because the Climate Alliance is very well connected in the German political landscape and within the different relevant federal ministries (T10). Indeed, with the adherence to the Climate Alliance there existed a wish to jointly create political strategies for national and European policies and to be able to commonly represent positions on climate change mitigation issues (T10). Three interviewed city officials responded that external environmental pressures had led their cities to be interested in a membership in the Climate Alliance. In one case the aftermath of the Chernobyl disaster was what led to the wish for more sustainable policy efforts (T2). Another city stated the flooding risk given its geographical location and lastly one city also mentioned the publication of the IPCC report where it was shown that climate change is indeed man-made. In all three cases the respective city councils decided that joining the Climate Alliance would be an appropriate step (T2, T3, T11). One city also mentioned the fact that it had joined the network due to the efforts of the head of the Environmental Agency. This person considered the issues of climate change and

energy as extremely important and expressed a strong political will to be active in a network such as the Climate Alliance (T2).

8.2. Benefits

8.2.1. Information

All respondents answered that to a certain extent they acquire new information through their membership in the network. Information on municipal climate change mitigation is not only gathered via the Climate Alliance itself but also during the discussions and presentations, which take place throughout the different meetings (T1, T2, T3, T5, T7, T10). Information includes organisational optimizations of mitigation efforts at the local level and technical details of how cities can improve their CO_2 emission calculations and experiences of implementing a project in other municipalities (T10). Especially for trickier questions city officials can often hear of solutions to some of their problems and find inspiration from others (T2). Indeed, several cities stated that especially within the national meetings it is interesting to talk to other member cities and then to copy those approaches in municipal climate change mitigation that have shown their efficiency (T3, T5). One city official stated that when cities give presentations on a successful project, it stimulates one's own ideas and one always checks whether such a project would be possible to implement in one's own city (T1). Several respondents also stated that most members are very much approachable and open to conversations, further highlighting the active exchange of experiences (T3).

A more specific way of exchanging information is the bilateral information exchange. This is when cities have direct contact outside of the standard network meetings. Thus, one city declared that when issues arise where one knows that a specific city has had experiences with, then that city can directly be contacted (T1, T5). And throughout the years the relationship with colleagues in different cities is intensified. Members of the Climate Alliance make use of the contacts that are established once a city participates in the network (T1). Specific examples of bilateral information exchange were stated by three cities. One mentioned a biking project that is still initiated on a yearly basis by the Climate Alliance and which directly involves the citizens. The city administration had learned from another one how to attract young and old members to participate and to manage to make "thousands of people bike for this event with a giant enthusiasm while one has to struggle to motivate a few dozens" (T7). Another city told about the exchange it had with a city in southern

Germany on how to organize excursions around its solar powered neighbourhood (T2). Because both cities had such a high number of excursion requests by national and international guests, city officials asked the southern German city about tips on how to manage these tours and were told that the easiest option was to professionalise these trips and to create an agency solely responsible for these tours. Thirdly a city exchanged information on a refurbishment program (T7). Bilateral exchange especially happens while exchanging information on problems that occurred during the implementation of specific project or policies (T2). When a city wins a prize or is talked and written about in the media for achievements in the field of climate change mitigation it may be asked to hold a presentation about those achievements in another city (T5).

One medium through which network members keep up-to-date is the newsletter (T4, T7, T8, T9). They receive information on municipal climate change mitigation, on projects that have been or are being implemented in other cities and on funding opportunities (T4, T7, T9). Moreover the Climate Alliance strongly focuses on promoting its own campaigns as well as national or European projects that could be of interest for its members (T8). During meetings and in newsletters the network promotes these campaigns to its members and shares information about the implementation procedure of certain projects and strategies that can be developed to render a project politically feasible (T8). One respondent mentioned the helpful information that is provided by the network on the amendments of laws and regulations (T5). It was perceived as very valuable to receive information on the amendment to the federal building code in 2012 and the Renewable Energy Act in 2011 and the possibilities and options it offered for climate change mitigation for example (T5).

Lastly, one very important way for cities to collect information through their membership in the network is the participation in so-called working groups. Working groups focus around a specific issue and their participants meet every three to six months (T8). The three working groups that were mentioned by the respondents were ‘energy supply of the future’, ‘CO_2 emission inventory’ and ‘financing’.
In the ‘energy supply of the future’ working group participants discussed, developed and are currently testing the climate planner that helps municipalities with their carbon dioxide emission inventory and with planning their future climate change mitigation strategies (T5). The tool is being tested by several cities that learn how to use it and give feedback on its practicality. During these regular sessions knowledge

and information is gained and exchanged with fellow participants. One respondent stated that these meetings address “the way in which the Energiewende is managed locally and which instruments are implemented, which measures are worth to be addressed, which ones are not worth it” (T1). For cities that want to gain a more in-depth knowledge on a certain issue these working group sessions can be very valuable. However, one issue that was mentioned by several respondents was the fact that often cities do not have the time or the budget to attend these meetings regularly. For example, in several cases the meetings for working groups took place in Brussels or in Luxemburg, this meant long and expensive train journeys (T5). One respondent said that the interest for attending these extra meetings was there but no travel funds were granted by the administration (T8).

The aspect of lack of time was also mentioned by a respondent talking about the newsletters. He said that although the newsletters derived from a good intention he never found the time to read them. With the information overload that he experiences every day he had to set his priorities differently and often ended up deleting the newsletters before reading them (T10). When asked about gaining new information on local climate change mitigation the respondent answered that he extracted the expert knowledge from technical and specialized literature (T10). This was also stated in another interview where the respondent explained that no new knowledge on local climate change mitigation was obtained through the network but that he and his colleagues rather relied on scientific publications to retrieve information (T6). Another interviewee claimed that most cities already knew the technical possibilities available to improve climate change mitigation locally and that the newsletter was in this respect not a further information source (T8). It is worth highlighting that one respondent claimed that although the network is very valuable for informing its members on climate change mitigation news nationally and globally, it fails to do so at a state and regional level, which is often perceived as crucial (T3).

8.2.2. Technical Support

In order to find out to what extent the benefit of technical support was used by the participants, the respondents were asked about the implementation of three technical tools that are used in the Climate Alliance, namely the local climate action plan “climate compass”, the carbon calculator ECORegion and the systematic benchmark approach Climate Cities Benchmark.

None of the eleven respondents made use of the “climate compass”. Instead, most cities chose to implement their own climate action plan (T2, T3, T4, T5, T6, T7, T9). Reasons for not using the climate compass included the fact that some cities were front-runners and developed a plan before the Climate Alliance offered any help (T2). Other cities chose to get help from other institutions such as the Institute for Energy and Environmental Research in Heidelberg (IFEU) or the Federal Environmental Ministry (BMU) (T3, T5, T10). One respondent explained this choice by stating that “the ‘climate compass’ is a very simple instrument, we are actually already one step further. The BMU climate action plan is more integrated and systematic and more far-reaching in the future” (T5). Another respondent explained that the climate action plan was developed in order to receive federal funding and once funding was received two so-called climate protection managers were hired to implement the developed plan (T3). One interviewee claimed that he did not know that the Climate Alliance offered a tool such as the climate compass but that his city had chosen to develop a plan on its own (T6).

More than half of the cities that participated in this study make use of the CO_2 emission inventory tool ECORegion (T1, T2, T5, T6, T7, T8, T11). Most cities however use ECORegion only every five years due to capacity reasons. Two respondents pointed out that this worked out well since one of the goals of the Climate Alliance is to reduce CO_2 emission by 10% every five years (T5, T7). One respondent noted that ECORegion was mainly used so as to have a comparison to previous years rather than to other cities (T6). He continued to explain that initially his municipality had chosen to use ECORegion to have a comparison with other cities. He stated, “it is actually a blackbox and everyone can enter the data as he or she wishes and then a result is spit out which cannot be compared to others in my opinion” (T6). Furthermore he also claimed “everyone can lie about the data he or she incudes in the tool” (T6). Thus, “there are cities that have excluded their airport and there are cities that have excluded a steel plant, (…) we have included the electricity demand of our Volkswagen plant, which equals the electricity that is consumed by the city itself, therefore making the tool not comparable to other municipalities” (T6).

One respondent stated that they were only partly using ECORegion. The city had helped in the set-up of the system but is now using its own tool (T4). This is also the case for two other interviewed cities (T9, T10). These two chose to use their own system as they thought it was more in-depth and accurate than ECORegion. An

interviewee explained that the city administration chose to get external help from the IFEU because the problem with making an inventory is not the effort of elaborately feeding data into the program but the procurement of valid data since it is very difficult to differentiate between various user groups (T10). Since the external expert chose a program from the IFEU, ECORegion was not used. Lastly, one city official explained that she did not have enough financial resources to use ECORegion. She did state that she would prefer ECORegion to her own self-built Excel spread sheet because it would be easier and more comfortable to use and the results would have more significance but that the costs of ECORegion of 1500€ per year were too much for her municipality to handle (T3).

