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Governing Climate Change by Diffusion

Transnational Municipal Networks as Catalysts of Policy Spread

Lukas Hakelberg

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Freie Universität Berlin
Fachbereich Politik- und Sozialwissenschaften
Otto-Suhr-Institut für Politikwissenschaft

Herausgeber

Freie Universität Berlin
Forschungszentrum für Umweltpolitik
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Autor

Lukas Hakelberg
lukas.hakelberg@fu-berlin.de

Summary

This study aims to assess the governance capacity of Transnational Municipal Networks (TMNs) active in climate policy. For this purpose, I perform an Event History Analysis (EHA) and two case studies, testing the impact of network membership on the likelihood of a city adopting a local climate strategy.

In a fist step, I develop the argument that TMNs influence their constituent's decision-making through governance by diffusion, meaning that they devise strategies to accelerate policy spread among their members in general, and the spread of local climate strategies in particular.

In a second step, I derive a range of alternative explanatory factors from theory, including policy diffusion along regional clusters, the coordinative impact of decisions on superordinate political levels, and local factors like a municipality's financial resources, potential cost savings, and perceived local vulnerability to the repercussions of climate change.

I then test these factors against each other. First by performing an EHA on a unique data set containing information on 274 European cities for the time period between 1992 and 2009, and secondly by examining the cases of Hanover and Offenbach, a pioneer and a latecomer in the adoption of a local climate strategy.

The results of EHA show that TMN membership is indeed the prime motivator for a city's adoption of a local climate strategy, mainly because networks succeed in facilitating learning processes among their members. Climate policy programs on superordinate political levels are equally important, especially for latecomers.

The case studies confirm that TMNs are a key resource of knowledge and expertise for both pioneers and latecomers. Support from the national government did not play a role in Hanover's decision to introduce a local climate strategy, however, it allowed Offenbach to make a qualitative leap in the elaboration of its action plan. Cost savings did not motivate the decision to act on climate change. Rather, it served city administrations as an argument to persuade local citizens and businesses to become active on their part.

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List of Abbreviations

ADEME: Agence de l'Environnement et de la Maîtrise de l'Energie

CCP: Cities for Climate Protection

COP: Conference of the Parties

EEA: European Economic Area

EHA: Event History Analysis

ELENA: European Local Energy Assistance

EU: European Union

GHG: Greenhouse Gas

ICLEI: International Council for Local Environmental Initiatives

IEA: International Energy Agency

IGO: International Governmental Organization

IPCC: Intergovernmental Panel on Climate Change

NGO: Non-governmental Organization

OECD: Organisation for Economic Cooperation and Development

TAN: Transnational Advocacy Network

TMN: Transnational Municipal Network

UNCED: United Nations Conference on Environment and Development

UNFCCC: United Nations Framework Convention on Climate Change

1 Introduction

1.1 Of Actors & Processes in Global Climate Governance

Climate change affects people worldwide. It affects them to different degrees and irrespectively of whether or not they contributed to its emergence. It is thus a global challenge demanding a global solution. Most often, this global solution is thought of as a multilateral agreement among nation-states, that is, an international regime (e.g. Barrett 2007, Cooper 2000, Paterson & Grubb 1992, Young 1997).[1] Accordingly, "the discussion of climate policy in science and media has mainly focused on the UNFCCC, its Kyoto protocol, and an agreement for the post-Kyoto era" (Sippel & Jenssen 2009:3). However, the tedious negotiations at climate summits in Copenhagen and Cancun made clear that such an agreement is far from being concluded. Given the urgency of meaningful emission reductions and the cost-effectiveness of early action (IPCC 2007, Stern 2006), it thus seems worthwhile to identify other actors and processes through which the governance of climate change might take place.

As a matter of fact, scholars have pointed to a whole list of actors contributing to climate governance, including multinational corporations, NGOs and subnational governments (Andonova et al. 2009:52). Frequently, these actors join forces across national borders to increase the impact of their initiatives, thus creating so-called "transnational governance networks" (Andonova et al. 2009:57). Unlike international regimes, these networks do not draw hierarchical authority over constituents from international law. Instead, they rely on soft governance mechanisms to direct their members toward network goals (Kern & Bulkeley 2009:319). These include "the diffusion of information, knowledge and norms; the pooling and distribution of financial, managerial and technical resources; and more recently, the negotiation and establishment of a set of norms, rules, and standards outside of the intergovernmental arena" (Andonova et al. 2009:63). In the context of this study, I will look at one spe-

[1] According to Robert Keohane (1989:4, cited in: Hasenclever et al. 1996:180) international regimes are "institutions with explicit rules, agreed upon by governments, that pertain to particular sets of issues in international relations." Hasenclever et al. (1997:13) classify this definition as the 'lean definition' in contrast to Stephen Krasner's 'consensual definition', describing international regimes as "implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations. Principles are beliefs of fact, causation, and rectitude. Norms are standards of behavior defined in terms of rights and obligations. Rules are specific prescriptions or proscriptions for action. Decision-making procedures are prevailing practices for making and implementing collective choice" (Krasner 1983:2, cited in: Hasenclever et al. 1997:12). As this paper focuses on the difference between formal international regimes in the area of climate policy agreed upon by national governments and the decentralized patchwork of cities' climate initiatives, multiplying across Europe, the lean definition of the concept is considered completely sufficient.

cific actor/network constellation: cities and transnational municipal networks (TMNs) active in climate protection.

1.2 Why Cities Matter to Climate Policy

Cities matter to climate policy for several reasons. On the one hand, they are a main part of the problem: 50% of the world's population already concentrates in cities, consuming 60-80% of energy production and causing about the same share of world-wide CO_2 emissions. On the other hand, they are also part of the solution, as innovations in urban mobility, combined power and heat supply or waste management can significantly reduce per capita emissions in cities (Kamal-Chaoui & Robert 2009:5-7). In addition, some scholars even assume that municipalities are better positioned than national governments to tackle climate change, due to co-benefits of climate policy and better preconditions for cooperation at the local level (Kamal-Chaoui & Robert 2009:64-65, Ostrom 2010:35). Measures like the reduction of car traffic or the extension of public transport, for instance, do not only curb GHG emissions, they also enhance local quality of life via the reduction of local air pollution, noise and congestion, which eventually improves a city's attractiveness (Kamal-Chaoui & Robert 2009:30). Regarding the preconditions for successful cooperation, Ostrom (2010:35) affirms that local climate projects have better chances of success than international negotiations, as they involve more frequent face-to-face communication and easier social monitoring of partners, thus promoting the development of trust and reciprocity, two essential factors for effective cooperation and commitment when faced with a collective action dilemma.

What is more, city initiatives in climate protection are rapidly multiplying. An example for this is the increase in adoptions of local climate strategies in a sample of 274 European cities between 1992 and 2009.[2][3] A local climate strategy is an official document whose elaboration is based on a formal decision by the municipal legislature and an inventory of local GHG emissions. It sets a quantitative CO_2 reduction target to be reached by the respective municipality in a given year, includes a comprehensive catalogue of concrete measures for emissions reduction in all relevant policy areas and provides a timeline for their implementation (cf. Hamburg 2007, Amsterdam 2008, Rotterdam 2007, Copenhagen 2009, Vienna 1999).[4] The data,

[2] The sample includes all cities that participated in Eurostat's 'Urban Audit' and that are located in a country that is a member of both the EEA and the OECD, minus those cities for which too many values were missing in Urban Audit data (Eurostat 2011a).

[3] The observation period begins in 1992, the year in which the UNCED in Rio de Janeiro "put climate protection policy on the political agenda at global, European and national levels" (Kern & Alber 2009:18). It ends in 2009 as this was the last year for which sufficient data on independent variables was available.

Amsterdam 2008, Rotterdam 2007, Copenhagen 2009, Vienna 1999).[4] The data, compiled by the author and presented in *figure 1*, shows that the number of municipalities, having introduced a so-defined local climate strategy, has risen from 3 – or 0,01% – in 1992, to 112 – or 40,9% – in 2009. Furthermore, a noteworthy increase in yearly adoptions can be observed after 2006.

1.3 Explaining the Dissemination of Local Climate Strategies

In this thesis, I aim at identifying the factors driving the spread of local climate strategies among European cities. Hence, my guiding research question is: "*why have European cities adopted local climate strategies in the period from 1992 to 2009?*" As alluded to above, my primary interest lies in analyzing the influence of 'transnational municipal networks' (TMNs), advocating local action on climate change in general and the adoption of local climate strategies in particular (Climate Alliance 2011d, CCP 2011b, energie-cités 2011b, C40 2011b). Since the early 1990s several such TMNs have been set up by and for cities, seeking "voluntary commitments from [local authorities] for the reduction of greenhouse gas emissions" (Kern & Bulkeley 2009:317). In order to promote this policy goal, "they try to enhance local capacities for addressing climate change, they promote the exchange of experience and transfer of know-how among their member cities and they represent the interests of their constituents at national, supranational and international level" (ibid.). Building on the literature on policy diffusion (e.g. Busch et al. 2005, Dolowitz & Marsh 2000, Elkins & Simmons 2005, Holzinger et al. 2007, Simmons et al. 2008), I develop the argument that the various strategies deployed by TMNs to steer member cities towards network goals essentially aim at the acceleration of processes in which chains of "interdependent but uncoordinated" decisions by governments to adopt a certain policy instrument – in this case a local climate strategy – lead to its broader dissemination (Elkins & Simmons 2005:34). In this context, the term 'interdependent' refers to governments taking independent decisions but factoring in the previous choices of other governments, whereas the term 'uncoordinated' implies that policy choice is neither the result of coercion through a hegemon or superordinate political level nor of harmonization based on formal agreement among actors (ibid.). Hence, diffusion occurs

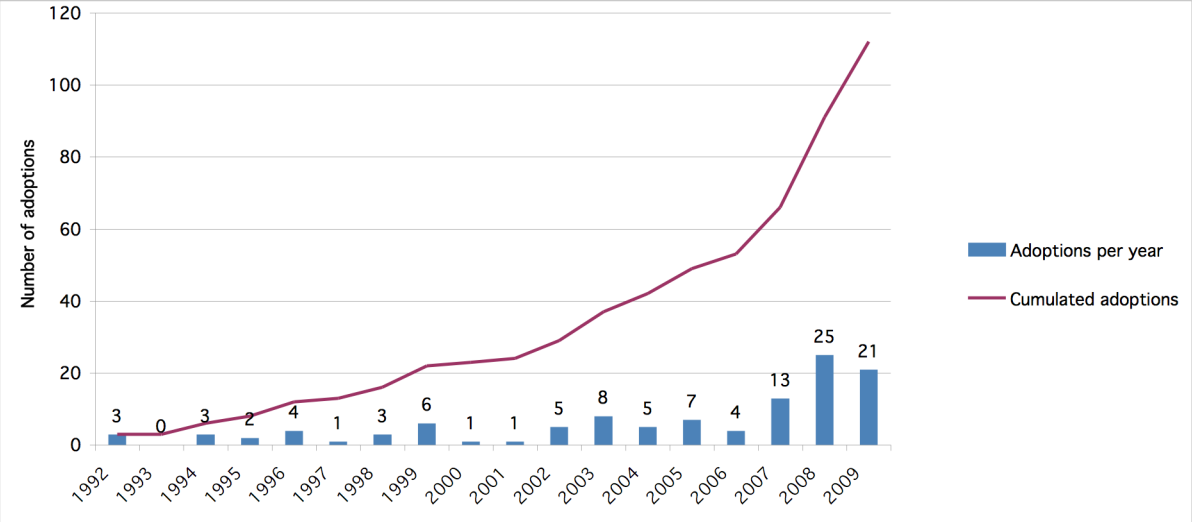
> "when governments voluntarily and unilaterally adjust their domestic policies to the previous policy choices of other jurisdictions[, doing] so by imitating or learning from other governments' policies, regulations or institutional arrangements" (Busch & Jörgens, forthcoming:1).

[4] In the absence of a concise definition of a 'local climate strategy' in the scientific literature, I draw on the documents issued by the municipalities themselves in order to clarify the term. For a longer description of what a local climate strategy might consist of see Kern et al. (2005:10).

As Kern & Bulkeley (2009:319-322) point out, TMNs deliberately foster processes of learning and imitation within their constituencies, for example by setting up best practice databases or promulgating specific benchmarks. Furthermore, they also can be shown to apply these strategies to promote the adoption of local climate strategies (Climate Cities Benchmark 2011, CCP 2011a, energie-cités 2011b, C40 2011b). I thus assume that TMNs have driven the dissemination of this policy tool by deploying strategies of "governance by diffusion", or in other words, by attempting "to favourably alter the context of unilateral and voluntary decisions by […] governments to adopt a given policy innovation" (Busch & Jörgens forthcoming:291-292).

In order to assess how relevant the influence of TMNs really is, I will test their impact against other potential determinants of local action on climate change. These include the diffusion of information along regional clusters (Kern et al. 2007), the coordinative effects of decisions on superordinate political levels (Shipan & Volden 2008), cities' financial resources, determining to what extent they can bear upfront investment in climate projects (Kern et al. 2005:6-8), the size of local co-benefits, determining to what extent the city, its inhabitants, and local business profit from climate policy (Kamal-Chaoui & Robert 2009:69-71), and the perceived local vulnerability to climate change impacts, underlining the urgency for action (Roberts 2008:536).

Figure 1: Adoptions of Local Climate Strategies 1992-2009



Source: own data

In order to evaluate the respective significance of these independent variables, I will proceed in two steps. Firstly, I will conduct an Event History Analysis on an original data set containing year-by-year information on the aforementioned 274 European cities for the 18 years between 1992 and 2009. This type of analysis predicts a so-called 'hazard rate', or in other words, "the likelihood of an entity's (individual's, organization's, jurisdiction's) experiencing a given event" (True & Mintrom 2001:36).

In the present case, this event is the adoption of a local climate strategy. The corresponding hazard rate is calculated for every year within the observation period by dividing the number of cities introducing a local climate strategy in a given year by the number of cities that had not yet adopted such a strategy at that point – the so-called 'risk set'. In order to estimate the parameters indicating how independent variables cause this hazard rate to fluctuate within a range from 0.000 (no chance of adoption) to 0.999 (adoption is almost certain), I will use a standard logit regression on the data set (ibid., Mintrom 1997:743-744, Box-Steffensmeier & Jones 2004:69-71).[5] In a second step and in order to better illustrate the actual causal processes linking the covariates to the eventual adoption of a local climate strategy, I will then perform two in-depth case studies of Hanover, an early adopter and pioneer of local climate policy, and Offenbach, a latecomer with only a small legacy in climate policy making. These case studies are informed by interviews with present and former city officials, involved in the drafting of the cities' respective local climate strategies.

The so-obtained results of my research are important in several respects. Firstly, they will identify the most relevant motivators and barriers for local action on climate change, providing policymakers with information on how to enable further cities to contribute to the reduction of CO_2 emissions. Secondly, they will inform the macro theoretical debates outlined in section 1.1, concerning the ability of other actors than nation-states to contribute to the governance of climate change, relying on processes not based on coercion or formal intergovernmental agreement but on communication and the steering of information flows.

The remainder of this paper is structured as follows: in part two, I will present the diffusion concept, the strategies by which its underlying processes can be accelerated, and the assumptions about its progression at the local level. In part three, I will introduce transnational municipal networks, explain their functioning and governance strategies, and develop the hypothesis that these networks promote the adoption of local climate strategies within their constituencies through governance by diffusion. In part four, I will deduce hypotheses about the impact of alternative independent variables on the likelihood of a city adopting a local climate strategy, whereas part five is devoted to the study's research design and the operationalization of variables. In part six the statistical findings will be presented and interpreted, which are then controlled for robustness in part seven by means of analyzing the two case studies. Part eight summarizes the paper's findings and explains their relevance for scientific debate.

[5] In general, my analytical strategy builds on models developed by True & Mintrom (2001), Mintrom (1997), and Berry & Berry (1990).

2 Processes of Diffusion and Their Acceleration

So far, the scientific literature on diffusion has mostly focused on the spread of policy innovations among nation-states.[6] Therefore, I will proceed by presenting the assumptions it makes for this level before explaining which modifications are necessary when applying the concept to 'inter-municipal' dynamics. These mostly concern the potential coordination of local policies through national law.

2.1 What Diffusion Is and Is Not

Theories of diffusion seek to explain the spatial or temporal clustering of specific policies or policy instruments. Hence, in contrast to theories of policy transfer (e.g. Dolowitz & Marsh 2000), they do not focus on an individual transmission from one jurisdiction to another, but on the overall dissemination of a certain policy among a range of jurisdictions (Holzinger et al. 2007:16). As Elkins & Simmons (2005:33-34) point out, diffusion is one of three possible determinants of such dissemination, the other two being coincidence and coordination. The term 'coincidence' refers to governments autonomously responding to similar domestic conditions or problems. Reasons for this might be an external economic shock or similarities in culture and institutions. The assumption that coincidence has caused the clustering of policies constitutes the null hypothesis of diffusion studies (Holzinger et al. 2007:25). In contrast, the term 'coordination' implies that governments parallelly or subsequently introduce a certain policy either because they formally agreed to cooperate and harmonize their procedures or because they are forced to do so by an external actor like a hegemon, financial institution or donor country (Elkins & Simmons 2005:34).

The concept of diffusion fits in between the two, in that it refers to processes in which policymakers are not formally obliged to adopt a certain policy but voluntarily choose to do so, "[drawing] on policy models which have been communicated in the international system" (Busch & Jörgens 2005:861). Hence, governments make formally independent policy choices, but factor in the choices other governments made before them; the result being an "interdependent but uncoordinated" process of policy dissemination, essentially based on communication and information flows (Elkins & Simmons 2005:34, Busch & Jörgens 2005:865). In principle, the 'factoring in' of other governments' choices can take place in three different ways. Through diffusion

[6] Exceptions are for example Berry & Berry (1990) and Mintrom (1997), who focus on policy dissemination among federal states in the U.S..

via learning, meaning that previous adoptions impart information about the benefits and downsides of a certain policy model that can be exploited by latecomers (Elkins & Simmons 2005:42), through diffusion via imitation, implying that governments introduce policies in response to normative expectations (Busch & Jörgens forthcoming:4), or through diffusion via competition, referring to policymakers seeking political or economic advantages over other jurisdictions by either lowering or raising a regulatory standard (Busch & Jörgens forthcoming:38, Elkins & Simmons 2005:42, Holzinger et al. 2007b).

2.2 Three Mechanisms of Diffusion

2.2.1 Diffusion via Learning

Learning is probably the most intuitive mechanism of policy diffusion. It occurs when policymakers in a given jurisdiction react to dissatisfaction with the regulatory status quo by looking elsewhere to find a more effective solution to the corresponding policy problem (Rose 1991:10). This kind of rational learning or "lesson-drawing" (ibid.) focuses on merits and outputs of a certain policy, as the motivation for its transfer lies in its actual capacity to improve the domestic regulatory situation. Or in other words: by drawing lessons from abroad, policymakers seek to combat dissatisfaction at home, thus averting possible sanctions like the loss of support or even the loss of office (Rose 1991:12). Despite this focus on the performance of a certain policy, learning might only be boundedly rational when cognitive biases influence the selection of information on which policy choice is based. Possible biases include information cascades, the availability of information, or the focus on a specific reference group (Elkins & Simmons 2005: 42-45).

Information cascades develop when policymakers in situations of great uncertainty base their assessment of a certain policy on the number of governments that have already implemented it. They are still interested in effectiveness; however, limited data, resources, or cognitive faculties cause them to rely on the number of adoptions as indicator of performance. In this case, only the decisions made by a few pioneers and the quality of information available to these actually program the spread of a certain instrument or institution (Elkins & Simmons 2005:43). Furthermore, the availability of information on a policy model might also determine whether and by whom it is taken up. Governments will always rank those models higher in their assessment that are easily accessible to them. Be it because they are already familiar with similar mechanisms or because a policy was first created by an actor with whom intensive communication is already taking place. That way, other more suitable alternatives may be discarded simply because information about them is more difficult to retrieve (Elkins & Simmons 2005:44-45). In addition, the focus on specific reference groups may also play a role in actors' policy choice. As Elkins & Simmons (2005:45),

referring to insights from psychology and sociology, point out, "imitating similar individuals is one of the simplest and most effective cognitive heuristics in the calculation of utilities." Thus, policymakers prefer to learn from peers with whom they share a number of characteristics, implying that policy choices of jurisdictions in the same region, with similar values, culture or institutions are more likely to be taken into account than those implemented in culturally more dissimilar jurisdictions (Rose 1991:14).

2.2.2 Diffusion via Imitation

Imitation is another type of diffusion process that is assumed to kick in when a critical mass, that is at least one third, of governments has adopted a certain policy (Busch & Jörgens forthcoming:37, Finnemore & Sikkink 1998:901). At this point, the policy is likely to turn from one of many alternatives into the 'appropriate' solution, creating normative expectations based on which peer pressure is exerted on latecomers. Governments are then urged to respond to this peer pressure through three different channels: legitimation, conformity, and esteem (Finnemore & Sikkink 1998:902-903).

Legitimation refers to the desire of governments to gain approval for their actions on the international scene, as well as from their domestic constituencies. Both elements are interlinked in that citizens also positively sanction a good international reputation. Or, as Finnemore & Sikkink (1998:903) put it: "citizens make judgments about whether their government is better than alternatives by looking at those alternatives (in the international and regional arena) and by seeing what other people and countries say about their country." Hence, legitimation is not just about governments creating a positive reputation and thus winning the trust of their peers, it also involves justifying the regulatory status quo to citizens conscious of appropriate solutions to policy problems.