Only two of the eleven cities use the Climate Cities Benchmark (T2, T5). One respondent explained that the benchmark was used in a report to the city council, which "found it quite nice but did not understand its purpose" (T5). Moreover, the interviewee stated that in order to successfully develop a benchmark a yearly CO_2 emission inventory is needed but since the city experienced a lack of time and capacity, it did not use the Climate Cities Benchmark regularly (T5).

The rest of the cities have not implemented this benchmark tool due to several reasons.

Four respondents stated that it was more important for them to implement measures and have real results than to participate in a benchmarking scheme (T1, T4, T7, T10). One city official explained that it was more important that "in the end the efforts lead to actual results rather than being subjected to a sophisticated benchmarking process" (T1). This view was also shared in another interview, which showed that the city focused mainly on the implementation of projects and campaigns rather than on a benchmarking tool (T7). Another respondent stated that they did not need the benchmarking tool since the regular municipal controls of their activities were working out fine and that the benchmark presents an additional expense and effort but does not result in an additional output (T10). Indeed, one city official explained that the city administration had not expected much from the benchmarking instrument and with each potential implementation of instruments it was always a question of prioritization (T4).

Another reason that was mentioned for not implementing the benchmarking instrument was the abundance of other similar tools (T11, T8). One respondent explained that with the implementation of their own measures and the participation of the European Energy Award there was no time left for the administration of the

benchmarking instrument from the Climate Alliance. She explained that each instrument had to be used separately, since they all differed one from another and every time the respective implementation had to be granted by the different municipal committees and often no additional financial resources were authorized by the municipal administration (T11). Another city official also stated that city administration had completed a benchmarking process through the European Energy Award (T8).
Similarly to the climate compass and ECORegion three city officials explained that not implementing the Climate Alliance benchmarking tool had much to do with time and financial restrictions (T1, T4, T7).

8.2.3. Networking

More than half of the city officials confirmed that they were using the conferences to network (T1, T2, T3, T5, T7, T8). Most of these cities attend the yearly national members' meeting and some of them also attend the international conferences that are organized by the Climate Alliance (T1, T2, T8). At these conferences members are sometimes asked to give a talk or to chair a workshop, especially when they can report special achievements in the field of municipal climate change mitigation (T5). All of these six city officials underlined the fact that during these meetings they would exchange information (see also 9.2.1.) and actively network and at times come back inspired and motivated with new ideas for their municipality.
Four of the respondents explained that currently they were not attending the Climate Alliance meetings or had never been to one of the conferences (T4, T6, T9, T11). Reasons for not being able to attend one of these meetings are similar to the lack of use of technological benefits provided by the network. Thus, members lamented the fact that they had not enough time and/or financial capacity to take some time off for these meetings. One member explained that he and his colleagues have so much to do in their coordination unit that they are already lacking staff to implement their municipal measures and that as much as they would like to attend the Climate Alliance conferences, there is just no time for it (T11). This view is also shared by another respondent who reveals that her municipality is confronted with capacity problems and that the reasons for these capacity problems are "obviously financial problems" (T4). One member explained that he did not attend the meetings because firstly these conferences were often quite far away ("half a world trip") and secondly their content did not appeal to him and he thought he would not learn anything new since these conferences were also used to announce the winner of the cycling campaign and that he did not feel like he had to be present for such occasion (T6).

Furthermore, the implementation of local measures has, for some members, a higher priority than the attendance of conferences. One respondent explained, “higher priority is attributed to the implementation of local measures” (T4). Another interviewee, who had a rather negative view on the outcome and productivity of such meetings, answered, “people sit three days together and talk about world peace – I’d rather work during that time” (T6). Lastly, one city official claimed that although he was attending the Climate Alliance conferences and networking with fellow members, he felt like he was networking more intensely with cities which were not part of the Climate Alliance but in the same region and federal state since they shared similar basic conditions and were in the same situation in terms of energy policies (T1).

8.2.4. Funding Support

Only one out of the eleven respondents claimed that her municipality regularly applies for EU funding opportunities with other members, which are found through the Climate Alliance (T2). Thus, she explained “for example we had a large EU project from 2006 to 2012 with the Climate Alliance North and during that time we worked closely with the network” (T2).

All other respondents did not find members for funded projects through the Climate Alliance. Two city officials explained that in general their municipalities did not apply for external funding opportunities due to a lack of capacity within their administration (T1, T8). One respondent stated that until 2011 the climate change management unit was occupied by a half-time position and applying for external funds was beyond the person’s power and too much work besides the implementation of local climate change mitigation measures (T1). The other interviewee answered that his city had “no capacity to apply for funding” and that the funds they received were from the municipal urban development fund, administered by agencies which no longer had any connection to the Climate Alliance (T8). Moreover, the respondent also explained that the city administration “had no experience with the application for funds and did not have the basic funding to provide own municipal funds” (T8). Indeed, for funding opportunities municipalities sometimes need to contribute to a certain degree with money from the municipal budget. Another member, who has also never applied to external (EU) funding, stated, “the effort for the application and the implementation for EU funding is not justified and much of the time budget gets lost in exchanges and mutual visits, therefore we chose not to get involved in such funding application” (T4). Lastly, one respondent claimed that funding opportunities had not yet happened because neither the Climate Alliance nor the municipality had

made a request to look for fellow members to apply for funds together (T7). Several respondents claimed that they had indeed already applied for external funds but that they had done so with cities that were not members of the Climate Alliance (T3, T5, T6). In one case city officials successfully applied for external funding with the city's partner city in Nicaragua, which was not a member of the network (T5). In another case, the respondent stated that he is currently implementing an EU project with cities in Denmark that have similar conditions to his own city but that these Danish cities were not part of the Climate Alliance (T6). He explained, "Cooperation does not always have to work out just because both cities are members of the same network. Completely different external prerequisites can exist. We have, for example, a very large percentage of renewable energy and therefore we always consider funding applications separately and independently and do not concentrate solely on fellow Climate Alliance members (T6).

According to the interviews, the Climate Alliance does not help with the funding process and does not offer expertise in the application procedure. On the one hand respondents claimed that they did not need external help for this process and on the other hand they stated that they looked for help in other institutions (T2, T3, T4, T5, T7). Indeed only two respondents explained that they had enough experience with the application for funds (T2, T5). To show how well her city is doing without the network's help, one city official stated that just in the last two years her city started around twenty projects that are financed by the BMU (T5). Moreover that same city official explained that in the case they needed advice on an application, they usually got help from the German Institute for Urban Affairs (Difu) (T5). Other respondents explained that the Climate Alliance did not help during the application procedure with expert knowledge but that "from personal experience I would say that the Difu provides much more advice and has a better public presence in this area than the Climate Alliance, therefore I prefer to seek help from the Difu, especially concerning recommendations and funding opportunities" (T3, T7). This view was also shared by another member who explained that it was not necessary for the city administration to get help from the Climate Alliance for the acquisition of external funds since the Difu was already providing advice (T4).

8.2.5. Awards and Certification

Two members stated that they had received an award of the Climate Alliance for a sophisticated drinking water supply system and for the renovation and establishment of a new city lighting system with light-emitting diode (LED) lights (T5, T8

respectively). Other respondents explained that the achievements in the field of climate change mitigation were mentioned on the Climate Alliance website (T6, T7). When asked whether the awards or the mention on the website was a motivating factor to become more active in the field of climate change mitigation, one member explained “No, I think awards are always nice and a lot of other municipalities then ask you ‘what have you done there’ but awards are primarily good for the image of the city” (T5).

Some respondents were not aware of an awards scheme organized by the Climate Alliance, others had never applied and one member had participated in the competition but had never won (T2, T3, T7).

Lastly, while choosing not to participate in the Climate Alliance award competition one respondent had taken part in another competition organized by the Difu (T4).

8.2.5.1. European Energy Award

The EEA is another competition that many members take part in. Indeed, out of the eleven interviewed cities four cities stated that they were actively participating in this certification process (T3, T6, T8, T11). It is interesting to compare the EEA and the Climate Alliance regarding the motivations for cities to join this certification program and the benefits they receive. While talking about the reasons to participate in the EEA, one respondent explained, “We were desperately looking for a way to embed and to confirm climate change mitigation within the city’s administration. Since the implementation of climate protection measures is voluntary and our federal funding and two follow-up funds are ending next year in August the city had to decide whether to continue climate change mitigation, even in the absence of external funding opportunities. The European Energy Award was for us the icing on the cake and we decided to make use of this program. And since the certification works across the different municipal agencies we saw the possibility to further strengthen and integrate climate change mitigation issues within the administration” (T3). The wish for the different municipal agencies and departments to work together on the issue of climate change mitigation was also the main reason to join expressed by another member who said “We participate in the EEA because we have different specialized municipal departments and back then, one did not work together. In the past everyone worked on their part and implemented some measures or not, so in order to manage climate change mitigation more efficiently we strived for the membership. Initially there were many hurdles to overcome but by now it works out well. Everyone knows that once or twice a year there is an audit which assesses

one's own performance. During the last audit we obtained gold." (T6). Lastly, one respondent explained that the city decided to join the program because it creates transparency of how far along the city is when it comes to climate change protection (T8). The member stated, "It was found to be very useful to have a quantification for the implementation of measures besides the rather abstract CO_2 reduction number that can be expressed in points." (T8).