Conformity, in turn, refers to the urge of governments to align their actions with those of their peers in order to make clear that they belong to the group. According to a rich body of literature in social psychology, beginning with Asch (1951), individuals and thus policy-makers, "fulfill a psychological need" when conforming to group norms (Axelrod 1968:1105, cited in: Finnemore & Sikkink 1998:903).[7] In several experiments, scholars have shown that this need for conformity "is so strong […] that individuals will make statements that are objectively wrong in order to avoid deviating from group judgments" (Finnemore & Sikkink 1998:904, Asch 1951). Or in other words, individuals tend to lose faith in their own judgment when they are confronted

[7] According to Katzenstein (1996:5, cited in Keck & Sikkink 1999:90) norms "describe collective expectations for the proper behaviour of actors with a given identity."

with a disagreeing majority. Thus, policymakers may be urged to introduce the 'appropriate' policy alternative, even though it might not be useful in the context of their jurisdiction. The reason for this is that deviation from group consensus often goes along with the fear of being considered strange, absurd or inferior by the majority (Asch 1953:465). Hence, by conforming, actors seek to regain the approval of the group, which mitigates fear and in turn enhances their self-esteem. Consequently, it is concern for national as well as self-esteem that leads policymakers to adopt the 'appropriate' solution to a policy problem, thus avoiding "the disapproval aroused by norm violation" (Finnemore & Sikkink 1998:904).

2.2.3 Diffusion via Competition

The third process through which governments factor in previous choices by other governments is competition. Busch et al. (2005:151) distinguish between economic competition, or situations in which governments struggle "for capital and market share for their domestic goods and services" (Simmons et al. 2008:17), and political competition in which governments "struggle to shape policy developments at the international level in accordance with their national policy patterns and regulatory traditions" in order to minimize subsequent adaptation costs (Jörgens 2004:8).

Most often, economic competition is thought of as a 'race to the bottom' in which governments alternate in lowering regulatory standards and tax rates in order to attract increasingly mobile capital (Drezner 2007:14). The underlying assumption of this approach is that capital is always directed to the place where it can earn the highest rate of return. As high tax rates as well as labor and environmental standards lower profits by way of increasing production costs, capital will thus be directed to the location where taxes and standards are the lowest (ibid.). From this perspective, policymakers have a strong incentive to implement market friendlier policies than their competitors in order to raise their jurisdiction's attractiveness for investment (Simmons et al. 2008:17), the supposed result being policy convergence on the lowest common denominator (Drezner 2007:14). Yet, this process of competitive adjustment must not always be that straightforward. As Busch et al. (2005:152) point out, environmental standards are seldom simply reduced. Rather, governments replace "legally binding regulations by softer instruments such as voluntary agreements or unilateral self-commitments by polluters." De facto, this change of policy relaxes obligations of the regulated; this is however masked by the shift from an old to a new policy model, which is supposedly more innovative and embodies the international standard. Hence, governments that seek to reduce standards in response to competitive pressures, often import softer policy models already in place elsewhere (ibid.).

Accounts of races to the bottom are popular, however, their empirical foundation remains shaky (Drezner 2007:17, Simmons et al. 2008:21). According to Wolf

(2004:233, cited in Drezner 2007:16), "the great bulk of foreign direct investment continues to go to countries with high labour costs and strong regulatory regimes, not least on the environment." In addition, Jörgens (2004:9) emphasizes that economic competition might also lead to 'races to the top' in cases where governments either seek "first mover advantage", that is the ability of the highly regulated domestic industry to quickly expand to foreign markets once standards are raised there (Tews 2004:18), or respond to demands by domestic industries to raise standards to the level of leading markets in order for them not to be confronted with diverging standards for their products – the so-called "California-effect" (Knill 2008:128). In these cases, policies do not converge on the lowest common denominator but towards the highest regulatory level.

Similarly, political competition is also assumed to result in races to the top. In this context, governments anticipate either the imminent policy harmonization on the inter- or supranational level (Jörgens 2004:8, Héritier et al. 1996) or the development of a critical mass of adopters of a certain policy (Busch et al. 2005:151). In order to avoid being obliged by international law or norms of appropriateness to introduce a model that does not correspond to their own regulatory tradition, governments will thus try to shape upcoming international regulation according to domestic modes and institutional preferences. Consequently, governments seek to position themselves as leaders in the respective regulatory field in order to promote the adoption of their strategy by other governments and/or supra- as well as international organizations (Busch et al. 2005:151-152).

> "The result is an often rapid emergence of numerous national regulations in a given problem area. Although these national approaches differ in scope or administrative detail, in their sum they form a global regulatory structure which in turn increases the prospect of international harmonization or further diffusion" (Jörgens 2004:8).

In a nutshell, diffusion via competition occurs when governments, engaged in a struggle over capital, market share for their domestic industries, or political influence, adapt their policies in order to gain a competitive advantage.

2.3 From Persuasion to "Governance by Diffusion"

2.3.1 The Role of Policy Entrepreneurs

In the previous sections I have shown that diffusion is an interdependent but uncoordinated process of policy dissemination that operates either through learning, that is, the boundedly rational search by policymakers for an external solution to a domestic problem, through imitation, referring to policymakers' urge to conform to normative expectations about the adoption of appropriate policies, or through competition, implying that governments adapt their policies in order to gain a competitive advantage over their peers.

Up till now, these processes have been presented as if they only depended on direct information flows between jurisdictions that are somehow transmitted in an institutional void. However, communication among governments normally takes place in specific fora that mediate information flows and also facilitate contacts to non-state actors. Examples include issue specific networks as well as IGO sponsored conferences, bringing together policymakers, experts and NGO representatives that exchange information and debate policy choice (Jörgens 2004:9-10, True & Mintrom 2001:39). In these arenas of communication, epistemic communities, transnational advocacy networks and IGOs themselves seek to influence government behavior and choices in accordance with their own policy goals by promoting norms and strategically providing knowledge and information (Busch & Jörgens forthcoming:36, Finnemore & Sikkink 1998:899-900, Betsill & Bulkeley 2006:147, Keck & Sikkink 1999:89). Accordingly, they may accelerate diffusion processes by persuading or pressurizing governments to conform to specific norms as well as by generating, intensifying and steering information flows.

Epistemic communities, for instance, which are "networks of experts who share a common understanding of the scientific and political nature of a particular problem" (Betsill & Bulkeley 2004:474), are assumed to gain influence on governments due to their ability to provide policymakers with guidance in increasingly complex issue areas. By developing a scientific consensus on a given topic they set the discursive boundaries within which related policy problems are discussed, that way shaping decision makers' perceptions of the issue and bounding the range of appropriate reactions to it (Adler & Haas 1992:373,375-376). Through transnational communication among community members in scientific bodies and bureaucracies, scientific consensus and related policy advice is then diffused, causing an increasing number of policymakers to adapt their conceptions of – and policy responses to – the respective problem (Adler & Haas 1992:378-379).

Transnational advocacy networks can be made up of such diverse actors as NGOs, social movements, trade unions, media, and parts of national and international bureaucracy. In general, they "include those actors working internationally on an issue, who are bound together by shared values, a common discourse, and dense exchanges of information services" (Keck & Sikkink 1999:89). Whereas epistemic communities gain their influence through "authoritative claims to knowledge" (Betsill & Bulkeley 2004:474), transnational advocacy networks are mostly value driven and seek to persuade or pressurize governments to conform to specific norms. TANs often introduce these norms into policy debates, promote norm convergence on the international level and try to convince governments to implement corresponding policies (Keck & Sikkink 1999:90). They do this either through persuasion by targeting decision makers with powerful messages about specific issues that combine facts with testimonies by affected persons, or through the mobilization of shame, meaning that they stage

symbolic events during which government failure is publicly denounced (Keck & Sikkink 1999:95-97).

International organizations fulfill several tasks that might lead to the acceleration of diffusion processes. As alluded to above, they provide the venues at which inter- and transnational communication is centralized and where information flows are bundled (Busch & Jörgens 2005b:92-93, Jörgens 2004:9-10). In addition, their bureaucracies issue non-binding policy recommendations that might be used as reference points by TANs and the domestic public when demanding policy changes from national governments (Busch & Jörgens 2005b:93). Moreover, international bureaucracies can exert influence in ways similar to those of epistemic communities, of which some bureaucrats might be members. As Busch (2006:4-6) points out, the OECD's environment directorate has been capable of defining concepts like the polluter pays principle based on which governments have designed policies, of framing discourses and teaching ideas to national civil servants, and of setting topics on governments' agendas that it considered important.

To what extent the described coordinative capacity enables policy entrepreneurs to actually govern by diffusion will be the subject of the following section.

2.3.2 Strategies for Governance by Diffusion

Given the decisive role that policy entrepreneurs play in the communication of norms and the steering of information flows, Busch & Jörgens (forthcoming:292) advance the idea that these actors could engage in what they call "governance by diffusion, that is, the attempt to favorably alter the context of unilateral and voluntary decisions by national governments to adopt a given policy innovation" (Busch & Jörgens forthcoming:291-292). As Andonova et al. (2009:55) affirm, the term governance implies that actors seek "to achieve some form of public good" by steering a society or polity towards particular goals. Accordingly, governance by diffusion must involve actors with the explicit aim of allocating a certain public good by means of catalyzing processes of learning, imitation and competition among governments. Despite the observed coordinative effect of policy entrepreneurs' actions, Busch and Jörgens (forthcoming:292-296) do not point to specific cases in which actors have really governed by diffusion in terms of this definition. Rather, they develop a framework of seven strategies that actors could in theory deploy in order to do so in the future.

The first of these strategies is the "[creation] and [enhancement] of channels of cross-national communication" (1). Given that "an impressive and well-functioning infrastructure of international organizations is [already] in place" the decisive step towards governance by diffusion would therefore be the widespread set up of "highly specialized communication networks such as issue-specific international commissions or committees" that provide information about effective policies and best

best practice. Examples on which further networks could be modeled are the International Network of Green Planners and committees set up by the EU in the context of its Open Method of Coordination (Busch & Jörgens forthcoming:292-293). The second and third complementary strategies would then be to generate reliable and authoritative information on best practices (2), and to make sure that these are diffusable (3), meaning abstract enough to be adjustable to "different politico-institutional settings" (Busch & Jörgens forthcoming:292-294). Action in these areas would increase the availability of information and thus facilitate learning; a goal that IGOs are already pursuing through the production of original research, policy-recommendations, and country reports; the latter being also particularly important for strategies four and five.

These are the "using of peers to accelerate the diffusion of policy innovations"(4) and the "increasing of transparency"(5) and can essentially be implemented through regular peer reviews like those issued by the OECD on countries' environmental performance. Reports of this kind let governments know that they are being observed and provide them with information on the activities of other governments. That way, peer pressure and awareness of appropriate solutions are increased, and imitation among governments is promoted (Busch & Jörgens forthcoming:294-295).

The sixth strategy consists in "strengthening domestic capacities" for the implementation of policy models communicated in the international system (6). This can be done by providing financial incentives and/or expertise to governments that want to learn but are inhibited by a lack of resources or know-how. The seventh and final strategy involves the "seizing of situative opportunities" (7), meaning that policy entrepreneurs should be prepared to take advantage and strengthen the effect of trigger events like major international conferences on an issue that might induce a wave of adoptions of a certain policy (Busch & Jörgens forthcoming:295-296). Hence, while strategy six is concerned with the removal of domestic barriers, strategy seven aims at the utilization of permissive opportunities.

Overall, one can conclude that strategies are conceivable that could improve existing coordinative capacities of policy entrepreneurs and thus enable these to govern by diffusion. The implementation of individual strategies can already be observed, however, no cases have yet been identified in the literature in which several of these are strategically applied to enable the allocation of a public good. Against this background, I will develop the argument that the diffusion of local climate strategies has actually been promoted by transnational municipal networks in a way that could amount to "governance by diffusion."

2.4 Diffusion at the Local Level

Most of the literature cited in the previous subsections to explain the concept of diffusion applies it to relations between nation-states (e.g. Elkins & Simmons 2005, Simmons et al. 2008, Busch & Jörgens forthcoming). However, this does not mean that diffusion does not occur among governments on subnational levels and that dynamics observed in the international sphere do not operate in the transnational sphere as well. As a matter of fact, several studies have shown that diffusion is just as likely to happen between constituent states of a federation (e.g. Berry & Berry 1990, Mintrom 1997) or between municipalities in one or several countries (e.g. Eisgruber & Simon 2009, Kern et al. 2007, Sugiyama 2008, Shipan & Volden 2006, Shipan & Volden 2008). This is actually not surprising since the microfoundations of diffusion processes remain in place regardless of the political level. Hence, municipal policymakers look to other cities for solutions to their policy problems and are subject to peer pressure just as their national counterparts are. As Rose (1991:7) emphasizes, "the setting [for lesson-drawing] can be another city, another state, another nation or an organization's own past."

Despite the absence of conceptual barriers to the application of the diffusion concept to 'inter-municipal' dynamics, two important modifications have to be made. Firstly, municipalities lack the sovereignty of nation-states. They are subject to provisions from national and regional governments and therefore can be obliged by these actors to introduce a certain policy (Kern et al. 2007:607, Shipan & Volden 2008:843). Accordingly, policy clusters on the local level may result from coercion by superordinate governments, which by definition excludes diffusion as an explanatory variable. The potential impact of national and regional provisions on policy choice on the local level must therefore be taken into account (*see section 4.2*). Secondly, the extent to which city governments can engage in transnational relations, that is communicate and exchange information with municipalities from other countries or attend conferences of municipal networks, crucially depends on their resources. Unlike national governments that are embedded in more or less the same international system and maintain representations at IGOs and in most countries, many municipalities might only have external relations with their immediate proximity. Therefore, their access to information on policy innovations is likely to be geographically bounded and dependent on the presence of a pioneering city close by (Kern et al. 2007:607). Consequently, any kind of diffusion process at the local level can be expected to proceed in two different spheres. Firstly, among those cities engaging in transnational relations and secondly in concentric circles around pioneering cities that serve as examples for their direct neighborhood (ibid.). This constellation is probably best imagined as a transnational network of pioneering cities that in turn serve as information hubs for other cities in their periphery (*see section 4.2*).

3 Transnational Municipal Networks: Governing Constituents by Diffusion ?

3.1 What is a Transnational Municipal Network?

As mentioned in the previous section, it is not self-evident that cities engage in widespread external relations. Besides contacts within their proximity, they may have bilateral connections to a small number of twin cities or participate in local government councils on the national, and sometimes on the European level. Another possibility is membership in issue-specific transnational municipal networks.

3.1.1 Structure, Actors and Goals

TMNs are constituted by member-cities that are free to join or leave the network. Their structure is "non-hierarchical, horizontal and polycentric […], [and] decisions taken within the network are directly implemented by its members" (Kern & Bulkeley 2009:309-310). By encouraging communication, learning and information exchange among their constituents TMNs facilitate transnational relations between cities, defined by Risse-Kappen (1995:3) as "regular interactions across national borders when at least one actor is a non-state agent or does not operate on behalf of a national government or an international organization." In general, a TMN is made up of three groups of actors: "an international secretariat and national/sectoral co-ordinators; a Presidency, Board and General Assembly; and member cities" (Kern & Bulkeley 2009:314). Secretariats and coordinators are concerned with the administration of network programs, whereas boards, made up of a president, vice-presidents and additional members, are "responsible for general decision-making between General Assembly meetings" (Kern & Bulkeley 2009:315). Board members are usually influential personalities like mayors or vice-mayors, representing cities very committed to network goals (ibid.). Member cities, the third type of actor, join TMNs for a variety of reasons, including information exchange, access to expertise and funding, or to gain political support and legitimacy for initiatives at home (Betsill & Bulkeley 2004:481-482, Bulkeley et al. 2009:26, Kern & Bulkeley 2009:315). The most active cities regularly send representatives to General Assembly meetings and liaise intensively with secretariats and boards. However, in large TMNs the majority of members remain passive, considering membership to be rather symbolic (Kern & Bulkeley 2009:316).

In the area of climate protection, four such TMNs have developed since the early 1990s. Cities for Climate Protection, the Climate Alliance and energie-cités were founded shortly before the UNCED in Rio de Janeiro in 1992 (Kern & Alber 2009:17), whereas C40 is a more recent network created in 2005 (C40 2011a). The circum-

stances of their foundation as well as their membership structure differ considerably. The Climate Alliance for instance was founded on the initiative of a group of pioneering cities and mostly recruits its membership from German speaking countries. Cities for Climate Protection is an ICLEI spin off with a global membership structure and a European subnetwork that has its headquarters in Freiburg, Germany.[8] However, its members are mostly found in the UK and Finland were national CCP campaigns exist. Energie-cités developed out of a project funded by the European Commission and is mostly made up of cities in French speaking countries, whereas C40 is a club of leading world cities that were invited to join by the mayor of London. Financially, the network is supported by the Clinton Foundation (Kern & Bulkeley 2009:316-317, Bulkeley et al. 2009:26, C40 2011a). About 1400 European municipalities, including most capitals, had joined at least one of these TMNs in 2009, the largest network being the Climate Alliance with roughly 1100 members, followed by energie-cités with 160, Cities for Climate Protection with 120, and C40 with 15 European members (Kern & Bulkeley 2009:316, C40 2010c).[9]

Despite their differences in history, geographical focus and size, the aim and basic strategy of these TMNs is essentially the same. According to Kern & Alber (2009:18)

> "these networks seek voluntary commitments from municipalities for the reduction of greenhouse gas emissions, they try to enhance local capacities for addressing climate change, they promote the exchange of experience and transfer of know-how among their member cities and they represent the interests of their constituents at national, supranational and international level."[10]

Hence, TMNs have repeatedly been identified as key drivers for local action on climate change (e.g. Bulkeley et al. 2009:26, Kern & Alber 2009:17, Sippel & Jenssen 2009:10-11). What kind of strategies they deploy to steer member cities towards network goals and why these strategies can be considered to amount to governance by diffusion will be discussed in the following subsection.

3.1.2 TMNs: More Than Policy Entrepreneurs

The aforementioned TMNs share a clearly stated aim: the mitigation of climate change through the reduction of urban CO_2 emissions (Kern & Alber 2009:18). In Ostrom's (2010:5) terms, this goal constitutes a global public good (*see section 1.1*). As

[8] Initially, ICLEI was a project of 35 U.S. and Canadian cities active in the area of ozone depletion. In 1991 and with the support of UNEP it expanded to include about 200 members from all world regions, treating sustainability issues in general (ICLEI 2011b).

[9] The figure for C 40 includes affiliate members.

[10] The original source of this quote is Kern & Bulkeley (2009:317). However, the latter only refer to the Climate Alliance, Cities for Climate Protection and energie-cités when speaking of "these networks." Kern & Alber explicitly include C 40 and use the exact same wording without putting it into quotation marks.

TMNs attempt to steer their member cities towards this goal, one can thus conclude with Andonova et al. (2009:56) that they engage in some form of governance. In so doing, their scope goes beyond that of the policy entrepreneurs identified in section 2.1.4. Whereas these are conceptualized as actors whose relevance depends on the "extent to which they shape, facilitate, and change the behavior of nation states", which in turn are assumed to remain the decisive location of governance (Betsill & Bulkeley 2004:475), TMNs are conceived as actors with some sort of sway over a constituency made up of member cities (Andonova et al. 2009:61, Kern & Bulkeley 2009:319). Or in other words: TMNs govern while TANs lobby.

According to Bulkeley et al. (2003:244) the way in which this governing happens is characterized by one decisive feature. Due to their horizontal and decentralized structure, TMNs lack the capacity to steer constituents by hierarchic authority. Since the formal bases for cooperation within networks are memoranda of understanding devoid of any legal value (Andonova et al. 2009:59), membership obligations are merely of symbolic or political character. This can be illustrated by the relatively weak commitments that cities have to make in order to become members. CCP for example merely requires new entrants to "take an active role in reducing greenhouse gas emissions […] and to strive towards achieving the first cycle of milestones within three years of becoming a participant" (CCP 2010:2).[11] Furthermore, CCP member-cities are free to set their own emissions reduction targets with the network just encouraging them to pursue more ambitious goals (CCP 2010:3). Similarly, energie-cités and the Climate Alliance merely ask members to aspire to reach certain reduction targets without formally obliging them to meet a predefined objective (energie-cités 2010:6, Climate Alliance 2011a). As alluded to above, even these very loose commitments are completely voluntary on the part of member-cities, since TMNs lack the power to sanction constituents in case of non-compliance (Kern & Bulkeley 2009:323). In reference to the axioms of the diffusion concept, it is thus important to retain that TMNs neither have the capacity to coerce members to adopt certain policies, nor are cities' reduction targets and climate-related initiatives harmonized via them.

Given this lack of hierarchic authority, networks are assumed to rely on softer forms of governance to steer members towards their goal of climate change mitigation via the reduction of urban GHG emissions. Kern & Bulkeley (2009:319), building on Bulkeley et al. (2003:244-246), identified three core strategies devised by TMNs to

[11] CCP has developed a framework of five milestones, including the conduct of an emissions inventory (1), the adoption of an emissions reduction target (2), the development of a short-to-long term Local Action Plan (3), the implementation of the local action plan (4), and the evaluation and reporting of results (5). After a member-city has reached all five milestones once, it is supposed to restart the cycle with more ambitious goals (CCP 2011a).

govern their constituents: "(1) information and communication; (2) project funding and co-operation (2); and (3) recognition, benchmarking and certification." In what follows, I will present these governance strategies in more detail and show that they largely overlap with the seven strategies of governance by diffusion identified by Busch & Jörgens (forthcoming:292-296, *see section 2.1.5*).

3.2 Governance Strategies Deployed by TMNs

3.2.1 Strategies of Information and Communication

Most, if not all, of the scientific literature on TMNs points to the exchange of information and experience and the transfer of best practice first when describing the workings of networks (e.g. Betsill & Bulkeley 2004:478, Bulkeley et al. 2009:26, Bulkeley et al. 2003:244, Kern & Alber 2009:17). As Kern & Bulkeley (2009:319-320) emphasize:

> " [these] strategies of information and communication are the bread and butter of TMNs. Networks are frequently established for the explicit purpose of creating and sharing 'best' or 'good' practice, and municipalities indicate that the opportunity to learn about 'what works' from other places is a key motivation for their participation in networks."

In order to increase the availability of information for their constituencies, TMNs typically set up best practice databases, comprising innovative climate projects elaborated by member cities. However, networks present and grant access to these in different ways. Online access to comprehensive databases is provided by the Climate Alliance, energie-cités and C40 (Climate Alliance 2011b, energie-cités 2011c, C40 2011d), CCP regularly elaborates in depth case studies of specific projects, the Climate Alliance and energie-cités feature exceptional initiatives in their newsletters, and energie-cités also circulates best-practice CD-ROMs and organizes study tours for local officials to visit initiatives in other cities (Kern & Bulkeley 2009:320-321). The clearly stated aim behind these activities is to foster learning among member cities in order to rapidly expand the implementation of innovative techniques for the reduction of urban CO_2 emissions (Andonova et al. 2009:64, Kern & Alber 2009:17, Bulkeley et al. 2003:244). However, since best practice studies are elaborated by member-cities and often used by these to enhance their progressive image, the transferability of projects may be limited. Hence, many local policymakers feel "the need to get behind the official storylines of best practice in order to find the real story if any form of implementation was to follow" (Kern & Bulkeley 2009:321).

In response to this, TMNs have begun to either elaborate lighthouse projects together with members (ibid.), or to develop general methodologies and detailed guides for the implementation of certain policies on their own (CCP 2011b, Climate Alliance 2011c, energie-cités 2011d). The Climate Alliance for instance has developed methodologies, guiding members in the elaboration of mitigation and adaptation strate-

gies as well as in the implementation of specific measures to reduce energy consumption in schools and public buildings (Climate Alliance 2011c). Similarly, CCP offers a guidebook, helping cities with their first steps in climate policy, and 'grey literature' on the performance of specific policy instruments (CCP 2011b). The same holds true for energie-cités, which has issued guides on topics like municipal energy planning and on how to better market the use of public transport among urban citizens (energie-cités 2011d). These examples show, that TMNs have gone from fostering exchange among members to performing and publishing own research in order to not only make information more available but to also increase its transferability.

Next to accelerating learning processes, strategies of information and communication may also foster imitation among TMN members. As Betsill & Bulkeley (2004:486) point out, many member-cities do not necessarily take up the technical information conveyed by best practice examples but their normative content, implying that policymakers primarily retain the message that local climate policy is viable and has already lead to tangible results elsewhere. This proof of feasibility endows local climate policy with legitimacy, making it a field of action that "local government should be concerned with" (ibid.). Hence, the awareness that other municipalities are successfully implementing certain climate projects might pressure latecomers or new entrants to also become active in a similar way, even if they do not transfer the exact practice.

When comparing these strategies of information and communication to Busch & Jörgens' (forthcoming:292-296) seven strategies for governance by diffusion, one can observe a substantial overlap. First of all, TMNs generate information (2) when they set up best practice databases, design methodologies, perform original research and publish guides and manuals. In addition, methodologies, guides and manuals also improve the "diffusability" of best practices (3) by turning projects embedded in the context of individual member-cities into abstract models. Likewise, best practice databases also increase transparency (5) in that they raise awareness for the achievements of member-cities, point to the feasibility of local climate policy, and thus make inaction less legitimate (*see section 2.1.5*).

3.2.2 Strategies of Funding and Cooperation

The second group of strategies that Kern & Bulkeley (2009:321) identify concerns funding of and cooperation among member cities. Funding and cooperation are interlinked because the major source of financial support for climate related projects in cities, the European Commission, often provides funding only for joint projects by several cities. In that respect, TMNs are crucial for member cities, since they either facilitate the search for partners or propose joint projects to several members themselves (ibid.). In most EU funded projects, TMNs work together with a small number of member-cities on a specific climate related issue. For instance, Energie-cités fre-

quently manages projects like 'ENGAGE' and 'Act2', the former involving a small group of members that elaborate strategies for the greater involvement of local civil society in climate protection (ENGAGE 2011), the latter connecting two leading members in the area of low energy construction with further cities interested in their expertise (Act2 2011). All of the other TMNs coordinate similar projects in which a subgroup of their members receives funding to elaborate and implement specific pilot projects together and learn from each other's experience. Most of the initiatives are financed by the EU, the only exception being C40, which relies on funds from the Clinton Foundation and other private donors (C40 2011e, SMILE 2009, SESAC 2011).

As Kern & Bulkeley (2009:321) point out, strategies of funding and cooperation have two main effects. On the one hand, they promote network cohesion by tying member-cities closer together through sustained cooperation on a specific issue and by also binding them to the network on which their access to external funding depends. On the other hand, they enhance member-cities' capacity to pursue network goals, that is, the reduction of urban CO_2 emissions. In terms of Busch & Jörgens's framework of strategies this implies that TMNs "[create] and [enhance] channels of […] communication" between members (1) by integrating them in joint projects that demand intensive collaboration, and strengthen local capacities (6) for the take up of policy innovations by making outside funding available to their constituencies (Busch & Jörgens forthcoming:292,295, *also see section 2.1.5*).

3.2.3 Strategies of Recognition, Benchmarking and Certification

The third type of strategy through which Kern & Bulkeley (2009:322) consider TMNs to steer their constituencies involves the recognition, benchmarking and certification of member-cities' performance. The underlying aim of these strategies is to promote compliance with network goals by creating peer pressure (ibid.). It is however important to retain that only two of the four TMNs under study apply these strategies: CCP and the Climate Alliance.

Recognition involves the offering of non-material rewards for outstanding progress by individual member-cities, for example through the bestowal of a special status or award. CCP, for instance, confers the title 'City of Ambition' to municipalities that made considerable progress in its milestone cycle (CCP 2010:4), whereas the Climate Alliance created the 'Climate Star' award to decorate members that have proven their exceptional commitment to climate protection (Climate Alliance 2011e). By definition, only a limited number of members can be rewarded, which leads Kern & Bulkeley (2009:322) to the conclusion that only the most active members actually compete for these awards to further their progressive image, whereas passive members are not incited to improve their performance.

In contrast, benchmarking is more likely to concern all members, given that it serves to measure and compare member-cities' progress based on a number of pre-defined standards (ibid.). In this respect, CCP relies on a cycle of five milestones that member-cities should repeatedly go through in order to continuously increase their performance. The milestones include the conduct of an emissions inventory, the adoption of a reduction target, the development of an action plan, the implementation of measures and the monitoring of results (CCP 2011c). Likewise, the Climate Alliance relies on a list of '10 Steps', a 'Catalogue of Measures' and 'the Climate Alliance Indicators' to monitor its members' progress (Kern & Bulkeley 2009:322). In addition, in 2009 it established the 'Climate Cities Benchmark' program, which elaborates comprehensive activity profiles of its members based on 26 indicators that assess performance in the areas of climate policy, energy, traffic and waste. On each indicator, constituents are ranked into one of four levels, ranging from 'initial stage' to 'front-runner of climate protection' (Climate Alliance 2011d).

Certification schemes have not yet been implemented by any of the TMNs, however, based on initiatives in Switzerland, Austria and North-Rhine-Westphalia, the 'European Energy Award' was set up in 2009 in the context of which private assessors evaluate municipal performance in the energy and climate sectors and confer labels to cities, showing their progress (Kern & Bulkeley 2009:323, EEA 2011). In the future, certification might thus be a way for TMNs to combine measures of recognition and benchmarking by linking performance on indicators to the bestowal of a label that members could decorate themselves with.

Overall, one can assume that strategies of recognition, benchmarking and certification serve to accelerate two kinds of diffusion processes: imitation and competition. Imitation is promoted through benchmarking schemes that compare members' progress in the implementation of specific measures, which by way of being elevated to the status of milestones, steps or standards become the appropriate policy solutions, which cities that want to become active in climate protection should introduce. Furthermore, by conveying information about the progress of others that tells cities how common certain practices or performance levels already are, benchmarks increase pressure on policymakers to conform to widespread practices and thus further intensify norm dynamics. In reference to Busch & Jörgens' strategies for governance by diffusion, benchmarking clearly is a tool to "[use] peers to accelerate the diffusion of policy innovations" (4) and to increase transparency (5), as it informs policymakers about the progress of other network members in general and their neighbors in particular (Busch & Jörgens forthcoming:294-295).

What is more, recognition schemes intensify competition among leading network members that use awards to enhance their progressive image. As Kamal-Chaoui & Robert (2009:30, *see section 1.2*) point out, a reputation for quality of life might enhance a city's competitiveness, especially in the attraction of businesses and staff

active in the high-end service sector. Accordingly, local governments could be incited by economic pay-offs to implement innovative climate policies that enable them to compete for awards offered by TMNs. As a result, economic competition among a small number of leading municipalities might lead to a race to the top in the area of local climate protection.

3.2.4 TMNs Engaging in Governance by Diffusion

This review of the governance strategies deployed by TMNs to steer member-cities towards network goals has shown that they all involve the attempt to accelerate diffusion processes, including learning, imitation, and economic competition. TMNs promote learning by setting up best practice databases, performing original research, publishing guides and manuals, and integrating members into joint projects on specific climate related issues. They facilitate imitation by setting benchmarks that underline the appropriateness of particular climate-related measures and pressure policymakers to conform to practices common among their peers. In addition, the bestowal of awards and special statuses that can be used by member cities to enhance their green image might induce economic competition among constituents for skilled labor and businesses active in the high-end service sector.

Furthermore, the analysis of these practices with regard to Busch & Jörgens' framework for governance by diffusion yields the result that TMNs apply six out of the seven strategies for the deliberate intensification of diffusion processes. They "[create] and [enhance] channels of […] communication" (1) by fostering contacts and cooperation among members through the set up of joint projects; they "[generate] information" (2) through the creation of the aforementioned guides, manuals, and best practice databases; they "[improve] the 'diffusability' of policy models" (3) by elaborating abstract methodologies for the implementation of certain policy instruments; they "[use] peers to accelerate the diffusion of policy innovations" (4) and "increase transparency" (5) by setting benchmarks that display and compare the progress of peers, and by providing information on best practices that these have implemented; and they "strengthen […] capacities" by providing their members with access to outside funding for climate related projects (Busch & Jörgens forthcoming:292-295). As all this is done in order to steer constituents towards the goal of climate change mitigation via the reduction of urban CO_2 emissions, one can thus conclude that TMNs engage in governance by diffusion.

3.3 Governance by Diffusion and the Spread of Local Climate Strategies

In the previous section I developed the argument that TMNs engage in governance by diffusion. With regard to my research question (*Why have European cities adopted local climate strategies in the period from 1992 to 2009?*) and in order to prepare the empirical test of this argument, the next step must now be to show that TMNs

apply at least part of the governance by diffusion strategies to promote the adoption of local climate strategies by their members. In general, all four TMNs under study, CCP, the Climate Alliance, energie-cités and C40, mention such action plans on their websites and identify them as a crucial tool for the mainstreaming of climate policy in municipalities (Climate Compass 2011, CCP 2011c, energie-cités 2011b, C40 2011b). There are however differences in the strategies they deploy to promote this policy instrument.

Energie-cités for instance offers so-called "ateliers plan climat energie" to its members (energie-cités 2011b). These are recurrent workshops that bring about 40 city representatives together who engage in the process of elaborating a local climate strategy. During workshops, energie-cités provides these city officials with expertise on how to elaborate ambitious action plans and incites them to exchange experience and to identify solutions that may be transferable to other municipalities. In addition, it provides an online discussion list on the topic that explicitly serves the purpose of facilitating exchange among city officials responsible for the elaboration of a local climate strategy. Currently, this list has more than 500 subscribers from municipal administrations (ibid.). Accordingly, the focus of energie-cités clearly lies on learning processes, which the network tries to accelerate by "creating and enhancing channels of […] communication" between interested members (1), and by providing information on how to properly implement action plans (2). In addition, the network might also improve the 'diffusability' (3) of the local climate strategy concept as its 'how to' expertise is supposedly context-independent (Busch & Jörgens forthcoming:292-293).

The Climate Alliance, in turn, offers a comprehensive methodology, the so-called Climate Compass, whose explicit purpose it is to enable "local authorities to work out an immediate climate policy action programme in a very short time" (Climate Compass 2011). This methodology comprises 16 steps organized in five modules, which go from "raising awareness" via "conducting an inventory" and "defining targets" to "formulating strategic resolutions" and "developing indicators" for monitoring (Climate Compass 2011b). In addition, the methodology is accompanied by a compendium of measures, comprising a matrix of abstract policy concepts and case studies from all over Europe, a list of recommended measures that the network considers effective and easy to implement, and a range of further websites and publications on specific policy sectors like renewable energy, energy efficiency, or cogeneration (Climate Compass 2011c). Next to developing this methodology, the Climate Alliance also integrated the elaboration of climate concepts and action plans as two separate points into its benchmarking system (Climate Cities Benchmark 2011). Hence, in addition to promoting policy learning via the Climate Compass methodology, the Climate Alliance also attempts to accelerate imitation processes by making the adoption of a local climate strategy a benchmark in its system of performance

indicators. In terms of the seven strategies for governance by diffusion, this means that the Climate Alliance does not only generate information (2) about – and improve the diffusability (3) of – the local climate strategy concept, but also uses information on peer performance (4) and makes cities' progress transparent (5) in order to pressure policymakers into adopting an action plan.

Similarly, CCP also deploys strategies to accelerate processes of both imitation and learning. First of all, the adoption of a local action plan is pivotal to its milestone methodology as three out of the five milestones that members should attain orbit around a city's climate strategy. These are the development and implementation of an action plan as well as the monitoring of its results (CCP 2011b). Hence, the adoption of a local climate strategy can be assumed to be the crucial indicator for a city's commitment to network goals, especially since CCP expects new entrants to complete the cycle of milestones once within the first three years of adhesion (CCP 2011e). It can thus be expected that not adopting an action plan goes along with a severe loss of reputation inside the network. In addition, CCP provides new members with a "Support Service Package" that involves, among others, guidance in the set up of an action plan by an expert from the network. This package is supplemented by the "CCP Europe Climate Toolkit", which includes basic guidance and advice in published form (CCP 2011d). Here again, a range of strategies for governance by diffusion is deployed. The milestone methodology clearly bestows the adoption of a local climate strategy with a high level of appropriateness and enables network members to identify non-adopters as laggards. Policymakers thus have to be aware that inaction will not go unnoticed due to increased transparency (5). In addition, local governments receive information about the progress of their peers in the elaboration of an action plan, which may further increase the urge to follow suit (4). Beyond that, guides and manuals provide information on how to implement an action plan (2), whereas the delegation of an expert from the network strengthens municipal capacities by transferring manpower and know-how (6) (Busch & Jörgens forthcoming:296).

C40, in turn, is a rather special case, since it is not a membership organization like the other three TMNs but a club to which leading world cities are invited that have already proven their commitment to climate protection (Kern & Alber 2009:17). Hence, the network does not have to focus on exerting peer pressure to motivate its members to take the first basic steps like the introduction of a local climate strategy. Rather, it tries to enable already active cities to become even more ambitious. Accordingly, its approach to promoting climate strategies rests on a partnership with a leading engineering consultancy, paid by the Clinton Foundation, that elaborates advanced CO_2 reduction concepts for a limited number of member cities per year (C40 2011f). One can thus conclude that C40 aims at the acceleration of learning processes by providing outside expertise and, indirectly, funding (6).

In sum, this overview shows that all TMNs under study promote the adoption of local climate strategies by their members, using a variety of strategies for governance by diffusion. Whereas energie-cités and C40 focus on the acceleration of learning processes by providing their members with opportunities for exchange, guides, manuals, outside expertise, and, indirectly, funding, CCP and the Climate Alliance seek to enhance processes of both learning and imitation by integrating the adoption of a local climate strategy into their benchmarking systems in addition to generating information on – and improving the diffusability of – the local climate strategy concept. From these insights and the theoretical assumptions discussed in the previous sections, I deduce the following hypotheses about the impact of TMNs on the dissemination of local climate strategies:

H1: Membership in a transnational municipal network increases the likelihood of a city adopting a local climate strategy.

H2: Membership in a transnational municipal network that promotes adoption through the acceleration of imitation processes further increases the likelihood of a city introducing a local climate strategy.

H3: The number of years that a city has adhered to a transnational municipal network increases the likelihood of it adopting a local climate strategy.

H4: A share of 30% or more of network members that have adopted a local climate strategy prior to the city in question increases the likelihood of it doing the same.

H2 is based on the assumption that benchmarking strategies are more powerful than information strategies since they urge policymakers to conform to normative expectations (Kern & Bulkeley 2009:322, Finnemore & Sikkink 1998:903); *H3* is based on the assumption that sustained non-compliance with network goals increases peer pressure; and *H4* is based on the assumption that the attainment of a critical mass of adopters results in norm cascades (Finnemore & Sikkink 1998:901, *see section 2.2.2*).[12] In order to test the aforementioned hypotheses about TMN impact, I will proceed by reviewing alternative explanatory factors for a city's commitment to climate protection in general and its adoption of a local climate strategy in particular in the next section.

[12] Finnemore & Sikkink (1998:901) assume that a critical mass is made up of at least 30% of actors in a given social system. (*see section 2.2.2).*

4 Alternative Explanatory Factors for the Adoption of a Local Climate Strategy

4.1 Selection of Control Variables

The focus of this thesis is on assessing whether TMNs, engaging in governance by diffusion, accelerate the dissemination of local climate strategies among European cities. In order to clarify how significant they really are, their influence has to be tested against other potentially relevant determinants cited in the scientific literature. In this respect, two strands of scholarship are important: studies of policy diffusion at the local level and studies on the determinants of local action on climate change. From the first strand, I derive additional explanatory variables that potentially affect diffusion patterns at city level irrespectively of the type of policy that is diffused, including geographical proximity to frontrunners and the potential coordinative effects of decisions by superordinate governments (Kern et al. 2007, Shipan & Volden 2008, *also see section 2.5*). This is crucial in order to be sure that dissemination is accelerated via TMNs and not along regional clusters or due to interventions by other actors.

In addition to the aforementioned variables, I derive mostly local factors from the second strand of research like co-benefits, financial resources, or perceived vulnerability to climate change impacts, which are susceptible to determine cities' policy choices independently from external influences. As a matter of fact, numerous single or small-n case studies in this research area have led to the identification of a manifold range of explanatory variables for local action on climate change, including motivators like the improvement of urban quality of life, cost savings, concerns for reputation, or the aforementioned vulnerability, and barriers like the lack of financial resources and know-how, the absence of a national mandate, or competing policy issues (e.g. Bai 2007, Bulkeley et al. 2009, Carmin 2009, Granberg & Elander 2007, Holgate 2007, Kern et al. 2005, Kern & Bulkeley 2006, Lankao 2007, Roberts 2008, Sippel & Jenssen 2009).

As it would overstretch the scope of this thesis to study all variables that are potentially in the run, a selection was made based on the findings of Sippel & Jenssen (2009) who, based on an analysis of over 90 case studies, established a ranking of motivators and barriers for local climate governance. In their study, the respective relevance of explanatory factors is measured by the number of times a given determinant is mentioned in the scientific literature. On the side of motivators, these are cost savings, the improvement of air quality and the perceived vulnerability to climate change impacts. The most relevant barriers include a lack of financial re-

sources, insufficient cooperation with other policy levels, and competitive policy issues (Sippel & Jenssen 2009:40).[13] Out of these, the improvement of air quality and competitive policy issues will not be included in this study. The former because of lacking data on local pollution for a significant number of cities in the data set (Eurostat 2011b); and the latter because many different competitive policy issues can arise in individual cities, which either implies an enormous effort in data collection or the over- or underestimation of a particular competitive problem when focusing only on one issue like unemployment for example.

Accordingly, the following explanatory variables will be incorporated into this study next to TMNs: in reference to the first strand, the diffusion of policy innovations along regional clusters and the coordinative effect of decisions made by superordinate governments will be analyzed; in reference to the second strand, the size of potential cost savings, a city's financial resources, and the perceived vulnerability to climate change impacts will be taken into account; the 'cooperation with other policy levels' variable identified as relevant by Sippel & Jenssen (2009) and the 'coordinative effects of decisions by superordinate governments' variable from the first strand overlap and will therefore be discussed together. The expected impacts of these factors will be presented in the following subsections.

4.2 Alternative Drivers of Diffusion

4.2.1 Regional Clustering at the Local Level

As alluded to above, it is necessary to compare the impact of TMNs on the dissemination of local climate strategies to a baseline scenario in order to assess whether they really outperform the diffusion process that happens without their mediation. Normally, this baseline scenario would simply be the observed dissemination process among all cities in the dataset, network members and non-members confounded (True & Mintrom 2001:36). However, this approach might omit accelerated diffusion in certain regional clusters, which is assumed to be the prevalent pattern of policy spread at the local level (Kern et al. 2007, Shipan & Volden 2008, *also see section 2.5*).

This assumption is based on the observation that a lot of cities do not have the resources to engage in transnational exchange and thus have to rely on communication

[13] Sippel & Jenssen (2009:40-42) established two separate rankings. One based on the number of times an explanatory factor is mentioned in scientific articles, this is the one on which my selection is based, and another one which uses the number of citations in abstracts as an indicator of relevance. For motivators the result is the same, for barriers however the results diverge. In the second ranking, inhibiting legal frameworks, collective action problems, and lacking control over utilities are identified as most relevant barriers next to the lack of financial resources.

with their immediate proximity for access to information on policy innovations. Hence, poorer or smaller cities are dependent on the presence of a pioneering city close by around which information is assumed to spread in concentric circles, eventually resulting in regional policy clusters arranged around a central hub (Kern et al. 2007:607). In this context, local policymakers are expected to only take regional information into account. Hence, diffusion mechanisms will essentially depend on dynamics in this sphere. Just as learning is assumed to depend on the regional availability of information, imitation can be expected to depend on regional standards for appropriateness and pressure exerted by regional peers. Furthermore, municipalities are more likely to compete with their direct neighbors than with other cities across Europe (Shipan & Volden 2008:846-847). Hence, the following hypotheses about the impact of regional proximity on the adoption of a local climate strategy can be deduced:

H5: Proximity to a frontrunner increases the likelihood of a city adopting a local climate strategy.