Several cities actively chose not to participate in the EEA certification program (T1, T2, T4, T5, T7, T9, T10). One city official explained this choice, "What I do not like is a system where a single company owns all the rights and the algorithms for the calculation are not disclosed, it is a bit of a black box. And I do not like this principle. Just looking at the benefits would have convinced me. We already do a lot. When you start off fresh it is surely different and therefore good to have some sort of pre-assembled menu but this black box bothers me." (T10). Another respondent agreed with the fact that the EEA is more useful for municipalities that are lagging behind when it comes to municipal climate change mitigation. She explained, "When the EEA became popular, our city had long established climate change mitigation and therefore this instrument was not needed." (T4). A further member stated, "We experienced that competitions such as the EEA are complicated, participation takes up much effort and a lot of information needs to be researched. We do not have the capacity for such a program. We focus in the implementation of climate change mitigation measures. From time to time it is nice to win a competition because it is great publicity but we feel like it takes too much effort to participate." (T2). Another reason not to partake in the EEA is the high participation fee (T5, T7). A member made clear "We participated for ten years. We basically helped to develop the program. But then we thought we no longer need it. We recently dropped out because we told ourselves that we knew how it worked. It was nice to benefit of external consulting, it is always helpful and it was good. But, it costs 8000€ per year the treasurer asked 'is this really necessary?' and I said that we would be able to plan climate mitigation measures by ourselves. We've been doing our work without a hitch and in a form that we like better." (T5).

When asked whether the EEA was a competitor for the Climate Alliance, mixed answers were given.
One member explained, "As soon as we implement grants, which also involve municipal money, we are obliged to regular reporting. This means that we also need to present the results to expert committees. Therefore the membership in the EEA is

perceived more clearly than the membership in the Climate Alliance." (T11). Another respondent agreed with the EEA having more impact than the Climate Alliance and pointed out that, "The Climate Alliance is built on a voluntary basis and with the EEA you really have to buy the services. I have to pay money for it and of course there is an external consultant. The procedure in the EEA program is clearly established. The results are then presented and judged in the city council and this is a recurring cycle. Therefore the pressure that is on the administration is much higher, as it should be, than on a voluntary basis." (T3). Another respondent added that the EEA is more publicly acknowledged than the Climate Alliance. Thus, she stated "The EEA is significantly more visible because every few years there is an award. The politicians fully support it and recognize it as a label that can be used in the political arena. With the membership in the Climate Alliance you do not receive any gifts. It is relevant solely at the working level." (T8).

However, several members explained that the membership in the EEA did not represent any competition for the Climate Alliance. One city official said, "The EEA is an instrument, which we use to establish an integrative working context which is necessary to push forward the field of climate change mitigation. The Climate Alliance has a much stronger focus in campaigns, in the involvement of citizens and in the recognition of climate change mitigation as an important topic beyond the urban context." (T11). Moreover, another respondent claimed that the EEA is not an exchange and networking platform (T8). "Every municipality gets certified and receives awards independently and the exchange between cities and town is not considered as one of the principal activities. Every EEA member has its own local energy consultant and networking is not intended. There are no large meetings; everything is dealt with within the municipality. This is different with the Climate Alliance. I know each and every employee and have been greeted by everyone for years. Moreover, I cannot imagine that the EEA can replace these valuable exchanges." (T8). Lastly, one member explained that the climate planner would be "a serious competition for the EEA because I believe the climate change mitigation planner is better" (T5).

8.3. Impact of Membership

When asked specifically about the impact the membership in the Climate Alliance had at the local level the respondents mentioned several important points.

Two respondents talked about the way CO_2 emission were reduced. One respondent explained, “We committed ourselves to halve emissions until 2030 and have pledged to reduce our emissions by 10% every five years.” (T4). When asked whether these goals were attained they both denied. One member claimed, “In the last measurement in 2013 we managed to reduce our emission during the five years by 8% instead of 10%. Our results are within the desired range. I do not know any city that achieves its goals. This depends on a huge number of factors. Of course no municipality can handle this on its own. It depends on federal law and requirements. In our case more than 50% of the CO_2 emissions stem from the industry. We are lagging behind when it comes to the renovation of buildings especially in the field of heating. We should have significantly higher remediation rates.” (T4). The other respondent said, “We almost made it. We just missed our goal but are better positioned than other municipalities. But one has to be aware of the fact that we are an industrial city and of course many of our emissions end up on the extended workbench in China. You have to face it as it is. We discuss it openly and are aware of the facts. We cannot force companies that outsource their production to implement the same standard as here. We try it, but we cannot force them. It is a difficult topic. But at least we are aware of the issue and do not deny it.” (T5).

Several interviewed members also talked about the way the network impacts their working life in serving as a creative think tank and helping in the implementation of projects and campaigns that often involve the citizens. Indeed one respondent explained that the network “was for us on the working level always more of an information pool and a creative think tank.” (T10). One campaign that many of the members participate in regularly is the so-called “City Cycling” campaign which encourages citizens to use bicycles in everyday life and put bike traffic planning on the political agenda (T5, T6, T8, T11). A further project that was mentioned by one member was the “repowermap”, a European project, which aims at promoting renewable energies and energy efficiency (T6). One member argued, “Projects such as “City Cycling” and “repowermap” contribute to encourage local climate change mitigation. This year, we carried out the cycling campaign for the first time on a suggestion from the Climate Alliance. These are little actions that should ultimately grow bigger from year to year.” (T6).

The membership in the Climate Alliance also impacts cities in legitimizing and politically accepting municipal climate change mitigation action (T1, T4, T6, T8, T11). One respondent explained, “The membership is in any case always also a signal for

the political arena. We can say we are not some crazy lone wolves but are part of a community, a European municipal network, which still has an ambitious climate change mitigation goal. And this network strives to make things better locally. What it comes down to is that the membership has helped us to establish climate protection goals in political terms. We always emphasize that the measures which we implement can be linked back to our membership in the Climate Alliance. The membership has led to the climate change mitigation goals not being challenged or alleviated." (T1). For the city officials the membership is often referred to in political discussions as a justification and legitimization of the implementation of certain measures for the achievement of the predetermined goal (T4, T6, T8, T11).

In certain cases the membership and the attendance of Climate Alliance meetings also helps to convince politicians of the importance of climate protection. One member pointed out "There always used to be certain reservations about climate protection within the conservative ranks. It was difficult to convince for example politicians from the Christian Democratic Union (CDU) to act. This has changed now that a few of these political representatives attend the national Climate Alliance meetings. Meanwhile the CDU is completely in favour of climate change mitigation, it is no longer questioned. These changes can be linked back to the extensive consultation and exchange with other politicians of the same party at these network meetings. The membership has helped to establish certain issues around climate change among politicians. The membership is a political positioning" (T5).

A few members explained that the impact on municipal climate change mitigation action and policy is not only due to the membership in the Climate Alliance but rather due to the work and effort of a handful of committed individuals. Indeed one interviewee responded, "I think what it comes down to is whether climate change mitigation is really an issue for the top personnel in the city, or whether it isn't. That is the main point. If the Lord Mayor or at least the Mayor or even the Head of Office perceives it as an issue and says this belongs to my priority topics, then things are really progressing. I believe that the membership in the Climate Alliance is of secondary importance. The membership really helped us to embed climate change mitigation goals in the city. That is undisputed. However, when it comes to acting locally many things are important but what is relevant for the citizens is a somehow identifiable person at the top level of the administration that says this is one of my topics of choice." (T1). Another member reported similar experiences saying that for several decades they had a head of department of the environment who fought for

climate protection and in general for energy-related issues (T2). “Therefore there existed a political will, a strong one, to support climate change mitigation and create an own area of expertise.” (T2). Another respondent claimed that until his recruitment the city remained a rather dormant member within the network and climate change mitigation action was kept to the minimum level of action (T7). “We paid our membership fees but that was all, whereby no one really knew why. When we were not active no one in the administration said ‘okay I will be responsible for the membership in the Climate Alliance’. Before being hired, the city planners were responsible for that and they had different priorities. Whether a city becomes active or not depends on someone taking the lead.” (T7).