H6: The number of neighboring cities having previously adopted a local climate strategy increases the likelihood of a city doing the same.

H7: A share of more than 30% of neighboring cities having previously adopted a local climate strategy further increases the likelihood of a city doing the same.

H5 represents the assumption that individual frontrunners are crucial drivers of diffusion; *H6* is based on the assumption that availability of information within the region is crucial for policy learning; and *H7*, similarly to *H4*, reflects the potential development of norm cascades when a critical mass of adopters is reached (Finnemore & Sikkink 1998:901, *see sections 3.3 and 2.2.2*).

4.2.2 Coordinative Effects of Decisions by Superordinate Governments

In section 2.4 the municipal lack of sovereignty was mentioned as one of the crucial differences that has to be kept in mind when conducting a diffusion study at the local level. This is due to the fact that in this context, coercion, one of the coordinative processes that diffusion strictly 'is not' (*see section 2.1*), is not exerted horizontally, that is, between national governments, but vertically, meaning that cities might be forced to introduce a certain policy by superordinate governments (Shipan & Volden 2008:843). If this was the case, a policy cluster at the local level would simply be the result of a decision taken at national or regional level and not of a series of interdependent but uncoordinated voluntary and unilateral decisions by local

policymakers (Elkins & Simmons 2005:34, Busch & Jörgens forthcoming:1). Overall, coercion by higher political levels can be expected to have little impact on the diffusion of local climate strategies in Europe, as climate policy has been a voluntary task for municipalities in almost all European countries (Kern & Alber 2009:15, Kern et al. 2005:5, Sippel & Jenssen 2009:27) – the only exceptions being France, where since 2008 the adoption of a "plan climat" is mandatory for municipalities with more than 50.000 inhabitants (Bordeaux 2011, Grenelle 2011), and, indirectly, Great Britain, where since 2008 city councils "are assessed [by the national government] on their performance in reducing per capita carbon emissions in their area" (Kern & Alber 2009:23).

Even though coercion can be excluded for most countries, other means remain through which superordinate governments might promote local action on climate change – these include the provision of leadership, know-how, and funding (Bulkeley et al. 2009:24, Kern & Alber 2009:19-20). Leadership implies that national governments set the issue of climate change high on the agenda and create a permissive environment for cities that want to become active on their part (Bulkeley et al. 2009:24). This is crucial because cities often demand guidance from national governments on how to tackle climate change (Kern et al. 2005:48). Furthermore, municipalities have been shown to emulate national initiatives, for example by adopting the same reduction targets (Granberg & Elander 2007:545). Consequently, a "lack of acknowledgement, encouragement and clear national-level guidance" can be expected to constitute a substantial barrier to local action on climate change (Jollands 2008:5).

In addition to ideational leadership, superordinate governments may also provide resources, that is, know-how and funding, to enable local authorities to implement climate policies. The German federal government, for instance, "[provides] municipalities with guidelines for local climate protection" (Kern & Alber 2009:19), whereas Great Britain set up the 'Carbon Trust', an agency that advises business and the public sector on how to cut GHG emissions (Carbon Trust 2011). Furthermore, some national governments offer financial support to local authorities that want to invest in climate protection. The oldest and most often cited funding schemes are the Swedish LIP and KLIMP programs as well as the Dutch 'Klimaatconvenant' (Bulkeley et al. 2009:25, Jollands 2008:7, Kern & Alber 2009:21). However, further funding schemes have recently been set up in other countries, including Germany, France, and Austria (BMU 2011, ADEME 2010, Klimafonds 2011).

Another important provider of resources for climate related projects is the European Union. Through several funding schemes, including its Framework Programs for research, the LIFE programs, the Intelligent Energy Europe program and its predecessors ALTENER and SAVE, the EU has channeled finances to municipalities for climate related projects, primarily in the areas of mobility and energy efficiency (ELTIS 2011,

CORDIS 2011). In addition, in 2008 the EU established the 'Covenant of Mayors', a voluntary agreement, committing signatory cities to go beyond the EU's CO_2 reduction target of 20% by 2020 (Kern & Alber 2008:22). Cities abiding by the agreement's rules, which include the set up of a local climate strategy within the year following accession, become eligible for additional funding for their climate related projects from the newly created ELENA facility (ELENA 2010). Moreover, the Covenant's secretariat together with the European Commission's Joint Research Center provides member-cities with technical expertise on the implementation of local climate policies, including local action plans, and regularly chooses so-called 'benchmarks of excellence' among members' initiatives (COM 2011a, COM 2011b). The aim, structure and strategies of the 'Covenant of Mayors' strongly resemble those of TMNs (*see section 3*), to which extent it engages in governance by diffusion would be a subject for a different study, though.

In sum, this overview shows that national governments as well as the EU have the capacity to accelerate the dissemination of local climate strategies among European cities. Whereas coercion has only been used in two countries and only during the last two years of the observation period, leadership, know-how, and funding have been provided through different channels by a range of national governments and the EU. The most noteworthy initiative by a superordinate government probably being the set-up of the Covenant of Mayors, an EU initiative that strongly resembles a TMN. Accordingly, the following hypotheses can be deduced:

H8: When its national government makes municipal action on climate change mandatory, the likelihood of a city adopting a local climate strategy increases.

H9: Strong national commitment to climate protection increases the likelihood of a city located in the respective country to introduce a local climate strategy.

H10: The availability of resources from its national government increases the likelihood of a city adopting a local climate strategy.

H11: A city's participation in EU funded, climate related projects increases the likelihood of it adopting a local climate strategy.

4.3 Explanatory Factors at the Local Level

Next to external influences on the likelihood of a city adopting a local climate strategy, a range of local factors may also determine whether municipalities are willing and able to commit themselves to climate protection. Among these local factors are

the availability of sufficient financial resources, potential co-benefits that could be exploitet by the city, its citizens or local business, and the perceived vulnerability to the adverse impact of climate change. These local determinants will be discussed in the following subsections.

4.3.1 Financial Resources

The implementation of climate-related projects like the extension of public transport or combined power and heat supply involves large up-front investment costs (Kamal-Chaoui & Robert 2009:71). Often, municipalities lack the financial capacity to bear these costs, despite potential savings that these projects might yield in the future. Hence, commitment to climate protection may be inhibited by budgetary constraints. As Bulkeley & Kern (2006:2251) point out, in cities in Germany and the UK even small-scale projects have become increasingly hard to execute, as pressure on local government finances increases. In Germany this is due to fiscal reforms that reduced municipalities' tax revenues (Bulkeley & Kern 2006:2241), whereas in the UK "local authorities are bound by strict central government controls over their finances" (Bulkeley et al. 2009:17). Along these lines, Sippel & Jenssen (2009:20) assert that municipalities in general have to deal with budgetary constraints, which are either linked to a "low and instable revenue base" or insufficient transfers from higher political levels. Accordingly, many municipalities are heavily indebted, which further reduces their financial margin of maneuver as a large share of expenditure serves to pay interest.

Overall, municipalities tend to be in financially precarious situations that force them to focus on their essential or compulsory tasks and leave little room for 'luxuries' like climate policy.[14] Consequently, the latter will only be implemented where sufficient local resources are available. From these insights, the following hypothesis can be deduced:

> *H12: The likelihood of a city adopting a local climate strategy increases with its financial resources.*

4.3.2 Cost Savings

Directly linked to the issue of local financial resources are cost savings, which are one of the potential co-benefits of local climate policy already mentioned in section

[14] Compulsory meaning that constitutional provisions confer responsibility to the municipal level.

1.2. Savings are mainly related to improvements in energy efficiency, which are susceptible to reduce costs and CO_2 emissions at the same time. As Kamal-Chaoui & Robert (2009:70) point out, due to these complementarities, measures like higher standards for building insulation can be considered "no-regret strategies", as savings quickly set off the aforementioned up-front investment costs. Hence, these economic benefits may provide additional incentives for local climate policy to municipalities, which are often severely underfinanced (Bulkeley & Kern 2006:2241). Along these lines, Betsill (2001:401) argues that municipal stakeholders are more likely to support environmental policies if proponents can show their short-term cost-effectiveness, this being "the ultimate criterion on which city councils make budget decisions." Moreover, Kern et al. (2005:88-89) state that climate policies are most successfully implemented in those German municipalities that do not conceive them as costly luxuries but as factors improving efficiency and reducing costs. Hence, pioneering cities often try to make climate policy auto-sustainable by setting up revolving funds that reinvest money freed up through cost savings in additional climate related projects (Bulkeley & Kern 2006:2246).

Thus, cost savings matter in two respects. On the one hand, municipalities that are reluctant to act on climate change might only be motivated by the co-benefit of cost savings, whereupon these would be the primary goal and emissions reduction a nice-to-have side-effect. On the other hand, cities committed to climate protection might be dependent on cost savings in order to finance their initiatives. In both cases the size of savings is crucial for the viability of local climate policy, as it determines whether and how fast investment costs can be offset and additional projects financed. Accordingly, the probability of a local climate strategy being adopted should increase with the size of possible savings. As these co-evolve with energy prices, their impact should thus be especially meaningful when gas and electricity prices are comparatively high. Hence, the following hypothesis can be deduced:

H13: The likelihood of a city adopting a local climate strategy increases with energy prices.

4.3.3 Perceived Vulnerability

Another potential motivator for local action on climate change is a city's perceived vulnerability to its adverse impacts. According to Sippel & Jenssen (2009:14), especially adaptation measures are motivated by threats apparently linked to climate change, including natural disasters like floods, heavy storms or heat waves. This seems logical since improved local resilience directly yields local benefits and protects local lives and property. As Carmin et al. (2009:19) point out in their case study of adaptation policies in Quito and Durban, "one important incentive [for their intro-

duction] was ensuring the safety of local populations and protecting the natural and built environments from natural disasters." Strikingly, it seems to be unimportant whether natural disasters can really be linked to climate change or not. According to Roberts, who also conducted a case study of Durban, South Africa (2008:536), extreme weather events,

> "although not directly attributable to climate change, […] have raised general awareness of the kind of impacts that may be experienced in a climatically changed future, [which led to] increased political and administrative support for climate change-related work in the municipality."

This relation shows that natural disasters can be important trigger events, opening so-called windows of opportunity for local action on climate change (Sippel & Jenssen 2009:15, Bulkeley et al. 2009:74). Furthermore, Sippel & Jenssen (2009:14-15) state that this connection is not limited to adaptation measures. Rather, those cities apparently most threatened by climate change are also more progressive when it comes to its mitigation. Thus, perceived vulnerability does not only lead cities to improve their resilience out of self-interest, the increased awareness for the adverse impacts of climate change also seems to promote a city's propensity to reduce emissions, which eventually benefits everyone. Based on these insights, one can conclude that a city will be ever more inclined to introduce a local climate strategy the higher its perceived vulnerability. Accordingly, the following hypothesis can be deduced:

H14: The likelihood of a city adopting a local climate strategy increases with its perceived vulnerability to the adverse impacts of climate change.

In the following section, the analytical strategy deployed to test the hypotheses elaborated in this and the previous sections will be outlined, starting with an explanation of the statistical method and proceeding with the operationalization of variables.

5 Research Design and Operationalization of Variables

5.1 Event History Analysis and the Dependent Variable

In order to test the hypotheses deduced in sections 3 and 4 I will perform an Event History Analysis (EHA) on an original data set containing year-by-year information on 274 European cities for the period from 1992 to 2009.[15] Event History Analysis is the statistical method commonly used to study diffusion processes (e.g. Berry & Berry 1990, Box-Steffensmeier & Jones 2004, Mintrom 1997, Shipan & Volden 2008, True & Mintrom 2001). Its goal is to predict the likelihood, most often termed the "hazard rate", of an entity experiencing an event at a particular point in time, using information on a range of covariates (Berry & Berry 1990:398, True & Mintrom 2001:36).

In this study, the entity is a city and the event of interest is its first adoption of a local climate strategy.[16] The data used for analysis, the event history, "is a longitudinal record showing whether and when the event was experienced by a sample of [entities] during a period of observation" (Berry & Berry 1990:398). Data included in this longitudinal record can either be continuous, meaning that events can be observed anywhere in time, or discrete, implying that event occurrences are recorded at distinct intervals like weeks, months or years (Box-Steffensmeier & Jones 2004:69). As this study is based on year-by-year information, meaning that variables can only fluctuate from year to year but not within years, a discrete time model was chosen. Accordingly, data on dependent and independent variables is arranged in city-years, meaning that every city under study contributes one data row to the data set for every year in which it is at risk of experiencing the event under study, that is, the adoption of its first local climate strategy (True & Mintrom 2001:37).

As each city can only experience this event once, the number of cities in the so-called risk set, comprising all cities that have not yet adopted a local climate strategy and are thus at risk of doing so in the future, is reduced at the end of each year

[15] The sample includes all cities that participated in Eurostat's 'Urban Audit' and that are located in a country that is both member of the EEA and the OECD, minus those cities for which too many values were missing in Urban Audit data (Eurostat 2010a). The observation period begins in 1992 because it was in this year that the UNCED in Rio de Janeiro "put climate protection policy on the political agenda at global, European and national levels" (Kern & Alber 2009:18). The observation period ends in 2009 because this is the last year in which data was available for all variables.

[16] Data on adoptions was collected by the author, relying mostly on information found on city's websites, the local climate strategies themselves, and in other official publications. In cases of uncertainty, city administrations were contacted by e-mail or by phone.

by the number of cities that adopt a local climate strategy that year (Berry & Berry 1990:398). Hence, cities do not contribute additional data rows to the data set after they have adopted a local climate strategy. The dependent variable in EHA, the hazard rate, indicating the likelihood of an event occurring in a given year, then is calculated by dividing the number of adopters by the number of non-adopters, i.e. the risk set (True & Mintrom 2001:36). As this dependent variable is a probability, it is of course unobserved. The observed dependent variable on which it is based is a dummy indicating whether a city did (1) or did not (0) adopt a local climate strategy in a given city-year (Berry & Berry 1990:398). Hence, it is represented as a series of binary outcomes, making logit the appropriate type of regression for the estimation of parameters (Box-Steffensmeier & Jones 2004:70).

As alluded to above, the point of EHA is to explain how independent variables cause the hazard-rate, or in other words, the likelihood of a city adopting a local climate strategy, to systematically move between years (True & Mintrom 2001:36). Information on independent variables is recorded for every city-year in the data set and can thus be time constant or time varying. How they are operationalized will be discussed in the following subsections.

5.2 Operationalization of Independent Variables

5.2.1 TMN Impact (H1-H4)

In section 3.3 four hypotheses were deduced about the impact of TMNs on the likelihood of a city adopting a local climate strategy:

H1: Membership in a transnational municipal network increases the likelihood of a city adopting a local climate strategy.

H2: Membership in a transnational municipal network that promotes adoption through the acceleration of imitation processes further increases the likelihood of a city introducing a local climate strategy.

H3: The number of years that a city has adhered to a transnational municipal network increases the likelihood of it adopting a local climate strategy.

H4: A share of 30% or more of network members that have adopted a local climate strategy prior to the city in question increases the likelihood of it doing the same.

In *H1* and *H2* the independent variable is TMN membership. It is operationalized by coding four dummy variables, one for every TMN under study, indicating whether a city observed in year t had been a member of the respective network in t-1. The time lag is incorporated into the variable in order to make sure that accession to the network really happened prior to the adoption of a local climate strategy. The same is done with all other variables as well (Box-Steffensmeier & Jones 2004:111). The incorporation of one variable per network has the convenient effect to enable the interpretation of differences in their significance with regard to the strategies that networks employ to foster the diffusion of local climate strategies (*see section 3.3*). In three cases, data on membership and accession dates were kindly provided by the networks (*see annex I*), in one case, they were retrieved from the network's website (C40 2011g).

In *H3* the independent variable is the number of years during which a city has adhered to one or more of the TMNs. It is operationalized by simply counting the number of years between year t and a city's accession to the network. As the counting process is based on entries in the dummy variables indicating TMN membership, the time lag is automatically incorporated into this variable. In cases where a city is a member of more than one network, membership years are added. This is consistent with the purpose of this independent variable, which is supposed to measure peer-pressure caused by sustained non-compliance with network goals (*see section 3.3*). Adding membership years then simply reflects the assumed increase in peer-pressure caused by non-conformity to normative expectations in more than one network.

In *H4* the independent variable is the share of a city's peers that had adopted a local climate strategy in t-1. This variable is operationalized by dividing the total number of network members by the number of network members that adopted a local climate strategy between the beginning of the observation period and t-1. In cases where a city is a member in more than one network, shares for the respective networks are added and then divided by the number of networks in which a city participates – the result being the share of this city's peers that had adopted a local climate strategy in t-1 (True & Mintrom 2001:42). As this variable is supposed to specify the impact of norm cascades, which are assumed to be triggered when a critical mass of at least 30% of adopters is reached, it has to take the expected non-linear effect of the share of previous adopters on the likelihood of a city adopting a local climate strategy into account (Finnemore & Sikkink 1998:901, *see section 2.2.2*). Hence, it is transformed into a categorical variable that indicates whether more or less than 30% of a city's peers had adopted a local climate strategy in t-1.

In sum, these independent variables are not only suitable to depict the general effect of TMN membership on the likelihood of a city adopting a local climate strategy. Rather, they are constructed to also specify the distinct impact of imitation proc-

esses by enabling the interpretation of differences in significance between networks and by measuring peer-pressure as well as the effect of norm-cascades.

5.2.2 Regional Clusters (H5-H7)

In section 4.2.1 three hypotheses were deduced concerning the influence of regional clusters on the overall dissemination of local climate strategies:

> *H5: Proximity to a frontrunner increases the likelihood of a city adopting a local climate strategy.*
>
> *H6: The number of neighboring cities having previously adopted a local climate strategy increases the likelihood of a city doing the same.*
>
> *H7: A share of more than 30% of neighboring cities having previously adopted a local climate strategy further increases the likelihood of a city doing the same.*

In order to operationalize the independent variables in *H5 to H7* a measure of proximity had to be specified. Given that the data set mostly contains information on bigger cities that are located across Europe, a rather large radius of 100 kilometers was fixed as a city's immediate proximity. This happened quite arbitrarily and certainly constitutes a weakness of the research design. However, no exact measure of proximity, besides contiguity (Shipan & Volden 2008:847), could be found in the literature on policy diffusion at the local level, therefore, this procedure was inevitable.

Hence, in *H5* the independent variable is the presence of a frontrunner within a 100km radius around a given city. A frontrunner is defined as a city that adopted a local climate strategy during the first wave of adoptions, that is, between 1992 and 2001. This definition is based on the observation presented in *figure 1* that the dissemination of local climate strategies has so far proceeded in three waves. The aforementioned long and flat wave from 1992 to 2001, a second shorter and larger wave from 2002 to 2006, and the third extremely steep wave from 2007 to 2009 (*see section 1.3*). The variable is operationalized as a dichotomous dummy, indicating whether a pioneering city was present in t-1 (1) or not (0). As frontrunners have introduced local climate strategies at different times, the variable will indicate the presence of a pioneering city from the year in which it adopted its action plan onwards.

In *H6* the independent variable is the absolute number of neighbors within a city's proximity that had introduced a local climate strategy in t-1. This variable is sup-

posed to reflect the availability of information within a city's region, which is assumed to increase with the number of cities from which lessons could potentially be drawn. It thus reflects the significance of learning processes as well as the assumption made by Kern et al. (2007:616) that information diffuses faster among cities that are located in conurbations like the Ruhr area.

H7 is the regional equivalent of *H4,* which was operationalized in the previous section. Here, the independent variable is the share of peers within a city's proximity that had adopted a local climate strategy in t-1. This share is calculated by dividing the cumulated number of adopters in a given year by the total number of peers within a city's proximity. In order to approximate the effect of norm cascades, this variable then is transformed into a categorical variable indicating whether the share of adopters was below or above 30% in t-1 (*see section 5.2.1*).

In sum, the variables reflecting the significance of regional proximity allow for the differentiation between learning and imitation processes within regional clusters. Whereas the absolute number of adopters in a city's neighborhood indicates the availability of information and thus the significance of learning processes (*see section 2.2.1*), the share of previous adopters reflects the importance of peer pressure and thus the relevance of imitation processes (*see section 2.2.2*). Similarly, the presence of a frontrunner also serves as an indicator for the relevance of imitation, as the literature assumes that laggards emulate the behavior of pioneering cities rather than using them as sources of information (Kern et al. 2007:607, Shipan & Volden 2008:847).

5.2.3 Coordination on Superordinate Political Levels (H8-H11)

In section 4.2.2 four hypotheses were deduced concerning the coordinative effect of decisions by superordinate governments:

H8: When its national government makes municipal action on climate change mandatory, the likelihood of a city adopting a local climate strategy increases.

H9: Strong national commitment to climate protection increases the likelihood of a city located in the respective country to introduce a local climate strategy.

H10: The availability of resources from its national government increases the likelihood of a city adopting a local climate strategy.

H11: A city's participation in EU funded, climate related projects increases the likelihood of it adopting a local climate strategy.

In *H8* the independent variable is the presence of a mandatory requirement for municipalities to implement climate policies imposed by the national government. It is operationalized by coding a dummy variable that indicates whether in year t such regulation had been adopted in the country in which a city is located. Exceptionally, no time lag is incorporated in this case, as the legislative process in France, one of the two countries that introduced mandatory requirements in 2008, the other being Great Britain (Bordeaux 2011, ADEME 2010, Kern & Alber 2009:23), already involved cities as early as 2007 and thus gave them the chance to anticipate coming requirements (Grenelle 2011b). As this variable indicates the relevance of coercion in France and Great Britain from 2008 to 2009, a high significance level would thus indicate that diffusion had not been the decisive driver of dissemination in these two countries during these two years (*see section 2.1*).