In contrast to the previously mentioned results some respondents explained that the membership in a TMN such as the Climate Alliance only had limited or indirect impact. For example, one respondent claimed that although politicians acknowledge the participation in the Climate Alliance, they do not really respect it, at least in the parties besides the Green Party and the Social Democratic Party (T7). However according to this respondent “no one has come up with the idea to cancel the membership” (T7). Another respondent followed this train of thought by stating “The membership in the network is not as present here in this city and we rarely use it to embed certain issues politically in the city. We have not used the membership to argue that we have to become more active. Others might use it as a legitimization tool and it is nice to do so but we have rarely used such argumentation.” (T10). Moreover, according to one member, specific municipal sectors such as the energy or the traffic sector seem rarely to be influenced by the membership (T5). Instead, “the change takes place in the political arena” (T5). Indeed, due to the complex institutional set-up of a city, “there is no clear cause-effect relation” (T4). “It is a change of processes within the municipality and among the urban population. These processes are not that one-dimensional. It is always a giant web of actions and inspirations that come together for things, such as climate change mitigation, to change. And therefore the membership is just a really small construction site.” (T4). Another respondent further portrays the complexity of the impact process as a member in a TMN. “It is up to us to make the most out of the things that we learn and that we experience in the Climate Alliance. And this is a long and treacherous path. Before the implementation of a certain idea of measure the city council needs to approve it. It is not possible to copy point by point an idea of the Climate Alliance and to say ‘great we will do this in our city as well’. It requires a long translation process at the local level. One has to see what can happen depending on the local

conditions, the available resources and the political majorities. Taking over ideas one-to-one does not work and would never work." (T1). The membership only seems to (at best) indirectly influence local policy making of the cities that participated in the study. "One has to imagine a city with different departments and sub-departments that all have to communicate well to really impact things in different areas such as urban planning, or the energy sector. But the Climate Alliance itself, I believe, does not have, in this sense, direct local impact or control." (T2). Another member who claimed that you cannot establish the influence of the membership on specific municipal sectors also shares this view (T8). "If at all, then the impact happens through the dialogue with other cities. Information from these exchanges can then be discussed with colleagues from other expert fields but basically one cannot notice a direct impact" (T8). Indeed, the "really important questions are not affected" (T8). "When it comes to clarify the future energy supply of the city, then the membership in the Climate Alliance does not matter." (T8). Furthermore the respondent also claimed that in the day-to-day work the membership plays no role and is not really present (T8). "The membership is communicated and made public but from what we see, it is relatively clear that the way policy makers use it and talk about it, it does not play a major role." (T8). One respondent concluded, "the membership with its projects and campaigns is a nice addition but is not the dominant focus point - and it does not need to be" (T6).

Moreover, some city officials explained how the positive changes in climate change mitigation measures can be mainly linked back to their own work rather than to the membership in the Climate Alliance. One respondent explained, "If something changes, it is due to the efforts of a number of individuals. But I wouldn't say that the Climate Alliance helped us." (T3). According to one interviewee the membership is a small indicator that cities are actively mitigating climate change and helps justify certain projects and measures (T4, T6). But, these measures are usually not ideas that stem from the Climate Alliance but from each climate change mitigation manager individually (T6).

8.4. Image Support

Besides the political impact of the membership it was also interesting to see whether the participation in the Climate Alliance helped to create a more sustainable and green image of a municipality. Seven respondents explained that to some extent the membership did help (T3, T5, T6, T7, T8, T10, T11). One interviewee stated that

climate change mitigation is an issue that is mentioned a lot and as a city an issue that is nice to advertise (T8). One city official claimed, “The green image of a city depends on a variety of factors but each network surely has a multiplier effect because a forum is available through which one can represent one’s city and document one’s own activities” (T10). Indeed, “the membership can achieve an image improvement and one can promote the fact that the city is in the Climate Alliance where a lot of other cities are participating” (T3). Another respondent explained, “Ultimately the membership has given us a good image in our federal state. Our federal state has a high esteem of the Climate Alliance.” (T7). Moreover, the participation in the Climate Alliance can also help cities when they apply for external funds for an environmental project (T1, T6). To mention the membership “underlines the long-standing efforts to think outside the box and to network with other municipalities” (T1). Lastly, three respondents clearly see leaving the network as a loss in image (T1, T3, T7). One respondent stated, “The membership has prevented questioning climate change mitigation targets or changing them because this would also mean to cancel the membership and this would definitely result in a loss of face.” (T1).

However, the interviews also showed that several city officials do not think that the participation in the Climate Alliance leads to a better image of cities because firstly the membership is not really known by the majority of citizens and secondly it does not stand out amongst the memberships in various other networks (T1, T3, T4, T5, T7, T8, T10, T11).

One city official explained, “Actually the population hardly knows that our city participates in the Climate Alliance, it is more known amongst experts and remains an exchange between experts. The activities that are conducted as part of the Climate Alliance are not communicated locally. If something is mentioned in the media, then only so because Climate Alliance meetings are being organized.” (T10). Another respondent expressed similar experiences (T11). “If you ask the average citizen if he or she knows about our membership in the Climate Alliance you will probably find 1 in 10000 citizens that will know about it. Our city is more beset with other problems and ultimately with the implementation of solutions than with the issue of climate change mitigation.” (T11). Furthermore one interviewee explained “Climate change mitigation is very difficult to transmit. Within the population surely no one knows that we are active in the Climate Alliance. That is something that is known amongst experts. Of course we do public relation work for specific projects but it is a

difficult subject matter that is hard to explain from the outside, because we are really active in the implementation of projects and this work is not 'sexy'. But, I believe that the public does not want to hear from climate change and its mitigation. Basically the press department would have to launch a massive campaign that talks about these problems." (T2). Two further respondents explained how the membership in the Climate Alliance does not improve the image of the city because it is imperceptible for the citizens (T4, T5). One member claimed "Maybe we are doing too little advertising about our participation, on the other hand the network provides very few instruments for citizens." (T5).

For one respondent, the membership in the Climate Alliance is also not seen to enhance the image of cities because it is no longer a network with unique characteristic. "The membership has little importance. Previously, it was certainly important because the Climate Alliance was still the only network in the field of climate protection. In the last five years however, climate change mitigation has gained an increasing importance in Germany and with this increase a number of networks and organizations have been created. The more alliances on this topic exist, the more you have to stand out like a lighthouse and I think that the Climate Alliance has lost its radiance over time." (T3).

8.5. Membership Challenges

The membership in the Climate Alliance is shaped by different challenges. During the interviews two main challenges appeared to dictate the success of participation in TMNs such as the Climate Alliance. First, a lack of activity can often be linked to a lack of time and capacity and second, there seems to be an abundance of sustainability networks such as the Climate Alliance. A further challenge that was mentioned by one member was the fact that during the international TMN meetings topics are discussed which are sometimes not relevant for German cities. Thus, the interviewee explained, "Certain countries have different problems that are very far away from our every-day working life. We recently participated in a seminar where a talk was given from someone from Johannesburg in South Africa. The problems that were mentioned were really not primarily climate change mitigation but rather social problems – sustainability problems in the broad sense but not including the ecological focus." (T10).

An important issue that was expressed by the majority of the respondents was the continuous capacity problems that municipal climate change mitigation managers

face both in terms of time and budget (T2, T3, T4, T5, T6, T8, T10, T11). One respondent explained, “To participate in a network is very time consuming. This means that one has to take time from certain tasks and prioritize activities.” (T10). This view was also shared by another member who explained, “The membership in the Climate Alliance represents high personnel expenses. One has to take part in the events and of course this implies some burden. Because four to five days of full-time work in a year are taken away from someone who participates in the national and international meetings. And some Climate Alliance projects, such as the benchmarking tool are even more complicated. Therefore we have to look that all these network activities are kept within reasonable limits.” (T2). The fact that the membership has a lower priority on the local agenda than the municipal climate change mitigation measures is also expressed by a city official who explained, “I’m glad that we manage our daily work here reasonably well and this also implies that the participation in the Climate Alliance has a significant lower priority. We try to engage and participate in these conferences but often it is simply not possible to do so.” (T8). Another interviewee claimed he was responsible for the implementation of 39 measures as part of the municipal climate change action plan and there was not much time left for anything related to the cooperation and participation in the Climate Alliance (T6). He stated, “If we were two or three people I would be able to contribute more but the active membership becomes difficult with the everyday work. The position of the climate change manager of a smaller German city includes dealing with many things on your own and submitting many proposals. This takes much time away of the regular working hours. Just recently I managed to get my request passed at the city council for a two-year extension of my working contract. I still need to finish a few things for this proposal and although I would like to be more active in the network I just do not see how I can do so with such limited time capacities.” (T6). Lastly, one city official pointed out, “The challenge is the fact that we see a huge potential to become active at the local level in the field of climate change mitigation. We have thousands of ideas but cannot implement these ideas because we do not have the money and the personnel. And these ideas always compete with the exchange and cooperation with other cities. In this competition networking and the exchange and cooperation with other cities will always be problematic. For example when there is a conference for three days in Lübeck then I do miss these three days here. This is just the daily problem we have to deal with. And when there is a lot of work then one often cancels the participation in such conferences, although these meetings help and I always come back motivated.” (T4). It is apparent that this constant capacity struggle is an issue that affects many German municipalities.

Another problem that challenges the membership of German cities in the Climate Alliance is the fact that over the last few years a surprisingly high number of climate change mitigation and energy-related networks have formed that are all looking for members. “By now there are many networks in this field and every municipality has to look how to position itself. Since the national climate change mitigation initiative this trend has significantly increased. This is why the Climate Alliance must face the competition with other networks. Eventually this can lead to networks mutually snatching members away from each other.” (T7). This was further highlighted by the claim of another city official. “In recent years, especially in the last two, such alliances with a focus on climate change mitigation have popped up all over the place. And of course everyone is trying to solicit new members. As a climate manager one tries to please as many as possible but often this does not work out. Sometimes time is missing to be able to contribute in a more in-depth way and certain projects are sacrificed. Our city is active in several networks. Currently we are focusing more on an alliance at the federal state level.” (T3). Indeed two other interviewees explained that they had chosen to be more active in other networks (T10, T11). Thus, in one case the municipality chose to be more engaged in the German Association of Cities (Deutsche Städtebund) and in the other case it was the Regional Council that drew more attention than the Climate Alliance. A respondent explained the motivation behind such a choice by stating, “The German Association of Cities had a set of recommendations on technical and building standards and many strong impetuses were given.” (T10). Moreover, one municipality specifically chose to be more engaged with networks that offer “some real funding opportunities” (T6). “The projects by the Climate Alliance are a nice addition but are not in the focus of municipal network activity.” (T6). This trend results in a strange dynamic. One respondent explained, “The main issue is the following: we are swamped with numerous options and requirements. There is an excess of opportunities and we have to see that we do not overexert ourselves. We just have too much going on.” (T11).

Table 3: Summary of Results

Reasons to Join the Network		
Reasons to join Climate Alliance	- Information and knowledge Exchange - Publicly acknowledged and ambitious climate change mitigation goal - Climate Alliance well established within German/European arena - External environmental/climate-related pressures	
Benefits		
	YES	**NO**

Information	- During conferences/meetings - During bilateral exchanges - Through the newsletter - Through the thematic working groups	- No time/financial resources for conferences/meetings/working groups - No time for newsletter - Information from scientific publications - No information on regional/federal state level
Technical Support	- ECORegion but only every five years - Climate Cities Benchmark for city council report	No "climate compass": - Own climate action plan - Climate action plan with help from other external institutions No ECORegion: - Own CO_2 inventory tool with external help from other institutions - Too expensive No Climate Cities Benchmark: - Focus on implementation of measure - Time and Financial Restrictions - No helpful output - Benchmarking with other institution
Networking	- At conferences	- No time/financial resources for attendance of conferences/meetings/working groups - Higher priority on implementation of measures than on networking - Networking with non-Climate Alliance members
Funding Support	- EU project with northern Europe Climate Alliance members	- No application for funds in general - No time/financial resources - Application for funds with non-Climate Alliance members - Advice on application procedure from other institutions
Awards and Certification	- Climate Star for climate change mitigation projects - Good for the image and public relations of municipality	- Awards from other institutions - Award not perceived as motivating factor to become more active
EEA in comparison to Climate Alliance		
	YES	**NO**
EEA competitor for Climate Alliance	- Instrument to embed climate change mitigation within municipal administration - Creates transparency on the climate change mitigation progress - Membership more respected by politicians than Climate Alliance - More publicly acknowledged	- EEA is black box - EEA especially interesting for municipalities lagging behind - EEA too time-consuming and expensive - Climate Alliance platform for experience/information exchange and campaigns - Climate planner: future tool of Climate Alliance serves as competition for EEA
Impact of Membership in Climate Alliance		
	YES	**NO**

Impact of Membership	- Creative think-tank - Campaigns involve citizens - Political Legitimization within municipal administration - Establish climate protection goals - CO_2 reductions	- Impact due to work of motivated and influential individuals - No clear cause-effect relation - Really important questions and decisions not affected by membership -Membership plays no major role for policy makers
Membership as Image Support	- Within the federal state - For the application for external funds - Leaving as image loss	- Membership not known by citizens - Membership does no longer stand out amongst various other networks
Challenges of Membership in Climate Alliance		
	- Lack of resources/personnel/time - High number of climate change mitigation/energy-related networks	

9. Interpretation of Results

9.1. Expected Benefits

It is interesting to see what members of a TMN such as the Climate Alliance expected to gain from their membership in the network when they decided to participate. The scientific literature tells us that cities join such networks because they are offered various benefits such as information and knowledge on climate change mitigation, technical and funding support as well as networking and cooperation opportunities and recognition and certification possibilities. However, according to my research, this only partly holds true. Hence, municipalities joined because they wished to connect and exchange experiences with other cities but also because they hoped for recognition in the political arena and by the public. To participate in these networks made these cities' efforts to act against climate change seem credible and municipalities had a clear climate change mitigation goal. This has to be seen in the context of the 1990s (the period when the majority of respondents joined the network) when Germany and Europe had GHG emission reduction targets but not yet defined municipal climate change mitigation goals. By now, and especially since the Energiewende, this is different. Although climate change mitigation remains a voluntary municipal task, the German government has recognized that municipal climate change mitigation is a crucial part of the Energiewende. Its importance has significantly grown over the last decade and a clear mitigation goal would probably no longer be a reason to join the Climate Alliance nowadays. Indeed, whereas more than two decades ago climate change was not yet officially recognized as a phenomenon that is caused by mankind, this changed with the publication of the first IPCC report in 2007. Therefore, it is understandable that cities that wanted to actively protect the environment and reduce emissions joined a network, such as the Climate Alliance, in order to jointly create political strategies. It is interesting to see that benefits such as funding and technical support as well as the wish for benchmarking and recognition were not part of initial reasons to join the Climate Alliance but that the main focus was on the exchange of experiences participants hoped to have with fellow members. Lastly, it is worth noting that the fact that one city joined because it is vulnerable to climate change impacts, such as extreme weather events and flooding, fits with findings by Zahran et al. (2008).

9.2. Information

Results on the benefit of receiving information from the TMN are in line with the scientific literature (see 6.3.1.). Indeed, the access to exclusive information is seen as the benefit that is most valued by members of TMNs. Gaining and exchanging new information was the benefit that was most often mentioned during the various interviews. But, as reported in the literature, the lack of information on climate change mitigation is not one of the reasons why cities are not more active in this field (Betsill & Bulkeley 2004). Indeed the majority of respondents claimed to know about causes of GHG emissions and the technical possibilities they had at their disposal in order to improve climate change mitigation at the local level. Thus, municipalities use the network mainly to become inspired by actions implemented by fellow members and are aware of the problems GHG emissions and climate change cause. Indeed, the findings in the interviews confirm the results of Kern & Bulkeley (2009) who claim that best practice information is rarely acted on but rather seen as a source of inspiration for own ideas. This is enforced during bilateral information exchanges on the implementation of specific policies or campaigns initiated by the Climate Alliance. The information flow mainly happens during the participation of working groups on specific issues related to climate change mitigation and the attendance of Climate Alliance meetings and conferences. Besides the newsletter the online presence of the Climate Alliance is not much taken into consideration by the members and the consulting guides and the database of best-practice examples do not seem to find much use amongst the members. These results question the effectiveness of such practices.

Although the newsletter (eClimail) informs on potential campaigns, projects, activities of other cities and new amendments to German and European laws, members often do not find the time to read it and when it comes to specific information on climate change mitigation participants chose to read scientific literature rather than information provided by the Climate Alliance. Moreover, the newsletters, but also the information provided to members at meetings, mainly focus on the national and European level but fail to include the regional and federal state level. However, information on climate change mitigation action in nearby cities is often met with more interest than information on projects in other countries. It can be seen that, although the Climate Alliance is a transnational network, members exchange and are interested in information mainly at the national level. One explanation might be that the Energiewende is, for the time being, a German project where German

municipalities relate to each other rather than to other European cities which do not face such energy transition. Overall it can be said that the Climate Alliance concentrates primarily on the role of disseminating and exchanging information and ideas rather than generating new information for their members (Keiner & Kim 2007; Lee 2013; Bulkeley et al. 2003; Bulkeley & Betsill 2003; Lipschutz 1997).

9.3. Technical Support

Confirming previous findings, technical resources are indeed offered by the Climate Alliance (see 6.3.2.).

Thus, the instrument ECORegion is made available to the members of the network that allows for local authorities to calculate, forecast, and monitor their emissions (Betsill & Bulkeley 2004). Although not all respondents take advantage of this tool, it seems to have helped many municipalities to make initial emissions calculations and forecasts. From the three instruments and methods that the Climate Alliance offers to its members, it is the most widely used one by the city officials that were interviewed for this research. However, ECORegion remains an instrument where results from one municipality cannot really be compared to others since there are not yet strict guidelines on which data to use. A comparison could potentially also serve as a motivating factor for cities to become more active. For the time being, some cities choose to include certain emissions whereas others choose to leave them out. Also, the majority of cities that implement the tool only use it every five years in order to look whether they have reached the Climate Alliance 10% emission reduction target.

What remains a difficulty, and could therefore be something that the Climate Alliance strives to improve, is the collection and procurement of valid data. Indeed, it seems that some municipalities have therefore chosen to work with other partners than the Climate Alliance, such as the IFEU, for their calculation, forecast and monitoring of emission because these had experience with the procurement of municipal data that is needed for such software. This might change once all members implement the climate protection planner from 2017 onwards, as this tool also includes an updated version of ECORegion.