In *H9* the independent variable is national commitment to climate protection, which is supposed to reflect to what extent national governments provide leadership on the issue. In order to measure commitment, a basic indicator was built showing whether in t-1 a national climate strategy, a carbon tax, and a feed-in tariff had been in place in the country in which a given city is located. For every adopted measure, one point is allocated on the indicator, meaning that it fluctuates between 0 and 3. The three measures were chosen because they have an agenda-setting function (national climate strategy), directly affect citizens' and corporate finances (carbon tax), or involve the allocation of subsidies (feed-in-tariffs), and should thus be publicly noticeable signs of a national government's commitment to climate protection. Furthermore, feed-in-tariffs and carbon taxes provide financial incentives for action to municipalities and their citizens alike. Data on the adoption of national climate strategies was retrieved from the IEA's Climate Change Database (IEA 2011), whereas the data on national adoptions of feed-in-tariffs and carbon taxes was kindly provided by Busch & Jörgens who collected it in the context of their dissertation project (forthcoming).

In *H10* the independent variable is the availability of national resources, that is, funding and know-how, for climate related projects in municipalities. In order to operationalize this variable, another basic indicator was built, showing whether national funding or other support schemes had been in place in t-1. On this indicator one point is allocated for the availability of expertise, whereas two points are allocated when funding is available. In practice, funding comes along with expertise; hence, there are no cases where only a funding scheme is in place at national level (e.g. BMU 2011, ADEME 2010, Kern & Alber 2009:21, Granberg & Elander 2007:543). The data used to built this indicator was retrieved from several sources, including the IEA's Climate Change Database (IEA 2011), secondary literature (Kern & Alber 2009, Bulkeley et al. 2009, Sippel & Jenssen 2009, Granberg & Elander 2007, IEA

2009), and websites of national environmental ministries and agencies (e.g. BMU 2011, ADEME 2010, Klimafonds 2011, klima:aktiv 2011, Carbon Trust 2011, Energy Saving Trust 2011, Klimp 2011, KEMIN 2009, SFOE 2011).

In order to operationalize independent variables in *H8* to *H10,* data measured at the national level is used to explain behavior at the local level. This means that one measurement, i.e. the presence of mandatory requirements for municipalities, appears several times in the data set as every city underlying these requirements contributes the same value. This does not challenge results in general, but a potential exaggeration of the significance levels of those variables using national data needs to be taken into account when interpreting results.

This inconvenience could be avoided in the operationalization of *H11*. Here, the independent variable is a city's participation in climate related projects funded by the EU. Unlike most national governments, the EU provides access to comprehensive project databases that indicate which cities participated and received financial support (CORDIS 2011, Intelligent Energy Projects 2011, LIFE Projects 2011, COM 2011c).[17] Accordingly, an indicator could be build, showing in how many EU funded projects or initiatives a city had participated between the beginning of the observation period and t-1. This indicator includes information on membership in the Covenant of Mayors, and on participation in joint and unilateral projects funded under the following programs: the Framework Programmes for research, the LIFE program, the Intelligent Energy Europe program, and its predecessors ALTENER 1 and 2 and SAVE 1 and 2. The search confirmed that these are the relevant sources for financial support for climate related projects in municipalities (ELTIS 2011, Act 2 2001, SESAC 2011, SMILE 2009, ENGAGE 2011).[18] [19] [20] [21] However, as search results were used to build a single indica-

[17] Important exceptions are the Austrian, Swedish, and German governments that provide access to databases indicating which cities have received funding for climate related projects (KLIMP 2011b, Klimafonds 2011, BMU 2011)

[18] Funds in this area might also be obtained from the INTERREG program; however, no searchable database exists that provides information on projects for the entire observation period.

[19] In order to find relevant projects funded under the Framework Programmes and the ALTENER and SAVE programs, the CORDIS database was searched, using the key words municipality OR town OR city OR "local authority" and selecting the following subjects: Renewable Sources of Energy, Energy Saving, Biofuels, Hydrogen and Fuel Cells, Other Energy Topics, Environmental Protection, Waste Management, Sustainable Development, Climate Change & Carbon Cycle Research. This search yielded 1119 results which were browsed one by one in order to find those projects were a city or several cities received funding in order to implement or participate in a climate related project.

[20] In order to find relevant projects funded under the Intelligent Energy Europe program its database was searched using the keywords municipality OR town OR city OR "local authority". Again, obtained results were browsed for projects in which a city government or a company fully or partly owned by the city obtained funding for a climate related project.

[21] In order to find relevant projects funded under the LIFE program, its database was search selecting local authority as beneficiary and climate protection, emissions reduction, energy saving, and greenhouse gas as keywords. The keywords were selected one by one and results were browsed for relevant projects each time.

tor, the variable does not yield significance levels for individual programs, rather it indicates – and is supposed to indicate – the amount of EU support in general that was received by a given city over the course of the observation period.

Overall, the variables representing the coordinative influence of national governments measure coercion and leadership, as well as the availability of know-how and funding. In these cases, national data is used to explain behavior at the local level. Hence, the significance of these variables may be overstated. This inconvenient does not affect the variable displaying the received EU support, though, as distinct data could be retrieved for each city in the data set.

5.2.4 Local Determinants (H12-H14)

In sections 4.3.1 to 4.3.2 the following hypotheses were derived about the impact of local factors on the likelihood of a city adopting a local climate strategy:

H12: The likelihood of a city adopting a local climate strategy increases with its financial resources.

H13: The likelihood of a city adopting a local climate strategy increases with energy prices.

H14: The likelihood of a city adopting a local climate strategy increases with its perceived vulnerability to the adverse impacts of climate change.

In *H12* the independent variable are a city's financial resources. In this study, these are approximated by local GDP per capita in t-1. Local economic performance is assumed to be a good proxy for the size of a city's tax revenues; however, an important qualification has to be made. As Bulkeley & Kern (2006:2241) point out, municipal revenues crucially depend on a country's fiscal organization, meaning that fiscal reforms decided at the national level determine which kind and what share of taxes municipalities receive. Thus, despite very high local productivity, tax revenues may be low if higher political levels instead of municipalities benefit from them. Therefore, the percentage of debt in municipal budgets would have been a slightly better proxy of local investment capacity. Unfortunately, for reasons of data availability, this measure could not be used. In contrast, the data on local GDP per capita could be retrieved from Eurostat (2011b, 2011c) for all municipalities for almost the entire observation period, thus minimizing the number of missing values in the data set.

In *H13* energy prices are the independent variable. This indicator is used to approximate potential cost savings resulting from improvements in energy efficiency, as these are more important when prices are high. This variable is operationalized by mea-

measuring the development of national energy prices between t-3 and t-1. The two-year time span was chosen in order to display a general trend instead of yearly fluctuations that might be misleading. In addition, national data had to be used because of the non-availability of data on local prices. Hence, the impact of this variable on the dependent variable might be overstated, which has to be kept in mind when interpreting results (*see section 5.2.3*). Absolute index values of national energy prices were retrieved from the OECD and then used to calculate the aforementioned percentage changes (OECD.Stat 2011).

The independent variable in *H14* is perceived vulnerability to the adverse impacts of climate change. Two indicators are used in its operationalization. The first one displays the number of deaths caused by extreme weather events in t-2 and t-1 in the country in which a city is located. The two-year time span was chosen in order to account for a possible delay of reaction that may be caused by the time needed to elaborate and adopt a local climate strategy in response to a changed perception of local vulnerability. Here again, national data is used for reasons of availability, which has to be considered when interpreting results. Nonetheless, it can be assumed that extreme weather events in a given country will have an effect on perceived vulnerability across that country, due to nationwide media coverage. The data on disaster deaths was retrieved from the Emergency Events Database maintained by the WHO's Collaborating Centre for Research on the Epidemiology of Disasters (CRED) (EM-Dat 2011). The second indicator used to approximate perceived vulnerability shows whether a city is located at the coast or not. As climate change is often associated with rising sea levels caused by the melting of the arctic ice shield (IPCC 2007), cities at the coast should be more vulnerable to the impacts of climate change than in-land cities. Municipalities receive coastal status when they are located in one of the costal regions identified by Eurostat in its Yearbook of the Regions 2010 (Eurostat 2010).

Independent variables, their operationalization and data sources discussed in this and the previous subsections are summed up in *table 1*. In the following section the results of Event History Analysis, retrieved using these variables, will be presented. First by discussing a range of descriptive measures and then by interpreting the results of inference statistics obtained using logit.

Table 1: dependent Variables, Operationalization, and Sources

Variable Category	Variable Name	Operationalization	Sign	Data Source
TMN Impact (*section 5.2.1*)	CCP	Dummy variable indicating whether a city had been a member of the CCP network in t-1 (1) or not (0).	+	E-mails received from CCP staff (*see annex I*)
	CA	Dummy variable indicating whether a city had been a member of the Climate Alliance in t-1 (1) or not (0).	+	E-mails received from Climate Alliance Staff (*see annex I*)
	EC	Dummy variable indicating whether a city had been a member of energie-cités in t-1 (1) or not (0).	+	E-mails received from energie-cités staff (*see annex I*)
	C40	Dummy variable indicating whether a city had been a member of C40 in t-1 (1) or not (0).	+	C40 2011g
	NETYEARS	Number of years that a city has been a member in one of the TMNs. In cases were a city participates in more than one network, membership years are added.	+	Based on CCP, CA, EC, C40
	NETPEERSKAT	Categorical variable indicating whether a share of 0, less (1) or more (2) than 30% of members in a TMN in which a city participates had adopted a local climate strategy in t-1. In cases in which a city is a member of more than one TMN, shares are added and divided by the number of networks in which a city participates.	+	Based on the dependent variable and CCP, CA, EC, C40. Calculations by the author. Operationalization based on True & Mintrom (2001).
Regional Clusters (*section 5.2.2*)	LOCPIO	Dummy variable indicating whether a pioneer was located within a 100km radius around a given city in t-1. Pioneers are cities that belong to the first wave of adopters (1992-2001).	+	Based on the dependent variable. Neighboring cities were identified using Diercke (1996).
	LOCLEARN	Variable indicating the absolute number of cities within a 100km radius that had adopted a local climate strategy in t-1.	+	Based on the dependent variable. Neighboring cities were identified using Diercke (1996).
	LOCPEERSKAT	Categorical variable indicating whether a share of 0, less (1) or more (2) than 30% of cities within a 100km radius around a given city had adopted a local climate strategy in t-1.	+	Based on the dependent variable. Neighboring cities were identified using Diercke (1996).
Coordinative Impact of Superordinate Political Lev-	NATCOERCE	Dummy variable indicating whether a mandatory requirement to become active on climate change was imposed on cities in a given country by the respective national government in t-1 (possible overestimation due to the use of national level data).	+	IEA (2011), Kern & Alber (2009) Bordeaux (2011), Grenelle (2011).

els (*section 5.2.3*)	NATLEAD	Basic indicator showing whether a national climate strategy, a carbon tax, and a feed-in-tariff had been in place in a city's country of location in t-1 (possible overestimation due to the use of national level data).	+	IEA (2011), data used in Busch & Jörgens (forthcoming).
	NATFUND	Basic indicator showing whether advice and/or funding were provided to cities for climate related projects by respective national governments in t-1 (possible overestimation due to the use of national level data).	+	IEA (2011), Kern & Alber (2009), … (*see section 5.2.3*)
	EUFUND	Indicator showing the number of EU funded climate related projects in which a city had participated between the beginnng of the observation period and t-1.	+	LIFE projects (2011), Intelligent Energy Projects (2011), CORDIS (2011), COM (2011c)
Local Factors (*section 5.2.4*)	GDPCAP	A city's local GDP per capita in t-1.	+	Eurostat (2011b, 2011a)
	NRG	Percentage change of energy prices between t-3 and t-1 (possible overestimation due to the use of national level data).	+	OECD.Stat (2011). Transformation of absolute values into % changes by the author.
	COASTAL	Dummy variable indicating whether a city is located at the coast (1) or not (0). A city received costal status when located in one of the coastal regions identified in Eurostat (2011a).	+	Eurostat (2011a)
	DISDEATH	Number of deaths caused by extreme weather events in a city's country of location in t-2 and t-1(possible overestimation due to the use of national level data).	+	EM-Dat (2011)

6 Results from Event History Analysis

6.1 Descriptive Statistics

The descriptive statistics discussed in this section are supposed to acquaint the reader with the data on which inference statistics are based. They already point towards a range of interrelationships, however, they do not constitute a proof of causality since the data set is not made up of a basic population, which would be all European cities, but of a sample of these cities. Hence, only inference statistics can indicate the significance of causal relationships between covariates (Raab-Steiner & Benesch 2010:11-13).

As *figure 1* already pointed out (*see section 1.3*), the share of adopters of a local climate strategy among the 274 European cities in the sample increased from 0,01% in 1992 to 41% in 2009. This process of dissemination proceeded in three waves: the first rather long and flat wave ranging from 1992 to 2001, the second slightly higher one ranging from 2002 to 2006, and the third extremely steep wave building up from 2007 to 2009. Accordingly, when looking at the overall hazard rate listed in *table 2* and depicted in *figure 4* one can deduce that between 1992 and 2001 there was only a 0,9% chance of a city adopting a local climate strategy, whereas this probability was already at an average 2,4% throughout the second wave and even at 9,8% over the course of the third wave.

As *table 2* indicates, early adopters, that is, cities that introduced a local climate strategy between 1992 and 2001 can mostly be found in Switzerland, southwestern Germany, Austria and Scandinavia, whereas adoptions in the second wave are geographically more widespread, including first introductions in northern Italy, Spain France, Great Britain, and the Benelux countries. The third wave then is predominantly shaped by a large number of adoptions in France and Great Britain. Quite strikingly, 17, or 29%, of the 59 adoptions in that period happened in the UK. An overview over the geographical distribution of adoptions is given in *figure 2*.

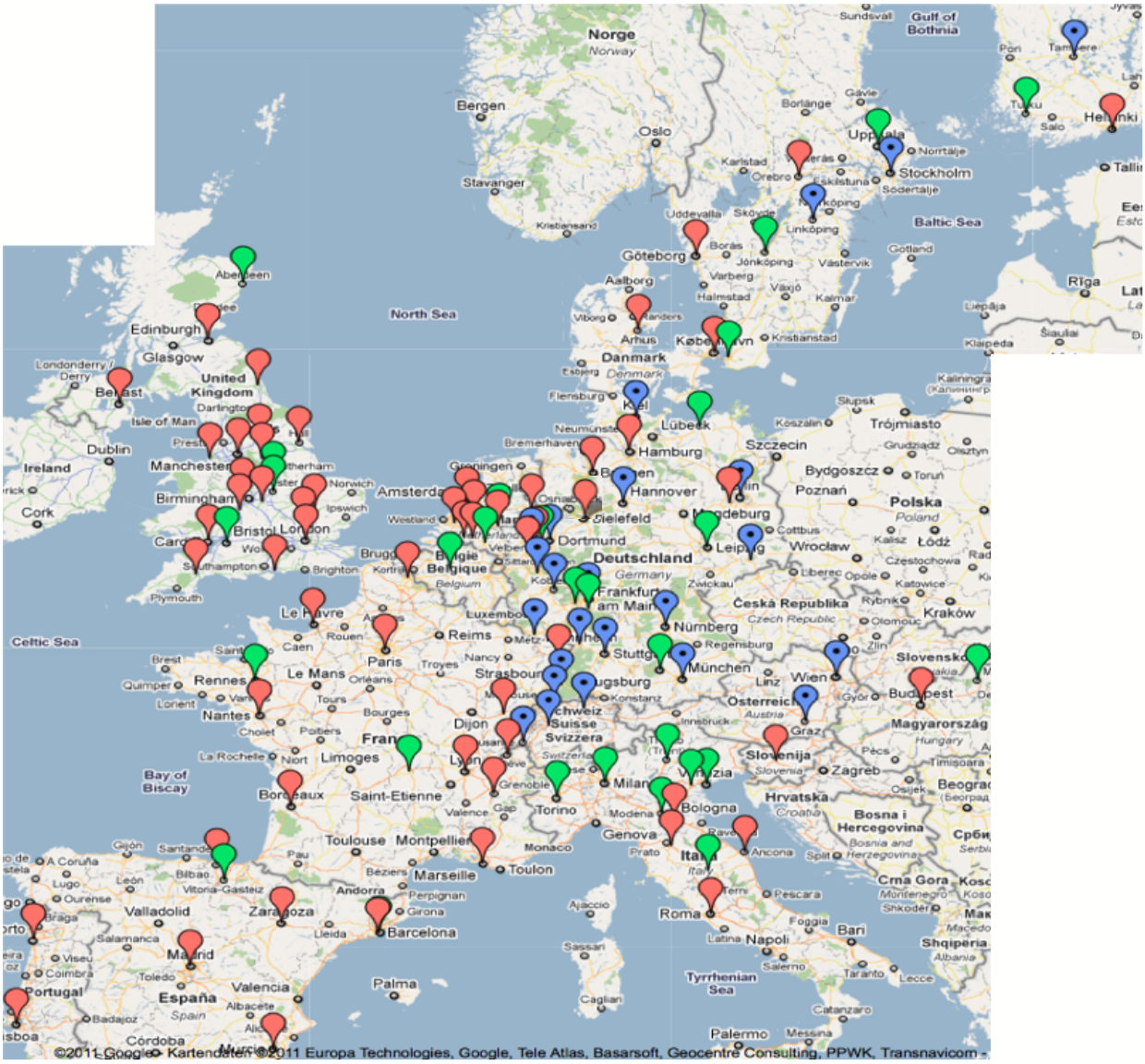
TMN membership also increases over the course of the three waves, however, with a markedly different progression. The number of members in the Climate Alliance for instance increased sharply from 5 in 1992 to 37 in 2001 (*see figure 3*). Then, however, the curve flattens between 2002 and 2009 where only 10 additional members joined the network. The patterns observed for CCP and energie-cités are less extreme in this respect, still, none of the networks affiliated more members after 2001 than before.

Table 2: Cities, Adoptions, and Descriptive Statistics

YEAR	CITIES	NOADOPT	HAZARD	CUMUL	SHARE
1992	Zürich, Basel, Frankfurt	3	0,010948905	3	0,010948905
1993	-	0	0	3	0,010948905
1994	Berlin, Saarbrücken, Tampere	3	0,011070111	6	0,02189781
1995	Kiel, Bern	2	0,007462687	8	0,02919708
1996	Dortmund, Freiburg, Graz, Hannover	4	0,015037594	12	0,04379562
1997	Stuttgart	1	0,003816794	13	0,047445255
1998	Dresden, Stockholm, Lausanne	3	0,011494253	16	0,058394161
1999	Bonn, Karlsruhe, Koblenz, Wien, Linköping, München	6	0,023255814	22	0,080291971
2000	Nürnberg	1	0,003968254	23	0,083941606
2001	Mülheim	1	0,003984064	24	0,087591241
2002	Bruxelles Bochum, Barcelona, Darmstadt, Modena	5	0,02	29	0,105839416
2003	Clermont-Ferrand, Torino, Venezia, Trento, Eindhoven, Malmö, Leicester, Aberdeen	8	0,032653061	37	0,135036496
2004	Augsburg, Rennes, Arnhem, Jönköping, Bristol	5	0,021097046	42	0,153284672
2005	Mainz, Rostock, Leipzig, Perugia, Miskolc, Uppsala, Turku	7	0,030172414	49	0,178832117
2006	Vitoria, Padova, Milano, Nottingham	4	0,017777778	53	0,193430657
2007	Hamburg, Potsdam, Paris, Lyon, Nantes, Bologna, Rotterdam, Utrecht, Nijmegen, Ljubljana, Helsinki, London, Edinburgh	13	0,058823529	66	0,240875912
2008	Arhus, Düsseldorf, Bielefeld, Bremen, Madrid, Murcia, Lille, Besancon, Grenoble, Marseille, Firenze, Ancona, Amsterdam, Tilburg, Enschede, Breda, Lissabon, Göteborg, Cardiff, Newcastle, Cambridge, Exeter, Portsmouth, Coventry, Wirral	25	0,120192308	91	0,332116788
2009	Kobenhavn, Essen, Zaragoza, Bilbao, Hospitalet, Strasbourg, Bordeaux, Le Havre, Budapest, Porto, Örebro, Belfast, Leeds, Manchester, Sheffield, Stevenage, Worcester, Wolverhampton, Kingston, Génève, Roma	21	0,114754098	112	0,408759124

Source: own data; noadopt indicates the number of adoptions per year; hazard indicates the yearly hazard rate; cumul shows cumulated adoptions; and share indicates the share of adopters among all cities in the data set.

Figure 2: Geographical Distribution of Adoptions

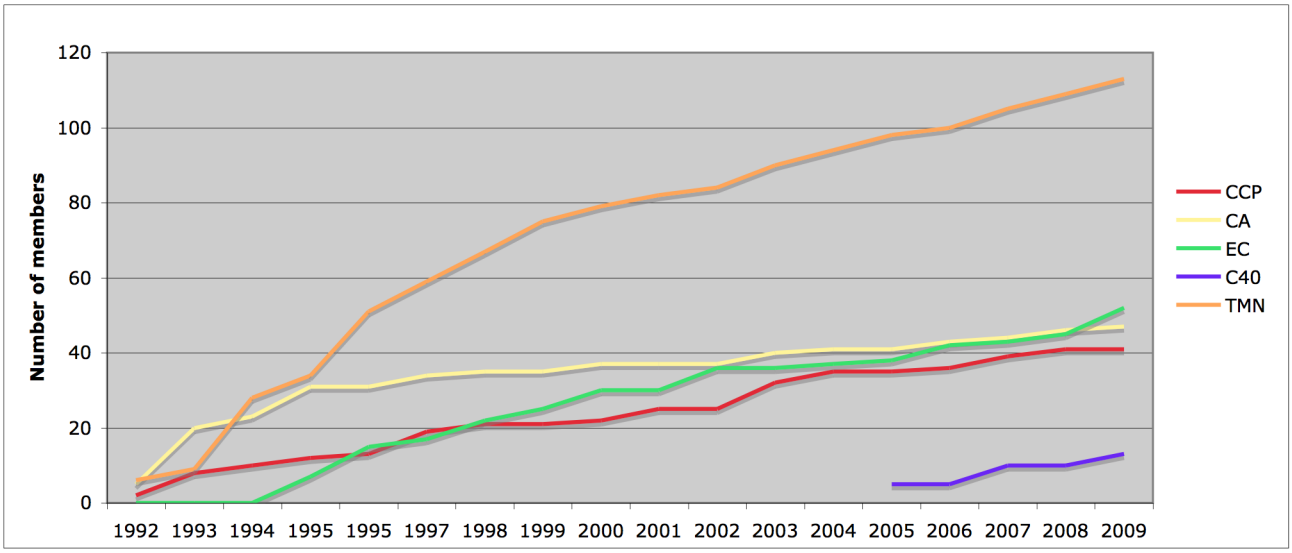


Source: Google Maps/ own data. Blue dots indicate first wave adopters, green dots indicate second wave adopters, and red dots indicate third wave adopters. The green dot for Barcelona is almost entirely masked by the red dot for Hospitalet.