A further tool that is offered is the climate compass, where potential measures for climate change mitigation are identified. It is striking to see that none of the eleven respondents used this tool for planning future measures. Although this might be a

coincidence with the sample of respondents, it may also underline the fact that just because a network offers such instruments and methods to its members does not necessarily mean that they actually use it. Instead, most of the members have already come up with a climate action plan on their own. One explanation might be that cities tend to be part of a network, such as the Climate Alliance, when they are already active in the field of climate change mitigation and often one step ahead of the Climate Alliance and therefore a climate change mitigation plan, with a set list of measures, is more likely to already exist. Either way, this results in multitude of climate protection plans all over Germany. Although every municipality faces different challenges, a unified national municipal climate change mitigation plan with a set list of measures would be a very helpful and the Climate Alliance should be a valuable partner for such an undertaking. Indeed, for evaluation purposes and to make sure that the current measures really work some sort of standardised program of measures would be advantageous. Of course, as long as municipal climate change mitigation remains a voluntary task, the launch of such a standardised, nation-wide municipal climate protection plan continues to be difficult. But, the climate protection planner, currently being tested by various cities, could represent an essential step for such a development.

Lastly, the benchmark tool, a measurement, assessment and depiction of the effectiveness of various reduction measures, is a further instrument that does not seem to have found much use amongst the participants of this research. The only two cities that have implemented it did not seem very enthusiastic about this tool. According to the literature, benchmarking can be an incentive to become more active and ultimately help politicians see the benefits for a city to act climate friendly as well as promote the public image of a green city (Bulkeley 2010; Betsill & Bulkeley 2004). Neither aspect was mentioned in the interviews. Furthermore, the tool does not seem to help in assessing the progress of municipalities since this requires, amongst other things, a yearly CO_2 emission inventory, which is only conducted every five years, if at all. It seems that only a limited number of citizens know about this benchmark which shows that this does not have much impact for the green and environmentally friendly image of a city. Moreover, since politicians do not seem to understand the purpose of such a tool, it is questionable whether benchmarking really motivates cities to actively change policies.

Generally, one of the main reasons for municipalities not to use the technical benefits offered by the Climate Alliance are capacity and financial reasons. Thus, the

implementation of all three instruments take much time and therefore it is often a question of prioritization whether or not to make use of the instruments offered by TMNs. It seems that members tend to focus more on the actual implementation of measures than on the administration of “sophisticated” and time-consuming tools offered by the Climate Alliance. It is understandable that these constraints hinder the use of certain technical benefits, however a proper evaluation of policies and measures is important and should not be disregarded.

A further factor that restricts the full potential of the technical benefits of the Climate Alliance is the cost of these instruments. Thus, since the budget reserved for climate change mitigation within municipalities is usually very limited, city officials cannot afford ECORegion for instance, even though they are interested in it. Therefore these instruments should either be made available free of charge or if climate change mitigation was an obligatory task for every municipality then some sort of subsidy system should be put in place. However, and this issue is discussed later on (see 10.6.), once a tool is free of charge, it is often perceived differently amongst politicians.

9.4. Networking

The findings on networking during this research confirm the main facts reported in the scientific literature (Bulkeley 2010). Thus, networking and cooperation do indeed happen and are seen as very valuable by the majority of the participants in this study. Most members see the yearly international and especially national conferences as well as meetings with working groups on specific subject matter as beneficial and worthwhile. However, some members do not get to attend these conferences due to lack of time and funding. Especially in smaller municipalities where the climate protection unit usually comprises one to two people, it is difficult to make time for such voluntary engagement. One solution could be the live streaming of such conferences and meetings. The possibility of bilateral cooperation is also a benefit that is perceived as helpful for solving problems that other cities have already faced but happens only with the strong determination of either city.

Moreover, it is also worth discussing the fact that just because municipalities are part of the same TMN, does not necessarily mean that there will be a strong basis for cooperation. Indeed, the Climate Alliance is a network welcoming all municipalities, whether they are forerunners in climate change mitigation or lagging behind and

whether they have a few million inhabitants or just a couple of hundreds. This is different from TMNs such as the C40 network which brings together large cities with common opportunities, interests and priorities. Indeed, for the respondent cities (bilateral) cooperation becomes interesting when cities have the same prerequisites and face similar challenges. This is also a reason why some cities are more interested in regional or federal cooperation.

9.5. Funding Support

TMNs such as the Climate Alliance can indeed in theory help to provide "means through which members can contact each other in order to bid jointly for project funding" (Kern & Bulkeley 2009, p.321). However, only one of the eleven respondents took advantage of this offer. This shows that finding fellow municipalities with which to apply and cooperate with is not something where the Climate Alliance membership can be beneficial. City officials from the other cities did either not apply for funding at all because of financial and time restraints, or they chose to apply for project with cities that are not members of the network. Indeed, for municipalities it is sometimes seen as more advantageous to apply with cities in the same region that are not necessarily part of the TMN (see 10.4.). In either case, membership in the Climate Alliance is also a bonus that is mentioned in funding applications. According to the literature TMNs can also help with expertise on the application procedure of interesting municipal climate change mitigation funding opportunities (Niederhafner 2013). However, this is not a service provided by the Climate Alliance nor is the potential provision of funds. Instead participants look for such help and advice in different institutions, which specialize in this field. Moreover, some participants stated that they did not need help for their funding applications. Overall, the benefit of financial support is not one that is highlighted by the participants of this research. Then again, it is not a benefit that the Climate Alliance claims to actively provide to its members.

9.6. Awards and Certification

According to the scientific literature, awards and certification can be meaningful for future initiatives and represent incentives to more actively pursue climate change mitigation (Strengers 2004; Kern & Alber 2009). As previously mentioned, the Climate Alliance rewards municipalities that have implemented some interesting and successful projects for the protection of the climate with the so-called Climate Star (6.3.5. and 7.3.). Some of the participants in this research indeed applied and even

won an award but did not consider that it helped in implementing more climate change mitigation policies and measures. Winning an award or a prize does therefore not necessarily serve as a motivation for city officials to become more active and for politicians to change their environmental and carbon policies. It also seems that the Climate Star competition is neither appreciated nor popular, at least amongst the respondents in this study. Since these competitions do not have much of an effect at the local level, they are seen as a tedious application process and a burden as well as something that consumes unnecessary time and effort for no meaningful results.

In order to see whether these opinions only applied to the Climate Star, the respondents were also asked about the EEA, a certification procedure and award. Since the Climate Alliance does not offer such a certification procedure it was interesting to look at the impact the participation in the EEA had at the local level and, whether it represented a threat to TMNs that focus on climate change mitigation. Indeed, the EEA shares essential traits with TMNs: it is transnational, based on the voluntary participation and aims at reducing GHG emissions. Certification procedures such as the EEA can also strengthen climate change mitigation policy (European Energy Award 2014). It is interesting to see that the reasons to partake in the EEA relate to the goals of the Climate Alliance. The Climate Alliance also aims at embedding and integrating climate change mitigation within the administration of municipalities and encourages different municipal departments to work in common on the implementation of measures. One could therefore assume that the membership in the Climate Alliance suffices. But apparently, for some city officials, the participation in the EEA is seen as a necessary step in order to seriously tackle climate protection locally. Moreover, the respondents see the Climate Alliance primarily as an organization that promotes campaigns, involves citizens and where municipalities can network, rather than a significant influence at the political level.

For politicians, the EEA is in a way more efficient in taking climate change mitigation to the next level than is the Climate Alliance. The benefits of the Climate Alliance are mostly free of charge and it seems that the membership in this network is not valued as much as the participation in the EEA although they offer similar tools. Thus, for example, ECORegion, the CO_2 balancing tool, is offered by both the EEA and the Climate Alliance. The main difference between the Climate Alliance and the EEA seem to be the external consultants that assist EEA municipalities in their efforts to reduce GHG emissions and the potential certificate at the end of each year.

However, for those cities that are part of both organizations, the EEA is seen as more helpful in the political arena than the Climate Alliance. Actually, for some respondents the EEA does not represent any competition for the Climate Alliance because the Climate Alliance is primarily seen as a network where cities can exchange experiences and information whereas the EEA is seen as an organization where every municipality works on its own towards reducing emissions. Moreover, the fact that the EEA is expensive puts much more pressure on progressing and delivering results than the free-of-charge membership in a TMN.

In conclusion, it can be said that the EEA is, especially for municipalities that are not that advanced with local climate change mitigation, a serious competition for the Climate Alliance. However, if the membership in the Climate Alliance would cost as much as the participation in the EEA, the alliance would most likely be able to offer such intensive help as well. Moreover, the current development of the climate planner might represent a further threat to the success of the EEA.