Part of the slow down may be due to saturation at least in Western Europe, however, another explanation might also be competition coming from newer initiatives such as C40, which increased membership from 5 European cities in 2005 to 13 in 2009, or the Covenant of Mayors, which was set up by the EU in 2008 and already affiliates 2181 members in 2011 (Newell & Bulkeley 2010:60, Kern & Alber 2009:22, COM 2011d). In total, the share of cities that participated in at least one TMN increased from 2,2% in 1992 to 30% in 2001, and subsequently to 41,2% in 2009. These figures underline once again that overall network expansion slowed down after 2001 and that differences in the speed of TMN expansion after that date are mostly due to cit-

ies joining a second network. Interestingly, the share of cities participating in networks (41,2%) and those having adopted a local climate strategy in 2009 (42%) are almost identical, even though dissemination patterns had diverged quite remarkably over the course of the observation period.

Figure 3: Development of TMN Membership 1992-2009



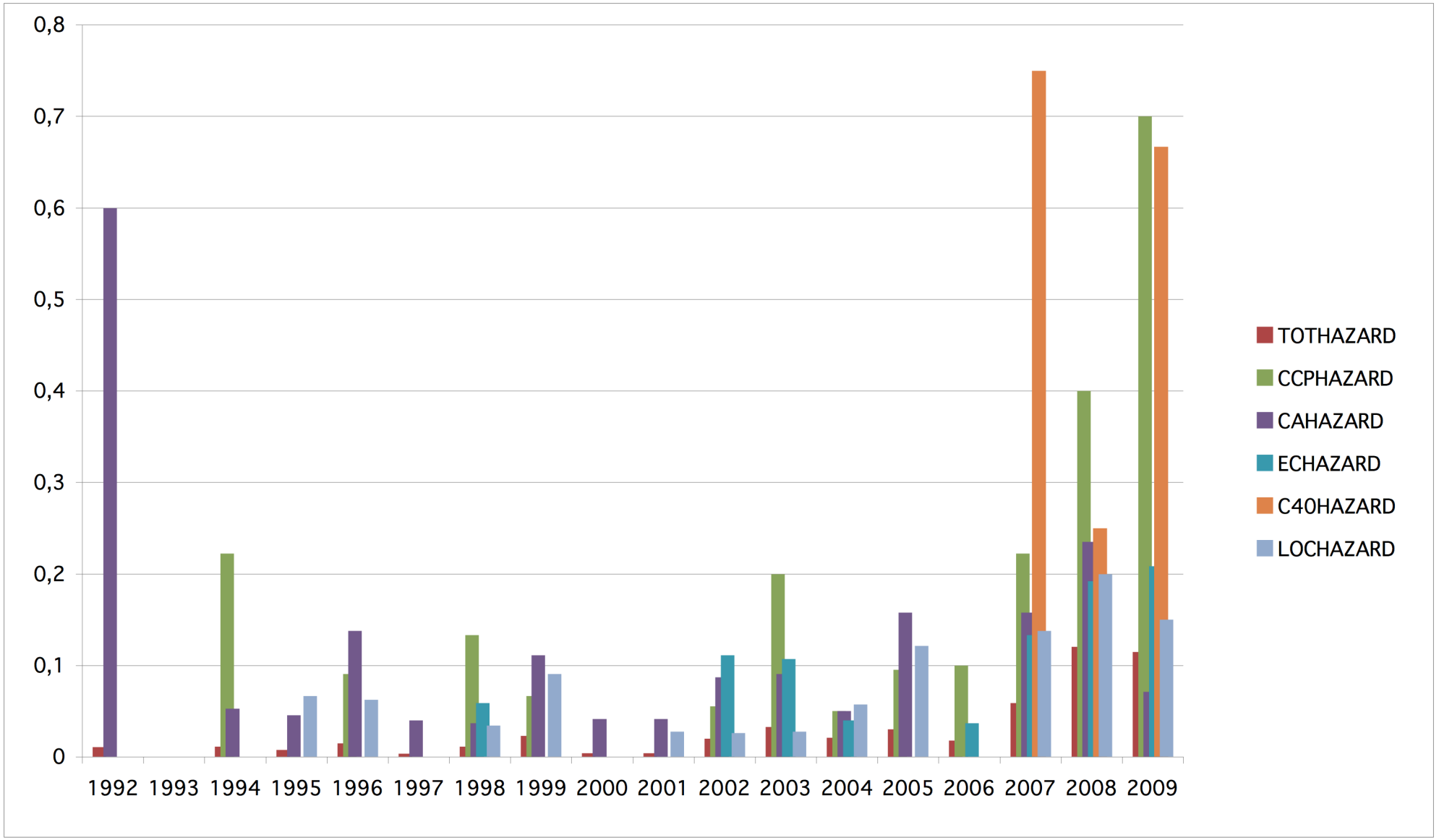
Source: data provided by TMN secretariats and retrieved from (C40 2011g).

A first hint towards the significance of TMNs results from the comparison of network hazard rates with the hazard rate observed among cities located in proximity to a pioneer, and the baseline hazard (*see section 4.2.1*). As one can see in *figure 4*, all the incorporated dummy variables outperform the baseline hazard in every year of the observation period. Hence, the local climate strategy concept diffused faster among TMN members and neighboring cities of a pioneer than among all cities in the sample. Furthermore, when comparing average hazard rates for TMN members and cities located close to a pioneer, it becomes clear that all but one network have consistently beat geographic proximity in the acceleration of diffusion (*see table 3*). CCP members for instance were more than twice as likely to introduce a local climate strategy in any year of the observation period than neighbors of a pioneer. In specific years, the likelihood of cities participating in the Climate Alliance, CCP, or C40 to adopt a local climate strategy even rose above 60%. These very high values are either the result of a few initial members adopting action plans quickly after network foundation, or are caused by a significant reduction of the size of the risk set at the end of the observation period, where most of the network members had already adopted a local climate strategy. In 2009, for instance, only 10 CCP members were left in the risk set and 7 out of these adopted a local climate strategy that year. Similarly, in

1992 the Climate Alliance had 5 initial members among cities in the sample, three out of which introduced an action plan the same year. As these indicative results were obtained by manually calculating hazard rates without regard to other covariates in the data set, though, they are only of descriptive value and cannot serve as a proof of causality.

In sum, this section has given an overview over the temporal and geographical distribution of the dependent variable, the development of overall membership in TMNs, and the hazard rates of specific populations such as TMN members and cities located in proximity to a pioneer. Whereas the presented measures have descriptive value and facilitate the interpretation of results from inferential statistics, they cannot confirm causal relationships among covariates. The outcomes of the inferential test of hypotheses that does provide significance levels for independent variables will be discussed in the next section.

Figure 4: Visual Representation of Hazard Rates Listed in Table 3



Source: own data

Table 3: Hazard Rates for TMNs, Neighbors of Pioneers, and Baseline Hazard

YEAR	TOTHAZARD	CCPHAZARD	CAHAZARD	ECHAZARD	C40HAZARD	LOCHAZARD
1992	0,010948905	0	0,6	0	0	0
1993	0	0	0	0	0	0
1994	0,011070111	0,222222222	0,052631579	0	0	0
1995	0,007462687	0	0,045454545	0	0	0,066666667
1996	0,015037594	0,090909091	0,137931034	0	0	0,0625
1997	0,003816794	0	0,04	0	0	0
1998	0,011494253	0,133333333	0,037037037	0,058823529	0	0,034482759
1999	0,023255814	0,066666667	0,111111111	0	0	0,090909091
2000	0,003968254	0	0,041666667	0	0	0
2001	0,003984064	0	0,041666667	0	0	0,027777778
2002	0,02	0,055555556	0,086956522	0,111111111	0	0,026315789
2003	0,032653061	0,2	0,090909091	0,107142857	0	0,027777778
2004	0,021097046	0,05	0,05	0,04	0	0,057142857
2005	0,030172414	0,095238095	0,157894737	0	0	0,121212121
2006	0,017777778	0,1	0	0,037037037	0	0
2007	0,058823529	0,222222222	0,157894737	0,133333333	0,75	0,137931034
2008	0,120192308	0,4	0,235294118	0,192307692	0,25	0,2
2009	0,114754098	0,7	0,071428571	0,208333333	0,666666667	0,15
Average	0,028139373	0,129785955	0,108770912	0,049338272	0,092592593	0,055706437

Source: own data; tothazard indicates the baseline hazard, lochazard indicates the hazard rate for neighbors of pioneering cities.

6.2 Inferential Statistics

Overall, the EHA model generated highly significant results for most of the variables operationalized in section 5. Based on these results seven out of the fourteen hypotheses derived in sections 3 and 4 can be confirmed. These include most of the hypotheses about TMN impact and all of the hypotheses concerning the coordinative effect of decisions made by superordinate governments. In contrast, all hypotheses concerning the impact of geographic proximity have to be rejected. Given that proximity is often considered a prerequisite for information exchange among cities (Shipan & Volden 2008, Kern et al. 2007), this further underlines the significance of TMNs for the diffusion of local climate strategies among European cities.

Table 4: Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	CCP[22]	2,389	,433	30,471	1	,000	10,906
	CA	2,850	,514	30,701	1	,000	17,291
	EC	2,027	,444	20,836	1	,000	7,590
	C40	,928	,697	1,774	1	,183	2,530
	NETYEARS	-,100	,036	7,915	1	,005	,905
	NETPEERSKAT			2,160	2	,340	
	NETPEERSKAT(1)	,747	,509	2,153	1	,142	2,111
	NETPEERSKAT(2)	,139	,366	,144	1	,705	1,149
	LOCPIO	-,616	,385	2,552	1	,110	,540
	LOCLEARN	,199	,110	3,271	1	,071	1,221
	LOCPEERSKAT			2,731	2	,255	
	LOCPEERSKAT(1)	,035	,401	,008	1	,930	1,036
	LOCPEERSKAT(2)	-,518	,362	2,052	1	,152	,595
	NATCOERCE	2,152	,364	34,864	1	,000	8,603
	NATLEAD	,535	,176	9,283	1	,002	1,707
	NATFUND	,447	,157	8,089	1	,004	1,564
	EUFUND	,257	,074	12,195	1	,000	1,294
	GDPCAP	,000	,000	12,596	1	,000	1,000
	NRG	,013	,014	,806	1	,369	1,013
	COASTAL	-,755	,279	7,319	1	,007	,470
	DISDEATH	,000	,000	,013	1	,910	1,000
	Konstante	-7,420	,855	75,291	1	,000	,001

a. Variables entered on Step 1: CCP, CA, EC, C40, NETYEARS, NETPEERSKAT, LOCPIO, LOCLEARN, LOCPEERSKAT, NATCOERCE, NATLEAD, NATFUND, EUFUND, GDPCAP, NRG, COASTAL, DISDEATH.

6.2.1 Results for TMN Impact (H1-H4)

H1 can be partially confirmed, since membership in three out of the four TMNs significantly increases the likelihood of a city adopting a local climate strategy. Whereas the indicators of membership in CCP, the Climate Alliance and energie-cités are all highly significant, the C40 variable only reaches a significance level of .183, which implies that the null hypotheses, coincidence, cannot be rejected. The most likely explanation for this comes in three legs. First of all, six out of the thirteen

[22] Variables in blue feature a significance level of below ,050.

European C40 members had already adopted a local climate strategy prior to their accession to the network. Out of the remaining seven only one city did not participate in another TMN as well and this city, Warsaw, had not yet adopted a local climate strategy at the end of the observation period.

In contrast, membership in one of the other three TMNs increases the likelihood of a city adopting a local climate strategy by factors of 10,906 (CCP), 17,291 (Climate Alliance), and 7,590 (energie-cités), respectively. Hence, a member city of the Climate Alliance, for instance, is 17 times more likely to introduce an action plan than the average city in the sample. In comparison to the other indicators, these values imply that membership in CCP or the Climate Alliance has the largest impact on likelihood out of all variables in the model. In turn, the influence of membership in energie-cités lags behind the other two, which at first sight seems to imply that *H2* can be confirmed. As expected, those TMNs that deploy strategies aiming at the acceleration of both learning and imitation processes have a larger influence on their members' policy choices than TMNs that only promote learning. However, it is puzzling in this respect that the variables that were set up to measure the relevance of imitation processes inside networks do not yield the expected results.

Thus, a city's years of membership in a TMN are highly significant, however, their effect goes in the opposite direction of what had been expected. Rather than increasing the odds of adoption as assumed in *H3*, every additional year of adhesion reduces this likelihood by 9,5%. This implies that new entrants either adopt a local climate strategy within the first years of membership, or become less and less interested in network goals the longer they adhere. Hence, rather than being urged to adopt a local climate strategy by the desire to conform to normative expectations, laggards seem to simply ignore network dealings when their behavior is in contradiction to prevalent standards of appropriateness. This result backs up the finding of Kern & Bulkeley (2009:329) that TMNs are mostly "networks of pioneers for pioneers" made up of a hard core of active cities and a periphery of passive cities that do not significantly change their behavior after accession. Hence, *H3* cannot be confirmed.

Furthermore, the variable measuring the impact of norm cascades triggered by the attainment of a critical mass of adopters among network members does not make a difference. From the significance level of NETPEERSKAT (2) one can deduce that there is a chance of more than 70% that observed interrelationships with variance on the dependent variable are the result of coincidence. Accordingly, *H4* stating that the attainment of a critical mass of at least 30% of adopters among network members increases the likelihood of a city adopting a local climate strategy has to be rejected.

Given that both variables measuring peer pressure do not yield the expected results, the acceleration of imitation processes does not seem to be the mechanism through which TMNs steer their members towards network goals. Hence, the application of

benchmarking strategies fostering imitation cannot be the reason why CCP and the Climate Alliance have been more successful in promoting local climate strategies than energie-cités. Two alternative explanations seem possible. First of all, CCP and especially the Climate Alliance might simply put more emphasis on the acceleration of learning, for example through the set up of abstract methodologies that guide members towards the adoption of a local climate strategy. This seems plausible given that the adoption of an action plan is a central aspect of membership in both networks (*see section 3.3*). Accordingly, efforts by CCP and the Climate Alliance to impart information about their elaboration should be more intense than efforts by energie-cités, which assists members in the set up of an action plan but has neither built an abstract methodology nor made adoption a pivotal element of membership (*see section 3.3*). The second reason might be that energie-cités' members are mostly French cities (Kern & Bulkeley 2009:317), which have little leeway for the elaboration of distinct policy initiatives given the centralized structure of the French state.

What has to be retained from these results is first of all that three out of the four TMNs are highly successful in accelerating the diffusion of local climate strategies. Whereas members of the Climate Alliance are 17 times more likely to adopt an action plan than the average city in the sample, membership in CCP and energie-cités multiplies the odds ten- and sevenfold, respectively. With the exception of national coercion, which has been geographically and temporally bound, no other variable matches any of these values. This confirms the assumption made in section 3.3 that TMNs, engaging in governance by diffusion, were the decisive driver behind the spread of local climate strategies among European cities.

Furthermore, as indicators measuring the relevance of imitation processes inside networks did not generate the expected results, TMNs can be assumed to mostly exert their influence on members via the acceleration of learning processes. Consequently, the enhancement of channels of communication (1), the elaboration and provision of information (2), and the improvement of the diffusability of the local climate strategy concept (3) by networks can be considered the most relevant strategies of governance by diffusion for the spread of local action plans between 1992 and 2009. However, laggards can often not be reached by networks via these strategies, which leads to a division of members into a hard core of active cities and a periphery of passive ones that become less and less likely to change their behavior the longer they adhere to the network (Kern & Bulkeley 2009:329). Accordingly, governance by diffusion seems to only work with constituents that are at least in part intrinsically motivated to commit themselves to local climate protection.

6.2.2 Results for Regional Clusters (H5-H7)

Variables measuring the influence of regional clusters on the likelihood of a city adopting a local climate strategy were incorporated into the model in order to control for diffusion processes that might proceed without the mediation of TMNs. The assumption on which these variables are based is that most cities have only limited capacities to participate in transnational relations and thus only take information available within their immediate periphery into account (*see section 4.2.1*). However, the results show that local climate strategies did not diffuse along regional clusters. As a matter of fact, all three variables, measuring the impact of a pioneering city close by (LOCPIO), the availability of information from direct neighbors (LOCLEARN), and the peer pressure exerted by regional peers (LOCPEERSKAT), yield significance levels that confirm the null hypothesis. Accordingly, *H5-H7,* stating that neighboring pioneers, the absolute number of previous adopters within a city's proximity, and the attainment of a critical mass of adopters in the neighborhood increase the likelihood of a city adopting a local climate strategy, have to be rejected. These findings once again underline the relevance of TMNs for the diffusion of local climate strategies, as they show that the spread of this policy instrument is predominantly driven by information flows and communication within networks.

6.2.3 Results for Coordination on Superordinate Political Levels (H8-H11)

Unlike the aforementioned regional clusters, coordination emanating from decisions on superordinate political levels consistently increases the likelihood of a city adopting a local climate strategy. What has to be kept in mind though is that three out of the four variables measuring coordination from above use national data to explain behavior on the local level. Therefore, their significance may be overstated.

Out of the four variables, the most relevant influence is exerted by mandatory requirements imposed on cities by their national governments. As NATCOERCE indicates, these increase the odds of adoption by a factor of 8,603, which comes close to the impact of CCP membership, at least on paper. Accordingly, *H8* can be confirmed. As mentioned in *section 5.2.3*, only two national governments made the elaboration of local climate policy mandatory for city officials. These are France and Great Britain who both introduced compulsory requirements in 2008. Despite their limited application, the overall effect on the dissemination of local climate strategies in Europe is remarkable. As *table 2* shows, 52% of the total number of adoptions of local climate strategies in 2008 and 2009 happened either in Great Britain or in France, which implies that an important part of the third wave of dissemination is not the result of a diffusion process but of coercion emanating from national governments. Accordingly, TMNs did not play the decisive role in this phase, which becomes even more obvious, when taking into account that the expansion of TMN membership

slowed down after 2001 (*see figure 3*), and that additional years of network membership have been found to decrease the likelihood of a city adopting a local climate strategy (*see section 6.2.1*). This implies that those late coming network members in France and Great Britain that adopted action plans in the last two years of the observation period were primarily pushed by national governments instead of TMNs. It thus seems as if TMNs have been more successful in motivating and enabling pioneers to become active on climate change than in pushing laggards, even within networks, towards minimal commitment. This implies that networks and the strategies of governance by diffusion they deploy need to be supplemented by more interventionist measures if truly widespread municipal commitment is to be achieved.

In addition to exerting coercion, which runs counter to the logic of diffusion, national governments have exercised coordinative influence by means that facilitate such processes. As the result for NATLEAD shows, national commitment to climate protection, measured by the introduction of a national climate strategy, a feed-in-tariff, and a carbon tax, increases the likelihood of a city located in the corresponding country to adopt a local climate strategy by 70% per adopted policy. Hence, cities located in countries that have adopted all of these policies are more than twice as likely to introduce an action plan as the average city in the sample. *H9* can thus be confirmed. Quite surprisingly, these values indicate that leadership is even more important to cities than the provision of resources by the national government, which, in accordance with *H10*, increases the odds of adoption by only 56% per unit. Accordingly, a city's capacity to take up policy innovations in the area of climate protection does not only depend on know-how and financial support, but also on leadership by example and ideational encouragement through the national government.

Next to support coming from the national government, cities are also dependent on funding provided by the EU. As EUFUND indicates, every EU funded, climate related project that a city participates in increases the odds of it adopting a local climate strategy by 29,4%. Accordingly, *H11* can also be confirmed. What has to be considered here, though, is that TMNs often facilitate the access to EU funding, as they enable members to find partners for joint projects (*see section 3.2.2*). Hence, those cities that have repeatedly received financial support from the EU are likely to also be TMN members. This implies that the joining of forces between different actors that combine their respective capacities has the highest chance of yielding tangible progress in the area a local climate protection.

In sum, superordinate political levels can be assumed to have had a substantial impact on the dissemination of local climate strategies among European cities. This conclusion holds even when the potential overestimation of variables made up of national data is taken into account, since significance levels are unequivocal and nowhere near a p-value of 5%. Especially the third wave of adoptions is in large part due to mandatory requirements imposed by national governments in France and

Great Britain, which implies that diffusion has not been the only process driving dissemination of the course of this period. In addition, leadership and resources made available by national governments have been found to accelerate the diffusion of local climate strategies, as well as funding provided by the European Union, which is often channeled to cities via TMNs that facilitate the teaming up with project partners.

6.2.4 Results for Local Determinants (H12-H14)

The results for local factors yield a mixed picture. A city's financial resources, measured by local GDP per capita, are highly significant, however, a one-euro increase in GDP only entails a minimal increase in the likelihood of a city adopting a local climate strategy. This increase is so small that it cannot be displayed by the three decimals of parameters in *table 4*. Hence, minimal differences in GDP do not have much of an impact, whereas values highly above average can be expected to have a noticeable impact on the odds of adoption. Accordingly, *H12*, which predicts a positive relationship between financial resources and the likelihood of a city adopting a local climate strategy, can be confirmed.

In contrast, the development of energy prices does not have a significant effect on local governments' decisions to introduce a climate strategy. Hence, the assumption embodied in *H13* that cost savings constitute an important motivator for local action on climate change has to be rejected. Likewise, the expected impact of a city's perceived vulnerability to the adverse impacts of climate change cannot be confirmed. Rather than increasing the likelihood of a city introducing an action plan, coastal status decreases the odds of adoption by 53%, which simply reflects that more in-land cities have adopted local climate strategies than coastal cities have. Furthermore, the number of disaster deaths in the two years prior to a given city-year is completely irrelevant for the decision to introduce a local climate strategy. Accordingly, local problem pressure does not seem to a major concern for European cities active on climate change, which implies to the rejection of *H14*.

In sum, these local factors do not exert the same impact as external influences on the odds of a city adopting a local climate strategy. The provision of external resources for instance has been found to be much more important than differences in local financial resources. In addition, neither the size of cost savings, nor local problem pressure motivate city governments as much to become active on climate change as TMN membership and encouragement coming from national governments.

In order to test the robustness of these statistical findings and to further approximate the causal processes linking variables, two brief case studies will be conducted in the following section. With Hanover and Offenbach a frontrunner and a latecomer

were selected for in-depth analysis in order to account for differences in motives between these two groups, which most theories of diffusion expect (*see section 2.2.2*).

7 Case Studies

The case studies of Hanover and Offenbach are both primarily based on interviews conducted with city officials currently or formally responsible for the elaboration of climate policy in the respective municipalities. Both interviews were based on a compendium of questions that largely overlapped and that interviewees received in advance (*see annex II*). Information on Hanover was obtained in an interview with Reinhard Martinsen, who had been the head of the department for preventive environmental protection and environmental planning in Hanover's city administration from 1987 to 1995. In addition, he has also led the administrative working group preparing the EXPO 2000 from 1991 to 1995.[23] Information on Offenbach was obtained in an interview with Sabine Swoboda, who has been subject specialist on climate protection, renewable energies, and nature and landscape conservation in Offenbach's city administration since 2006, and with Mathias Trümner-Friese, who is the personal assistant to Offenbach's mayor responsible for the environment.[24] Unless indicated otherwise, evidence cited in the case studies is based on these interviews.

7.1 Hanover: From Mediocrity to Champions League

Hanover introduced its first local climate strategy within the first wave of adoptions in 1996 and can thus be considered a frontrunner in this respect (Hanover 2011a). The council decision to elaborate this action plan was already taken in 1990, which underlines that Hanover had tackled the issue prior to the UN's Rio Conference in 1992, which is generally assumed to be the starting point for climate policy (Kern & Alber 2009:17). Following this council decision, in 1994 the city's central energy office that had already been in place since the late 1980s was relabeled "central office for climate protection" and charged with the elaboration of the city's first action plan, which focused on initiatives in the areas of mobility, housing, and business and set the rather ambitious reduction target of 25% by 2005. However, with an actually achieved reduction of 7,5% in 2005, this target was missed by far (Hanover 2011b).

The basic preconditions for Hanover's early commitment to climate protection were created by two distinct developments. First of all, the Green party joined the ruling coalition in 1987 and worked towards the establishment of an environmental department, which had not been part of Hanover's city administration before. Accordingly, mostly external staff was recruited for this department and these experts imported their environmental know-how into the city administration. Furthermore, the Red-

[23] The interview was conducted and recorded on skype on January 12th 2011.

[24] The interview was conducted and recorded on skype on February 4th 2011.

Green coalition in the city council, flanked by an active scene of citizen initiatives, constantly pushed the administration as well as Hanover's utilities towards more environmentally friendly practices, for example by making sustainability the general principle for all city programs, and by obliging the local energy supplier to grant decentralized cogeneration units access to its electricity grid.

The second development that raised widespread awareness for sustainability issues in Hanover was the city's application to host the EXPO 2000, which was the first new type of world exhibition to be held, meaning that this fair was organized around a central motto defined by the *Bureau International des Expositions*. For the EXPO 2000 this motto was "Man, Nature, Technology – a New World Begins," which was supposed to motivate exhibitors to present innovative solutions for the reconciliation of these three aspects. Hence, in order to be considered as a host, Hanover had to prove progressiveness and commitment to sustainable development early on. Furthermore, after Hanover had been selected in 1990, city officials had the impression that the world was watching them and thus decided to further enhance the city's progressive image.

> "Die Stadt hat sich dann in dem Wissen, dass die Welt auf Hannover schaut, bemüht, den Leitgedanken der Nachhaltigkeit in die Praxis umzusetzen."

7.1.1 The Impact of TMNs

In the context of the EXPO application, leading city representatives, including the former chief municipal director Jobst Fiedler and the head of the environmental department Hans Mönninghoff, got in contact with their counterparts from Toronto, the main competitor for the organization of the EXPO, which had already been involved in projects and consultations that eventually led to the establishment of ICLEI, and also became the organization's first seat (ICLEI 2011b). Due to these personal acquaintances, Hanover eventually became one of the founding members of ICLEI and was also among the 14 initial participants of the network's CO_2 Reduction Project, the predecessor of the CCP campaign (Betsill 2001b:1). At the same time, the city was also a founding member of the Climate Alliance, however, city officials in Hanover valued their membership in ICLEI more, as it granted them access to expertise from the then leading cities in Canada and Scandinavia. Or as Mr. Martinsen put it:

> "Über ICLEI eher als über das Klimabündnis hatte Hannover den internationalen Draht zu den Pionieren in Kanada und Skandinavien. Daher kamen die Impulse vor allem von ICLEI. Es gab zwar schon Ökoinstitute und das Wuppertalinstitut, aber die hatten noch keine wirkliche Erfahrung im Bereich lokaler Klimaschutz."

Accordingly, in the early stages the environmental department and local politicians, who were already sensitized to sustainability issues, mainly drew their specifically climate related expertise from ICLEI and the cities with whom they cooperated in the

urban CO_2 reduction project.[25] This applies especially to know-how related to the elaboration of a local climate strategy, as the clearly stated aim of this two-year initiative was to "develop comprehensive local strategies to reduce emissions of greenhouse gases, especially CO_2" (ICLEI 1993:1-2). The means by which this should be achieved were a range of "policy workshops, technical consultations, and research drawing on the data gathered by each municipality" (ibid.). Hence, learning was definitely the main purpose of this project, and also the main reason for Hanover to liaise more intensively with ICLEI than with the Climate Alliance. Furthermore, the explicit interest in initiatives elaborated outside Germany underlines that cities in the transnational sphere rather than direct neighbors were perceived as relevant sources of information on policy innovation.

The following statement by Mr. Martinsen on Hanover's relation to other frontrunners also reflects the importance of learning and information exchange for the cohesion of this group of pioneers:

> "Es gab eine Art Wettbewerb zwischen diesen Städten in dem es darum ging, wer es schafft, Klimaschutz am Besten umzusetzen. Dieser war allerdings eher von Kooperation, Erfahrungsaustausch und Interesse als von Konkurrenz geprägt. Wer ist der Beste gab es nicht."

As it seems, cities participating in the urban CO_2 reduction project had the aim to improve their performance together by pushing each other towards innovation and by sharing experience. Hence, the type of competition described here did not force city governments to adapt their behavior to altered conditions against their will (Elkins & Simmons 2005:39). Rather, they took the welcome challenge to swim with the best and to elaborate initiatives that could arouse the interest of likeminded policymakers. Hence, cities did not only join to draw lessons but also to underline their innovative capacity by providing others with expertise. Thus, if competition took place, it was competition for recognition among peers.

Next to learning, this recognition aspect seems to have been the second incentive for Hanover to participate especially in transnational projects on climate protection rather than in regional or national ones. As Mr. Martinsen affirmed:

> "Mit Umweltschutz kann man das Stadtimage aufbessern. Hannover ist von der Größe, Bedeutung usw. eher eine mittelmäßige Stadt, aber mit der internationalen Ausrichtung beim Umweltthema konnte sich Hannover in die Champions League hocharbeiten."

Hence, the commitment to climate protection and its celebration on the transnational scene was used by Hanover to get rid of its mediocre image and to underline

[25] According to Betsill (2001b:1), cities participating in the urban CO_2 reduction project were Ankara, Bologna, Chula Vista, Copenhagen, Dade County, Denver, Hanover, Helsinki, Minneapolis, Portland, Saarbrücken, Saint Paul, and Toronto.

that the city was far more progressive than commonly assumed. Accordingly, ICLEI/CCP also served as a platform on which Hanover could present itself and enhance its reputation. As alluded to above, a progressive image was desirable due to the international attention caused by the organization of EXPO 2000. In addition, it was also perceived as a crucial factor for the attraction of business and qualified personnel to the city:

> "Hannover war mal Industriestadt, aber heute sind 84% der Arbeitsplätze im Dienstleistungssektor. Hier will man nicht nur die einfachen Jobs in der Stadt haben, sondern auch Wissenschaft und Forschung stärken. Wenn es attraktive Arbeitsplätze in den Bereichen Nachhaltigkeit, Wissenschaft und Forschung gibt, ist das ein Faktor für die Stadtqualität."

The third aspect of TMN membership next to learning and the enhancement of the city's reputation that motivated or enabled Hanover to become active on climate change was the access to EU funding. As Mr. Martinsen affirmed, thanks to contacts arranged by ICLEI and the Climate Alliance, the city could raise more than 16 million euros through the participation in EU sponsored projects in the 1990s. This is confirmed by research in the EU's databases, which showed that Hanover had participated in two projects in collaboration with Utrecht, Lisbon, and Palma de Mallorca prior to the adoption of its local climate strategy in 1996 (CORDIS 2011). These projects were funded under the EU's THERMIE program and concerned energy extensive planning of cities as well as the mobilization of CO_2 reduction potentials in residential buildings. As Mr. Martinsen emphasized, the partners for these projects were found via ICLEI.

In sum, membership with ICLEI/CCP promoted Hanover's commitment to climate protection in three different ways. First of all, close collaboration with other pioneering cities in the urban CO_2 reduction project, the predecessor of the CCP campaign, made information about how to tackle climate change at the local level available to local politicians and the city administration. Secondly, ICLEI served as a platform on which commitment to climate protection could be celebrated in order to enhance the city's reputation vis-à-vis its peers in the transnational arena and in relation to the general public. Thirdly, the city gained access to EU funding via the teaming up with partners from the network.

7.1.2 Influence of Neighbors and Higher Political Levels

As Hanover is one of the initial pioneers of local climate protection, the city became active on the issue before the national government, another city close by, or the Land had elaborated meaningful programs.[26] Accordingly, it had not been encouraged

[26] This information is taken from the data set.

to become active on climate change by the national government or any of the other actors. Hence, instead of providing inspiration, the national government was rather perceived as lagging behind own initiatives, whereas the Land was mostly considered obstructive.

> "Die Städte sind näher am Nachhaltigkeitsziel dran als die Bundesregierung. Der Rat für nachhaltige Entwicklung lädt die Städte mittlerweile sogar zu Konsultationen ein."

> "Das Land arbeitet eher kontraproduktiv. Es möchte zum Beispiel die Umweltzone in Hannover wieder verbieten."

As discussed in the previous subsection, the city thus sought information and acknowledgment among likeminded peers in the transnational sphere. In addition, it closely followed international developments and aligned its own actions to postulates coming from this level, for example by adopting a reduction target for its first local climate strategy that had been communicated during the Kyoto process.

> "Man hat sich immer an den globalen Zielen orientiert und dann versucht, diese für Hannover umzusetzen."

In addition, the European Union was an important reference point for Hanover, mostly because it incorporated sustainability as a general principle into its programs from an early stage and promoted environmental objectives that matched those of the city. Hence, Hanover could regularly obtain funding from the EU, and helped to implement its policy goals in return, shortcutting national and regional governments.

> "Die EU Fachprogramme haben sich schon sehr früh nach dem Leitbild der Nachhaltigkeit gerichtet. Es gab immer inhaltliche Übereinstimmungen zwischen EU Programmen und den hannoverschen Initiativen. Hier gab es eine direkte Verbindung, die die Landes- und Bundesebene überbrückt hat. Die Finanzierung durch EU Fördermittel hat auch dazu geführt, dass man indirekt die Ziele der EU auf lokaler Ebene umgesetzt hat. Die nationale Ebene wurde dadurch umgangen."

This statement once again emphasizes the prevalent perception of city officials in Hanover that the national government had not much to contribute to initiatives in the areas of climate protection and sustainability. Furthermore, it also points to an explicit EU strategy to govern past national governments and directly cooperate with municipalities that share its policy goals.

7.1.3 Local Factors

With a GDP per capita of 23300 € in 1996, Hanover was in the lower midfield of Western European cities in the data set (Eurostat 2011b). Despite this apparent lack of financial resources, the city was able to implement meaningful climate policies. One reason for this is that regular refurbishment of municipal buildings, including schools, kindergartens, and social housing is already provided for in the city's budget and can easily be implemented in accordance with the highest energetic standard, as cost savings set off initial investment rather quickly.

Furthermore, Hanover still owns its public utilities and can thus rely on their revenue and influence their investment decisions. With regard to emissions reduction, the utilities are the crucial instrument of local climate policy as they enable the city to decide on the expansion of combined power and heat supply and to order the modernization of power plants.

> "Das Hauptinstrument ist die Energiepolitik der Stadtwerke, die das Fernwärmenetz ausbauen, die spezielle Tarife anbieten und die Kraftwerkanlagen modernisieren um die Erreichung der CO2 Minderungsziele zu ermöglichen."

Given that public utilities can already make major progress on their own, the city itself does not have to rely on tax revenue to invest in climate protection. However, this cooperative stance of the city's energy supplier had to be fought for by the city council in general and the head of the city's environment department in particular.

> "Die Stadtwerke wurden durch schiebende und ziehende Maßnahmen in Richtung Nachhaltigkeit und Klimaschutz bewegt. Hans Mönninghoff war lange Zeit im Aufsichtsrat der Stadtwerke und hat das Thema dort durchgesetzt. Mittlerweile haben die Stadtwerke diese Themen zur Unternehmensphilosophie gemacht."

In addition, the city focused on the elaboration of individual demonstration projects that were partly EU funded and aimed at motivating private investors to improve energy efficiency on their part. These projects involved rather little investment from the city but had a large impact on investment decisions by private developers. An example for this is the creation of the new housing estate "Am Kronsberg", in which 80% of overall CO_2 emissions are avoided by improvements in insulation and heating.

> "Durch diese Standards, die dort gesetzt wurden, sind praktisch alle Neubauten in der Stadt auch nach diesen Standards gebaut worden, weil die Investoren sagen, was die dort können, können wir auch! Wenn sie vor Ort zeigen, was möglich ist hat dies eine Signalwirkung."

The second local factor in the data set, cost savings, played a role in the refurbishment of municipal buildings. More importantly, however, they also served as the prime argument of the proponents of local climate policy to convince parts of the city administration, local business and citizens of the merits of local climate protection. The central office for climate protection, for instance, mostly used the argument that the climate friendly solution is eventually also the cheaper one when advising other parts of the city administration on policy choice. Furthermore, the propensity of private investors to participate in demonstration projects was observed to increase with energy prices.

> "Außerdem wurden Investoren auch durch steigende Energiepreise motiviert, die dazu geführt haben, dass sich ein energieneutrales Haus schon nach sechs Jahren rechnet."

As it seems, pointing towards cost savings was the passe-partout solution when important stakeholders had to be persuaded to also commit to climate protection.

> "Es wurde immer über den Pfad, und kostet auch weniger, argumentiert."

In contrast to these local factors, perceived vulnerability to climate change has apparently not played a role, since it was not brought up by Mr. Martinsen when interrogated about the incentives for local action on climate change.

In sum, Hanover was able to finance climate protection because it implemented already planned refurbishments in accordance with high energetic standards, redirected investment priorities of its public utilities and elaborated demonstration projects that motivated private investors to become active on their part. Cost savings facilitated the compliance with highest energetic standards in refurbishments and served as main argument in the persuasion of municipal stakeholders. Perceived vulnerability did apparently not play a role.

7.1.4 Comparing Results

Overall, the case study of Hanover confirms some of the statistical findings but mostly brings up additional explanatory factors. As to TMN impact, it backs up the conclusion drawn in *section 6.2.1* that networks mainly influence their members via the acceleration of learning processes. Hanover mainly focused on its membership with ICLEI/CCP precisely because it facilitated access to expertise coming from pioneering cities in Canada and Scandinavia. Furthermore, the case study confirms the assumption by Kern & Bulkeley (2009:321) cited in *section 3.2.2* that strategies of funding and cooperation, or in Busch & Jörgens's terms the strengthening of capacities (6) (forthcoming:295), constitute a major incentive for local governments to participate in TMNs. In addition, Hanover's explicit focus on cooperation with pioneers in the transnational sphere confirms the finding in *section 6.2.2* that geographic proximity does not foster information flows in the area of local climate protection.

In contrast, the EHA model did not grasp competition for reputation among network pioneers, as all network members were assumed to be each other's peers. However, it seems as if pioneers tend to team up with other pioneers and only take policy adoption by these into account. Hence a 30% share of adopters among network members in general does not have any meaning for cities that are only focused on a certain subgroup. In addition, the relevance of economic benefits linked to a progressive reputation was not integrated into the EHA model as neither a city's image nor the relationship between image and increased attractiveness for business and skilled labor can be adequately measured.

Concerning the coordinative effect of superordinate governments, the results for Hanover show that pioneering cities tend to be less dependent on resources and leadership provided by national governments than the average city in the data set. Once again, this underlines the importance of transnational information flows among pioneering cities for the spread of knowledge and policy instruments in the earlier days of local climate policy. Another interesting finding is that municipalities have

indirectly reciprocated the EU's financial support, by allowing it to govern past national governments and to pursue its policy goals together with likeminded municipal governments.

As to local factors, the case of Hanover confirms that GDP per capita has a rather small impact on a city's capacity to act, as a range of strategies can be employed to implement climate policy in a budget friendly way, for example by ordering public utilities to rearrange their investment strategy or by motivating private investors. In Hanover's case the extent to which these were inclined to act was however highly dependent on energy prices, which contradicts the statistical finding that cost savings do not have an influence on local commitment to climate protection. In turn, perceived vulnerability was not mentioned as a potential motivator for local action on climate change, which confirms the results from the EHA model.

What is more, the case study of Hanover pointed towards the influence of the Green Party on the creation of permissive preconditions for local commitment to climate protection and to the importance of the city's application to host the EXPO 2000. Two explanatory factors that the model did not take into account at all.

7.2 Offenbach: Financial Constraints Are Not an Excuse

The City of Offenbach introduced its first local climate strategy in 2010 (Offenbach 2010). It is thus a third wave adopter and among the last German municipalities under study to launch a local action plan.[27] However, this does not imply that Offenbach had completely ignored climate protection before. The council decision to elaborate a climate strategy was already taken in 2006 (ibid.), and the city's earliest activities in this issue area date back to 1997 when Offenbach decided to join the Climate Alliance and elaborated a local agenda 21.[28] These activities coincide with the accession of the Green party to the city's coalition government and were actively promoted by it. In the following years, a range of individual projects was elaborated, including the set up of an energy saving initiative in 2003, in which the city and local craftsmen jointly offer advice on energy efficiency to citizens and other local businesses (Offenbach 2011a). In addition, in 2006 the city launched an initiative to install solar panels on all municipal roofs and invited citizens to tender certificates that grant a fixed share of the facilities' revenue (Offenbach 2011b). The latest major climate related project that Offenbach is involved in since 2009 is the "Rhine-Main Model Region for Electric Mobility" that investigates how different means of electric trans-

[27] Technically, Offenbach had thus been a non-adopter during the actual observation period of this study (1992-2009).

[28] The decision to join the Climate Alliance was made in 1997. Membership became effective in 1998.

port, ranging from hybrid busses to pedelecs, can be used to enhance urban mobility (Offenbach 2011c). The model region is financed by the Federal Ministry of Transport, Building, and Urban development and its headquarters are resident with Offenbach's public utilities (BMVBS 2011).

7.2.1 TMN impact

As mentioned above, Offenbach decided to join the Climate Alliance in 1997 and became a full member in 1998. Since then, the city participated in a couple of the network's working groups and engaged in more intense bilateral relations with cities from Japan, which were arranged by the Climate Alliance. In general, city officials consider participation in the network a good possibility to access information on local climate protection and to act in concert with other municipalities. As Mr. Trümner-Friese put it:

> "Die Mitgliedschaft im Netzwerk bietet den Expertinnen und Experten in den Kommunen die Möglichkeit, sich auszutauschen und von den gegenseitigen Erfahrungen zu profitieren, um gemeinsam mehr für den Klimaschutz zu erreichen."

In particular, Offenbach profited from know-how communicated within the network, as its secretariat as well as other network members supported the city in the elaboration of both its CO_2 inventory (Offenbach 2010:9). As Mr. Trümner-Friese affirmed:

> "Das Netzwerk ist eine Plattform auf der Wissensaustausch stattfindet. Auch die CO_2 Bilanz ist in Zusammenarbeit mit anderen Netzwerkmitgliedern entstanden."

This exchange of knowledge mostly happened via the network's issue specific working groups. For instance, Offenbach could draw on its participation in a joint study group of 13 municipalities that tested a new type of CO_2 inventory and exchanged their respective experiences. As Mrs. Swoboda pointed out:

> "Es gibt einen regen Erfahrungsaustausch über die Netzwerke. Man orientiert sich an anderen Beispielen und überlegt, ob etwas übernommen werden kann. Offenbach war zum Beispiel eine der 13 Testkommunen für die Entwicklung des CO2 Bilanzierungstools 'Ecoregion.' Die Stadt hat in der entsprechenden AG mitgearbeitet und das Tool in Zusammenarbeit mit anderen Mitgliedern weiterentwickelt."