9.7. Impact of Membership

As one of the main goals of the Climate Alliance is to reduce GHG emissions, it was interesting to see whether such a reduction has really taken place since participating in the TMN. Although it is not possible to clearly attribute emission changes to the membership in TMNs, emission reductions can broadly depict as to whether the benefits that the network offers to its members have some impact. The results show that the way the emissions are calculated should somehow be based on a national standard. As mentioned in section 10.3., municipalities should be told clearly which data to include and which one to leave out as well as where to obtain which data. One has to realize that the documentation of GHG emissions and CO_2 inventories is still in the beginning stages. Thus, such records have not existed for a long time and are continuously evolving and become more elaborate. Therefore, in the future, it will most likely be easier for municipalities to obtain data and make more precise predictions. Maybe, eventually, it will also be possible for cities to exactly show the effect of their outsourced companies. Indeed, while examining GHG emissions reduction results one should keep in mind that due to cheaper labour in certain countries, the emissions of these “extended workbenches” are currently not shown in national and municipal emission balances.

The most important way in which the membership of the Climate Alliance impacts local climate change mitigation efforts is in legitimizing it at the municipal level. It seems that efforts in promoting climate protection and the implementation of measures that reduce GHG emissions are less questioned when a city participates in a TMN such as the Climate Alliance. This was also shown in a previous study by Davies (2005). Moreover, the membership in the Climate Alliance impacts climate change mitigation in the sense that some members use it as a think tank to come up with potential measures as well as a source of inspiration for measures that are then tailored to the needs and the local conditions of a municipality. Indeed, one has to keep in mind that each city has a different budget and faces different challenges and it is impossible to come up with an ideal list of climate change mitigation measures that can be adopted by each German municipality.

Often the impact of the membership on climate change mitigation policies is enhanced by the efforts of a few committed individuals (Dorsch 2003; Anguelovski & Carmin 2011b; True & Mintrom 2001). This is also shown by a few respondents that claim that the membership is of secondary importance and that climate change mitigation only effectively takes place when a person, known to the public and at the top of the administrative level, considers climate protection as a matter of personal importance. Moreover, it seems like the more enthusiastic the person responsible for the cooperation with the Climate Alliance is about climate change mitigation, the greater the benefits of the membership in a TMN such as the Climate Alliance will be at the local level. The more efforts city officials put into the participation in the Climate Alliance, the more they will be able to profit from it. This was also noticeable during the phone interviews: the respondents that sounded unmotivated and uninspired about climate change mitigation often came from municipalities that did not seem to be very active in the network.

The direct impact on specific municipal sectors is very limited and if at all indirect. According to the views of some of the respondents, it seems that the participation in a TMN rarely leads to policy transfer and policy learning. The simplified idea behind policy learning is that new information on specific issues such as climate change mitigation create policy change and lead to the implementation of certain measures to reduce GHG emissions and protect the climate (Betsill & Bulkeley 2004; Sabatier 2007). In reality, however, a municipality rarely adopts policies after gaining new information and ideas on measures from the Climate Alliance (Behringer 2003). Indeed, none of the respondents could name an example of a new policy that had

been adopted as the result of any of the benefits offered by the TMN. The adoption of a policy is a process that is much more complicated and takes much more time than it seems. The implementation of new measures represents a complex process, in which the Climate Alliance seems to primarily serve as an inspiration source and an instrument that helps climate change mitigation managers to convince politicians of the importance of their work (Betsill & Bulkeley 2004). Moreover, at the municipal level policy learning is very dependent on both the local financial situation and capacities. Hence, even if there is a strong political will for a municipality to act climate friendly, it is often restricted by factors that are very hard to influence.

While the impact the membership has on municipal climate change mitigation policies seems to be limited, it is interesting to see whether the participation in the Climate Alliance has an influence on the "green" and "sustainable" image of the respective cities. Indeed, one could think that this is one of the reasons why many members decide to stay in such a network even if they are not very active or do not take full advantage of the various benefits offered by the Climate Alliance. The membership contributes to the environmental image of a city but only at the political level and between climate change mitigation officers. Usually, it is only other experts in the field of climate protection that know about the efforts that city officials undertake. When it comes to the citizens, the membership in a TMN does not play a significant role. Indeed, the majority of citizens do not know that municipalities participate in a network such as the Climate Alliance. Although the TMN does organize campaigns to involve citizens the issue of climate change mitigation is not yet considered as one that the wider public feels strongly about. When it comes to climate change mitigation and the membership in the Alliance, city officials rarely advertise the benefits of this membership. Moreover, there is usually neither time nor money for marketing climate protection achievements. Either way, climate change mitigation is not a topic that is met with much interest among the citizens. Therefore, it would be too simplistic to accuse municipalities that participate in TMNs of green washing (pursuing an environmentally friendly image without actually implementing many emission-reducing measures). Nevertheless, a stronger focus on the public relations of the membership in the network within municipalities would be important for citizens to grasp the significance of climate change mitigation.

Whereas two decades ago climate change mitigation was rarely found on the political agenda of municipalities, this has changed over the last few years and has gained increasing importance especially since the Energiewende. This trend has lead to the development of a variety of new networks that all base on the topic of energy

transition. Thus, whereas twenty years ago, the membership in the Climate Alliance meant that municipalities were interested, engaged and some sort of pioneers in mitigating climate change, this has definitely changed. Since the Climate Alliance has become one of many networks and organizations that aim at helping municipalities and regions to act in favour of climate protection, it is not as much perceived as helping the environmental and sustainable image of municipalities as it probably used to.

9.8. Challenges

Although municipal capacity for climate change policy is itself already shaped by a variety of restrictions, the participation in networks is also influenced by two significant challenges, directly affecting the way in which the benefits of the membership in TMNs are met in German cities.

On the one hand, there is a continuous lack in capacity in the climate change mitigation offices in all municipalities that participated in this research. The fact that the climate change mitigation managers only have very limited financial resources leads to personnel problems which in turn result in a lack of time to attend TMN meetings, exchange with fellow colleagues from other municipalities and take full advantage of the technical tools offered by the networks. This will stay that way as long as climate change mitigation remains a voluntary task of municipalities. Thus, "not only does climate change mitigation as a voluntary task take a back seat to other mandatory tasks, it is often not even given priority among other voluntary tasks" (Bulkeley & Kern 2004, p.35). But, given the fact that climate change mitigation has increasingly gained in significance, the picture may end up changing. Indeed, the German government relies on municipalities to reach its emission reduction goals and will eventually have to provide sufficient funds so as to make climate change mitigation and the participation in networks such as the Climate Alliance easier.

The climate planner is a further project that will be of important for the Climate Alliance and climate change mitigation in Germany. It aims at the harmonization and standardization of methods for the calculation of municipal energy and CO_2 inventories and the development of local climate protection measures for all municipalities in Germany. Ideally this planner should be supported by the German government and therefore free of charge.

On the other hand, as a result of the increasing popularity of climate change mitigation, numerous networks that focus around similar issues have popped up all over the country. Although, at first glance, this could be seen as a welcomed development, it leads to networks snatching members away from each other. This is an issue that, up to now, has been left out of the scientific debate. This is understandable since this abundance of networks is a relatively new phenomenon. Thus, municipalities, often try to please as many networks as possible, and end up choosing to be active in just a selected few. This results in some older TMNs, such as the CCP, becoming inactive in Germany.

The difficulties encountered at the start of this study serve as an illustration of the phenomenon. While initially this research was initially planned to focus around German CCP members, the “updated list” I had been handed quickly showed that the alleged members were no longer active. Instead, these had chosen to become active in other networks, such as the Climate Alliance. The abundance in networks and the emergence regional networks represents a serious threat to TMNs. Networks with a regional focus can be more attractive for municipalities than international networks because their members are faced with similar problems and challenges and are surrounded by identical legal frameworks. This is especially true for smaller municipalities. Even in TMNs such as the Climate Alliance respondents tend to network preferably with fellow German cities. This questions the essence of transnational cooperation and therefore of TMNs. Indeed, it seems that the Climate Alliance is, for German members at least, a German network for German cities. This might be explained with climate change mitigation policies and measures still being very different depending on the European country and even from one German municipality to the other. Should there be a European directive making climate change mitigation mandatory then the importance and the significance of TMNs and the impact of the various benefits will surely grow again. Moreover, such developments would also emphasis the differentiation to other regional and national networks.

10. Discussion

10.1. Contribution of this Research

Several studies have looked at municipal climate change mitigation in Germany but there has been little research on the influence of TMNs on German municipalities. The first contribution of this research is therefore to present an extensive overview of the existing scientific literature on TMNs. Especially with the onset of the Energiewende, the reduction of GHG emissions within cities is gaining importance and so is the impact that such networks have at the local level. The main studies on TMNs have taken place in anglophone countries. Moreover, the few studies that exist on TMNs in Germany focus around the CCP program, which is no longer active in Germany.

Therefore this research has also contributed to the scientific debate on TMNs in shedding light on the way TMNs function in Germany and on the specific benefits the Climate Alliance offers to its members. More importantly, this research has given an overview on how the benefits are used at the local level. Thus, this study examined whether the benefits of information exchange, technical and financial support, networking and certification, awards and recognition are made use of in municipalities that wish to mitigate climate change. Moreover, whether these benefits have an impact on local climate change mitigation policy was also examined during the structured expert interviews with the respective climate change mitigation managers of each chosen municipality.

Lastly, this study has also contributed to the scientific debate by pointing out the main challenges faced by TMNs. While the financial struggles have been examined in previous research, the plethora of networks in Germany all based around similar issues has largely been left out of the scientific debate.

This research gives an overview of the current state and struggles of TMNs in Germany. The results of this research could be used for municipalities that are thinking about joining so as to get an overview what the membership entails and how its benefits translate at the local level. Moreover, the results could also be helpful for the secretariat of the Climate Alliance and be an indication for potential improvements.

10.2. Limitations of this Research

The main limitation of this research is the small sample size that has been selected for the phone interviews. Indeed, only eleven municipalities out of 469 Climate Alliance members were chosen for this study. Nevertheless, this sample was not randomly chosen since ten of these eleven municipalities introduced their climate change mitigation activities on the Climate Alliance website, hence indicating their active participation in the network. These municipalities were considered to be more active than the average members and therefore able to give a more extensive view on the ways they used the benefits offered by the network. Furthermore, had the sample size been larger it would not have been possible to conduct such extensive phone interviews and surveys would have been needed instead. Since the climate change managers of the respective cities are normally under constant time pressure, survey requests by students or other researchers are often ignored. Indeed, various city officials that were contacted at the beginning of this research did not react to the first couple of e-mails and a certain amount of persuasion skills was needed in order to obtain the approval for a phone interview. Several declined to be interviewed, either because they were not interested or because they did not have any time. Thus, It was imperative to conduct phone interviews in order to obtain in-depth answers that could be used for the analysis of the use of benefits at the municipal level.

A further limitation is that within the sample, the size and socio-economic characteristics of the chosen cities vary significantly, thereby influencing the reasons why some benefits are not used as extensively. Such research was not undertaken because of the initial difficulties encountered with the CCP network, namely that the German members were not aware of their membership. The initial sample contained all German CCP members who also happened to be part of the Climate Alliance. It was chosen to interview these initial member cities about their membership in the Climate Alliance since they had already been contacted. Therefore, and due to time restrictions, a classification according to the size and socio-economic characteristics of municipalities was not included.

Another limitation is the fact that for each municipality, interviews were only conducted with one city official. Indeed, often and especially in smaller municipalities there is only one person responsible for the cooperation of the city with the Climate Alliance. But, in order to limit bias opinions, it would have been interesting to conduct a second interview whenever another city official was familiar with the collaboration with TMNs. Again, it was quickly seen that to be granted one interview in a

municipality was already an achievement. I was in no position to set the rules and therefore a second interview was not considered an option in the frame of a master thesis. This might be different if research is conducted as part of a larger research group or if it is directly linked to the government.

Last, the fact that this research only looks at the Climate Alliance rather than including another TMN, such as Energy Cities, can also be considered as a further limitation. Thus, although it is likely that the results of this research with the Climate Alliance would be similar with other TMNs, a comparison would have been appropriate. However, time constraints did not allow for such research.

10.3. Recommendations for further Research

There are several recommendations for further research. First of all it would be interesting to see whether the results of this study are similar when examining a larger sample of German municipalities that are part of the Climate Alliance. Obviously, this would take much more time but would allow for some concrete generalizations and recommendations on how to improve the benefits offered by the network.

Moreover, the participating municipalities could be classified according to the demographic types of the Bertelsmann Stiftung (Bertelsmann Stiftung 2015). This typology classifies German municipalities according to their demographic, economic and social development into nine different types, ranging from small and stable municipalities to strongly declining municipalities with special adjustment pressures. The way the benefits of the Climate Alliance are used could be examined according to the cities' demographic type. A similar study could be undertaken where the member cities in the Climate Alliance are categorized according to the political parties that rule the respective municipality. One could then look at whether certain benefits are more accepted in cities depending on the political parties.

It would also be helpful to conduct some research amongst the management of the Climate Alliance and examine how the management is in contact with the members and how the benefits that they offer to the municipalities are communicated to the respective city officials.

Further research could also be conducted on different TMNs, such as Energy Cities. While the results are likely to be similar, since this network offers benefits very similar to the Climate Alliance, it would be interesting to compare both TMNs according to the benefits offered to the participating municipalities as well as their management style.

Moreover, it would also be interesting to examine how the benefits of the Climate Alliance or another TMN are used in a European country that is not facing an energy transition and where climate change mitigation has not gained as much importance over the last decade. Do TMNs benefit of more popularity amongst city administrations? Are certain benefits more important than in Germany? Is the effect TMNs have on municipal climate change mitigation policy greater than in Germany? Do cities, as was shown in this research, also mainly network and cooperate with fellow members of their country?

Lastly, it would be interesting to examine how the climate planner (implementation scheduled in 2017) is used at the local level and to analyse how this tool has changed with respect to the tools previously offered by the Climate Alliance.

11. Conclusion

Findings of this research suggest that some of the benefits provided by TMNs are better received than others. According to the respondents, the network is primarily used for networking and information exchange purposes. Whereas the technical support is partly used, the benefits of funding support and awards and recognition are taken advantage of only in a very limited way. The main reasons for the benefits of TMNs not being used to their full potential is the lack of funding and time which German municipalities are confronted with when it comes to climate change mitigation.

Furthermore, whereas it is supposed to be transnational, the Climate Alliance has in reality become a network that primarily connects fellow German municipalities. It faces competition from a plethora of networks and organizations dealing with climate change and other aspects of the Energiewende. This relatively new phenomenon decreases the impact of both smaller organizations and TMNs on municipal policy making. The participation in multiple organizations and alliances does not increase the efficiency of municipal climate change mitigation. The unpopularity of local climate protection due to economic sacrifices and the reduction of GHG emissions are problems that remain to be solved. Moreover, municipalities prefer to cooperate locally with cities that are faced by similar socio-economic problems rather than in a large TMN such as the Climate Alliance.

While TMNs may have more (lobbying) power at the national, supranational and international level, the impacts the benefits provided by membership in a TMN have a very limited impact at the local level. The usefulness of such networks might therefore be questioned, even though TMNs, such as the Climate Alliance, remain valued by their members. For the respondents of this study, climate change mitigation is not a battle they want to fight alone, especially as long as climate protection remains a voluntary task.

Moreover, the way the benefits offered by TMNs are used at the local level depends on the responsible city officials. TMNs use a “laissez-faire” approach with no authority to force their members to apply specific strategies. Therefore, the presence of a motivated, competent and committed individual, who understands the importance of TMNs, is crucial. Even if municipalities participate in many networks

that offer benefits of high quality, the membership is useless if city officials do not understand its purpose.

Finally, the use of the benefits offered by TMNs could be significantly improved if climate change mitigation were to become a compulsory municipal task. In order to reach its ambitious plans to reduce GHG emissions, Germany needs to support and subsidize municipal climate change mitigation as well as the efforts of networks such as the Climate Alliance. Moreover, to have greater impact, TMNs need to come up with innovative ways to communicate and offer benefits for municipalities shaped by financial and personnel restrictions. The climate planner, a tool currently developed by the Climate Alliance and the German government, could represent an urgently required step towards facilitating climate protection and reducing GHG emissions in Germany and eventually also in other countries.

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14. Appendix: Interview Scheme

Basic Questions

1) Since when is your city member of the Climate Alliance?
2) From a scale of 1 to 10 where 1 means not active in the Climate Alliance and 10 means very active, where would you position yourself? Why?
3) What were the main reasons why you joined the network?

Questions regarding the Climate Alliance

1) Did you implement the Climate Alliance climate action plan, "climate compass"? Why/why not? If so, which modules were achieved? Do you use ECORegion? If so, how often and why? Do you use the Climate Cities Benchmarking tool?

Questions on Tools/Benefits

Information:

1) Have you received information from the network through good-practice databases, the website and newsletters? Why/Why not?

Technical Support:

2) Have you worked with a software package that calculates, forecasts and monitors GHG emissions? Why/Why not?

Project Funding:

3) Has your city applied for funds jointly with other members of the Climate Alliance? Why/Why not? Has the network helped your city with the application for EU, national and international funds? Why/Why not?

Networking and Member Cooperation:

4) Has your city attended conferences or workshops organized by TMNs? Why/Why not? Has your city exchanged information/experiences with fellow members? Why/Why not?

Recognition, Certification:

5) Has your city been acknowledged for climate change mitigation achievements? Why/Why not? Has it received awards such as the European Energy Award? Why/Why not?

Questions on Impact on Municipal sectors

1) Have policies changed in either of the following sectors: energy, transport, waste, land use planning and development? Why/Why not?

Questions on Challenges

1) What are the main challenges with the membership in such network?

Questions on the Image of the Membership in a TMN

1) How important is the membership in the Climate Alliance for the sustainable and environmentally friendly image of your city?

15. Annex

The full transcription of the eleven interviews and the NVivo coding file can be found in a separate dropbox folder:
https://www.dropbox.com/sh/1dg7je0hrfvw9dv/AABWO4UfprkTkcPRAH8ZDJLNa?dl=0