In addition, Offenbach also joined the Climate Alliance's working group on electric mobility, as it was interested in related initiatives outside the Rhine-Main Model Region that could impart information on how to deal with specific regulatory details. Mr. Trümner-Friese sums up the importance of rational learning in this respect:

> "Welche Infrastruktur muss in den Städten geschaffen werden, damit Elektromobilität funktioniert? Da gibt es viele kleine Fragen in der Praxis auch in Bezug auf die StVo, die geklärt werden müssen."

This underlines that TMN membership influenced Offenbach primarily by providing the opportunity to draw lessons from previous experience in the set up of local climate strategies, CO_2 inventories, and the necessary infrastructure for electric mobility. That the focus of the Climate Alliance's activities clearly lies on the acceleration

of learning processes, despite the elaboration of a range of benchmarking tools (Climate Cities Benchmark 2011), is illustrated in the following statement by Mrs. Swoboda, concerning the large time lag between Offenbach's accession to the network and the eventual adoption of a local climate strategy.

> "Es wird vom Klimabündnis nicht gefordert etwas Vorzeigbares zu erarbeiten."

Accordingly, Offenbach's city administration did not feel pressurized by the network to finally become active. Rather, interested individuals within the administration used membership as an argument to convince other stakeholders that the city should begin to elaborate a tangible strategy.

> "Der Beitritt zum Klimabündnis erfolgte 1998, aber der Beschluss ein Klimaschutzkonzept zu erstellen erst 2006. Ein paar Jahre lang ist also nicht so richtig viel passiert. Einzelne Projekte wie z.B. die Energiesparinitiative wurden initiiert, aber der Beitritt wurde nicht sofort instrumentalisiert. Es hat ein paar Jahre gebraucht, bis die Einsicht reifte, dass ohne konkrete Beschlüsse, z.B. zur Erstellung eines Klimaschutzkonzeptes, nicht viel geschieht. Dafür war die Mitgliedschaft sinnvoll, um zu sagen: 'Wir sind jetzt Mitglied wir sollten irgendwann auch mal etwas Vorzeigbares erarbeiten'" (Sabine Swoboda).

Hence, TMN membership itself apparently constituted a resource for local policy champions that was employed to push the subject of local climate policy inside the city council and the municipal administration. This largely corresponds to the finding of Betsill & Bulkeley (2004:484) that membership backs up the position of proponents of local climate policy inside city administrations.

In sum, the Climate Alliance secretariat as well as other network members provided Offenbach with technical information and thus supported its efforts to implement its local climate strategy, its CO_2 inventory, as well as policies linked to electric mobility. City officials had a clearly rational interest in detailed technical know-how communicated via the network, which underlines that learning has been the predominant mechanism affecting policy choice in Offenbach. In contrast, the absence of normative pressure felt by city officials makes clear that the network does not accelerate imitation processes, despite its benchmarking system. Instead, local policy champions use TMN membership as a resource to reinforce their position within the city's council and administration.

7.2.2 The Influence of Neighbors and Higher Political Levels

Unlike Hanover in the early 1990s, which could not rely on information available in its immediate proximity or from superordinate political levels, Offenbach could draw on expertise and resources from both its larger neighbor Frankfurt and the national government. Frankfurt had already adopted a local climate strategy in 1992 and had also been a driving force behind the foundation of the Climate Alliance (Climate Alliance 2011d). Since then, its activities in climate protection have been coordinated by a well-staffed energy department that has accumulated almost 20 years of expe-

rience in the implementation of local climate policies (Frankfurt 2011). Hence, this department was repeatedly approached by Offenbach's city administration for example to obtain advice in the context of the restructuring of its environmental agency into the present agency for environment, energy, and mobility, but also in relation to the elaboration of its local climate strategy (Offenbach 2010:3). As Mrs. Swoboda pointed out:

> "Es besteht ein enger Kontakt zu Frankfurt. Das Energiereferat existiert dort seit 15 Jahren, hat eine sehr gute personelle Ausstattung und viel Erfahrung. Während der Aufbauphase unserer Fachgruppe Klimaschutz haben wir daher Kontakt zu den Frankfurter Kollegen gesucht."

Hence, Offenbach's climate related initiatives as well as its local climate strategy were in part informed by advice retrieved from its larger neighbor. In addition, the city also collaborates with Frankfurt and other municipalities in the Rhine-Main area in specific initiatives like the model region for electric mobility, where policy and technical solutions are elaborated together (Offenbach 2011d). Accordingly, Offenbach's relations to its pioneering neighbor are rather marked by cooperation and information exchange than by competition.

> "Zwischen den Städten gibt es keine Konkurrenz. Das Engagement kommt von sich aus, Wir sind selber überzeugt vom Thema. Wir greifen Informationen über vorangegangene Initiativen anderer Städte eher auf, um Akteure bei uns vor Ort von der Notwendigkeit des Handelns zu überzeugen."

Similarly to what has been observed for TMN membership, policy champions inside the city administration use information on other cities' initiatives to advance their cause, rather than being pressurized by activities of pioneers close by. In sum, proximity to a frontrunner has in part facilitated Offenbach's commitment to climate protection, by making information available and providing the opportunity for cooperation in joint projects. In addition, references to the achievements of cities close by help local policy champions to push the issue of climate protection forward in municipal institutions.

Besides being affected by its neighborhood, Offenbach has also profited from resources coming from the national government for example in the context of the federally funded model region for electric mobility and also in the elaboration of its local climate strategy. As a matter of fact, Offenbach was one of the cities that received financial support for the set up of a local action plan under the 'climate protection initiative' funded by the Federal Ministry of the Environment (BMU 2011a). This financial support enabled Offenbach to implement a more ambitious action plan than originally planned, however, it did not have an influence on the actual decision to elaborate a local climate strategy. As Mrs. Swoboda emphasized:

> "Die CO_2 Bilanz wurde schon vor der nationalen Förderung erledigt und es war auch klar, dass ein Maßnahmenprogramm entwickelt wird. Als der Beschluss gefasst wurde, war nicht abzusehen, dass es eine nationale Förderung geben würde. Wir hätten das

> Klimaschutzprogramm also auch ohne dieses Programm erarbeitet, aber natürlich mit weniger Mitteln."

Due to the additional funding coming from the national government, Offenbach could hire external consultants that supported the city in the elaboration of its local climate strategy. These consultants had already advised other local governments before and could thus impart information about the effectiveness of specific projects. For instance, the first measure from the climate strategy that is now being implemented in Offenbach, a door-to-door advisory service on energy efficiency for citizens, had already been successfully applied in North-Rhine-Westphalia and was thus recommended by one of the consultants.

> "Die Gutachter haben schon für andere Städte Konzepte entwickelt und können sagen, was woanders gut gegriffen hat. Die Haus zu Haus Beratung aus dem Klimaschutzkonzept wurde zum Beispiel von einer Kommune in NRW übernommen. Die Empfehlung kam vom Gutachterbüro" (Sabine Swoboda).

In sum, the national initiative did not give the decisive impulse, however, the provided funding made a qualitative difference in that it enabled Offenbach to hire external experts that decisively shaped its action plan. Another means by which the national government exerts influence on Offenbach's climate policy is the provision of subsidies like the feed-in-tariff without which municipal initiatives like the solar panel program mentioned in the introduction could not be executed. In addition, national funding schemes are a decisive argument when advising citizens and local businesses on energy efficiency. Consequently, a large part of the city's activities in climate protection concerns the assistance of these actors in the application for national subsidies.

Thus, unlike Hanover in the early 1990s Offenbach is in part dependent on national initiatives in the elaboration of its climate policies. Even though the decisive impulse for action came from the city itself, national funding made a qualitative difference in the elaboration of its climate strategy. Furthermore, the city could only set up certain programs and motivate citizens to become active on their part because of available subsidies form the national government. It thus seems as if latecomers were more reliant on support from superordinate political levels than pioneers.[29]

7.2.3 Local Factors

As Offenbach is the most indebted city in the Land of Hesse, implying that only 3% of its budget can be flexibly allocated, the lack of financial resources constituted a substantial barrier to local climate policy. In total, only 70.000 € are available for cli-

[29] Funding from the EU was not brought up during the interview; it is thus assumed that it has not played a decisive role in Offenbach.

mate protection from the municipal budget per year despite the fact that the city of Offenbach still partly owns its public utilities. This is due to the fact that most of the utilities' revenue is already allocated to other entries in the budget. Accordingly, proponents of climate protection had to be inventive in the use of available funds and mostly focused on budget friendly measures. However, the city's financially precarious situation did not serve as an excuse for lacking commitment. Rather, city officials seemed to be motivated by the challenge to prove that Offenbach had a capacity to act despite its bad finances. As both interlocutors emphasized:

> "Man darf sich nicht durch knappe finanzielle Ressouren abschrecken lassen, sondern muss die vorhandenen Möglichkeiten und Handlungsräume erkennen und nutzen."

Hence, measures in the local climate strategy focus mostly on advisory services for citizens and local business as well as awareness campaigns. In addition, a range of programs, including ecologic driver trainings and a funding scheme for refurbishments, could be set up with the help of local sponsors that carry most of the costs (Offenbach 2010:54). In general, city officials in Offenbach attempt to overcome the lack of municipal resources by putting more emphasis on the persuasion of private actors to either change their behavior or to partake in climate related programs proposed by the city. As Mr. Trümner-Friese pointed out:

> "Man kann auch mit relativ geringem Budget viel erreichen, vor allem durch Überzeugungsarbeit sowie gezielte und direkte Informations- und Unterstützungsangebote."

Thus, Offenbach made a virtue of necessity and responded to lacking finances mostly by trying to commit citizens and local business to become active on their part. In this respect, the most important argument was the second local factor under study: cost savings. Both, the city's energy saving initiative as well as the door-to-door advisory service are based on the idea that citizens and local business need to be made aware of the personal co-benefits of climate protection:

> "Durch die Energiesparinitiative wird seit längerem ein Bewusstsein für Energiesparen und Energieeffizienz geschaffen. Hier wird seit vielen Jahren vermittelt: 'Tue Gutes für die Umwelt und schone gleichzeitig deinen Geldbeutel."

In sum, Offenbach's precarious financial situation posed a challenge to policymakers responsible for climate protection, which was tackled by focusing mostly on budget friendly measures, like advisory services and awareness campaigns. In this context, the most important argument to motivate citizens as well as local business to become active on their part was the reference to financial co-benefits, that is, cost savings.

7.2.4 Comparing Results

As did the previous study on Hanover, the case of Offenbach confirms the statistical finding that TMNs accelerate diffusion via learning. City officials in Offenbach had is-

sue specific interests and joined the network's corresponding working groups to obtain technical know-how from other cities. Moreover, this case study also confirms that processes of imitation have not played a role given that city officials did not feel pressurized by the Climate Alliance during the 9 years between Offenbach's accession to the network and the council decision to adopt a local action plan. Instead, local policy champions have used network membership to persuade other municipal stakeholders of the urgency for action.

As to the relevance of regionally available information, the case of Offenbach contradicts the statistical findings and the study on Hanover, as the city has substantially profited from advice given by its more experienced neighbor Frankfurt. The comparison to Hanover suggests that pioneers tend to focus on the transnational sphere given that there is no local information available, whereas latecomers rely mostly on regionally available information. This confirms the finding of Kern et al. (2007) that clusters develop in the periphery of transnationally connected frontrunners.

A similar conclusion can be drawn with regard to the influence of national governments. Whereas Hanover had outpaced the national government in the early 1990s, Offenbach could draw – and was in part reliant – on national funding or subsidies for its climate related projects. This also confirms the statistical results that found national leadership and funding to be highly significant. In contrast, EU support seems to have not played a decisive role in Offenbach, as it was not brought up by city officials when interrogated about the influence of other political levels.

Concerning local factors, the case of Offenbach shows that a lack of financial resources can be overcome by adapting policy measures to budget constraints and by tapping private and external sources of funding. In addition, just like the study on Hanover, it contradicts the statistical finding that rising energy prices are irrelevant to local climate policy, as citizens' commitment largely depends on personal co-benefits. Finally, perceived vulnerability to climate change impacts has apparently not played a role in Offenbach, as interviewees did not make any reference to it. This is consistent with statistical results as well as the Hanover case.

8 Conclusion

This thesis' most consistent finding is that transnational municipal networks (TMNs) have significantly accelerated the diffusion of local climate strategies among European cities between 1992 and 2009. Whereas the results from Event History Analysis show that TMN membership increases the likelihood of a city adopting a local climate strategy by up to 17 times, the case studies of Hanover and Offenbach underline that pioneers and laggards alike seek and profit from expertise, contacts, and resources provided by the networks. This implies that TMNs impact member-cities predominantly via the acceleration of learning processes, which they achieve by increasing the availability of information, by multiplying contacts among members, and by enhancing their capacities to act locally on climate change.

In contrast, imitation processes have not been accelerated via TMNs. Despite the set up of milestone and benchmarking systems, the share of previous adopters does not affect the likelihood of a network member to introduce a local climate strategy. This result also applies to cases in which a critical mass, comprising at least 30% of network members, has adopted an action plan. Accordingly, norm cascades do not play a role among network constituencies. Likewise, additional years of membership decrease rather than increase the likelihood of a network member adopting a local climate strategy, which highlights that consistent non-compliance with network goals does not increase normative pressure. Thus, members either adopt a local climate strategy within the first years of membership or become passive. These statistical findings are consistent with results from the two case studies, which show that neither Hanover nor Offenbach felt pressurized by networks or network peers. This became most obvious in the case of Offenbach, where city officials explicitly stated that the Climate Alliance does not keep track of its members' progress. Instead, membership is used as an argument by local policy champions to persuade other local stakeholders of the urgency for action.

As to the third diffusion process, competition, the case of Hanover shows that frontrunners among network members compete with each other for a progressive reputation, which is expected to yield economic benefits by means of enhancing a city's attractiveness. This effect could not be grasped statistically as network members were not subdivided in groups of pioneers and laggards. However, the finding suggests that TMNs have a chance of pushing pioneers towards sustained innovation by organizing contests and setting up schemes of recognition.

In comparison to TMNs, regional information flows have been found to be less significant. Results from EHA indicate that neither the presence of a pioneering city close by, nor the absolute number or the share of previous adopters among neighbors influence the likelihood of a city adopting a local climate strategy. Accordingly, diffu-

sion along regional clusters, including processes of imitation and learning, has not played a role in the spread of local action plans – at least in aggregate. For pioneers, this result is confirmed by the case of Hanover, which shows that the city could not rely on regionally available information and was therefore eager to access the transnational sphere to obtain knowledge from pioneers in Canada and Scandinavia. In contrast, the case of Offenbach demonstrates that neighboring pioneers can constitute an important source of advice for latecomers, as the city relied in part on expertise coming from Frankfurt's energy department. Thus, available information from contiguous neighbors is relevant for latecomers, whereas expertise accessible within a 100km radius is not. In combination, these findings suggest that knowledge on local climate policy circulates first and foremost among pioneers in the transnational sphere, before potentially spreading to their respective immediate peripheries. This matches similar findings by Kern et al. (2007) concerning the dissemination of local agenda 21.

Coordinative effects of decisions by superordinate governments, the third potential external driver of adoptions of local climate strategies, have been found to exert substantial influence, however, less so than TMNs. Especially where national mandatory requirements have been in force, that is, in France and Great Britain since 2008, a remarkable increase in adoptions of local climate strategies could be observed. This implies that the third wave of adoptions from 2007 to 2009 is in part the result of coercion rather than diffusion. In addition, national governments have fostered the spread of local climate strategies by providing municipalities with leadership and resources. As results from EHA show, strong national commitment to climate protection as well as the provision of know-how and funding substantially increase the likelihood of cities to adopt local climate strategies. Whereas Hanover had not been reliant on support from the national government in the early 1990s, the case of Offenbach confirms these findings given that the city could make a qualitative leap in the elaboration of its climate strategy thanks to financial support from the Federal Ministry for the Environment. In addition, many of its other climate-related initiatives rely directly or indirectly on national subsidies. Overall, these results imply that pioneers have been less dependent on resources and encouragement coming from the national government than latecomers. The latter, in turn, seem to need this additional support in order to implement more ambitious local climate policies.

As to the impact of EU support, results from EHA show that participation in climate related projects financed by the European Union significantly increases the likelihood of a city adopting a local climate strategy. As the case of Hanover demonstrates, access to this financial support is often granted via TMNs, which facilitate the search for qualified partners among their constituencies. As Offenbach has not profited from EU support for the elaboration of local climate policies, these findings suggest that

mostly groups of pioneers, coordinated via TMNs, have the capacity to apply for – and thus eventually receive – funding from the EU.

The local factors under study have been found to be less significant than TMN impact. Results from EHA show that large differences in GDP per capita can explain non-adoption in one and adoption in another city, however, both case studies underline that cities implementing local climate strategies are not necessarily the richest. On the one hand, this is the case because additional financial resources like revenue from public utilities or investment from private sponsors can be tapped to facilitate local climate policy. On the other hand, a range of budget friendly initiatives like advisory services and awareness campaigns enable municipalities to make progress despite financial constraints. As to cost savings, statistical findings and case study results are in contradiction. Whereas EHA indicates that rising energy prices do not increase the likelihood of a city adopting a local climate strategy, both case studies demonstrate that cost savings are a crucial argument for the motivation of citizens and local businesses to become active on their part. The reason for this divergence may be that local governments do not mechanically react to rising prices at specific moments but consistently refer to the possibility of saving money when advising local stakeholders. In contrast to this divergence, results on perceived vulnerability are unequivocal. Neither EHA nor the case studies provide evidence for the assumption that the likelihood to act locally on climate change increases with the perceived risk of becoming adversely affected by climate change.

Accordingly, also in comparison to other independent variables, TMNs, accelerating diffusion via learning, remain the most powerful explanatory factor for the overall dissemination of local climate strategies in Europe between 1992 and 2009. In reference to Busch & Jörgens' framework (forthcoming:292-296) these findings imply that TMNs have been observed in successfully applying three out of the seven strategies for governance by diffusion. First and foremost, they have created and enhanced channels for transnational communication (1) by organizing issue specific working groups, arranging bilateral contacts, and facilitating their members' search for partners for joint projects. In addition, they have generated information (2) based on which expertise has been provided to members concerning the elaboration of local climate policies in general and climate strategies in particular. This has been especially relevant in Offenbach, where the network was directly involved in the set up of the city's CO_2 inventory and action plan. Accordingly, TMNs have also strengthened their members' capacity to act (6) by injecting necessary know-how into city administrations and by providing access to EU funds. Given that these strategies were deployed to contribute to the mitigation of climate change – a global public good – one can conclude that TMNs have proven their capacity to govern by diffusion and have thus contributed to the governance of climate change (Andonova et al. 2009, Ostrom 2010).

What has to be kept in mind, though, is that networks only reach part of their constituencies via the aforementioned strategies. A large number of members remain passive and do not substantially change their behavior following accession. This calls the actual steering capacity of networks into question and implies that latecomers need additional support and encouragement especially from national governments. Given that cities crucially matter to climate policy due to their large share in overall emissions and their unique capacity to reduce per capita emissions via innovations in urban mobility and combined power and heat supply (*see section 1.2*), it is thus necessary that TMNs, the EU, national governments, and private actors join forces in a polycentric approach to the governance of climate change that enables actors at all levels, including municipal governments, to make meaningful progress in climate protection (Ostrom 2010). In this context, initiatives like the Covenant of Mayors, which combines the EU's capacities with those of TMNs and local governments, or C40's partnership with the Clinton Foundation that taps private finances to enable local climate policy could serve as blueprints for the further orchestration of efforts by public and private, supra- and transnational actors in the governance of climate change (Abbott & Snidal 2010). If these polycentric initiatives were further developed, they could constitute a meaningful alternative to the governance of climate change via international regimes, turning municipalities from "laboratories of democracy" into laboratories of climate policy (Shipan & Volden 2008:840).

Bibliography

Literature

Abbott, Kenneth W., and Duncan Snidal. 2010. International regulation without international government: Improving IO performance through orchestration. The Review of International Organizations 5, no. 3 (8): 315-344.

Adler, Emanuel, and Peter M. Haas. 1992. Conclusion: Epistemic Communities, World Order, and the Creation of a Reflective Research Program. International Organization 46, no. 01: 367-390.

Alber, Gotelind, and Kristine Kern. 2009. Governing Climate Change in Cities: Modes of Urban Climate Governance in Multi-Level Systems. In OECD Conference Proceedings. Paris: OECD. http://www.oecd.org/dataoecd/22/7/41449602.pdf.

Andonova, Liliana B., Michele M. Betsill, and Harriet Bulkeley. 2009. Transnational Climate Governance. Global Environmental Politics 9, no. 2 (Mai 1): 52-73.

Asch, Solomon. 1953. Social Psychology. New York: Prentice Hall.

Asch, Solomon. 1951. Effects of group pressure upon the modification and distortion of judgment. In: Guetskow (ed.). Groups, leadership, and men. Carnegie Press.

Bai, X. 2007. Integrating Global Environmental Concerns into Urban Management: The Scale and Readiness Arguments. Journal of Industrial Ecology 11, no. 2: 15-29.

Barrett, Scott. 2007. Why cooperate?: the incentive to supply global public goods. Oxford [u.a.]: Oxford Univ. Press.

Bauer, Michael, Hildegard Hogen, Ute Gräber-Seißinger, Achim Pollert, and Bernd Kirchner. 2004. Das Lexikon der Wirtschaft: Grundlegendes Wissen von A bis Z. Bonn: Bundeszentrale für politische Bildung.

Berry, Frances Stokes, and William D. Berry. 1990. State Lottery Adoptions as Policy Innovations: An Event History Analysis. The American Political Science Review 84, no. 2 (Juni 1): 395-415.

Betsill, Michele M., und Harriet Bulkeley. 2004. Transnational Networks and Global Environmental Governance: The Cities for Climate Protection Program. International Studies Quarterly 48, 471-493.

Betsill, Michele, and Harriet Bulkeley. 2006. Rethinking Sustainable Cities: Multilevel Governance and the 'Urban' Politics of Climate Change. Environmental Politics 14, no. 1: 42.

Betsill, Michele, und Harriet Bulkeley. 2007. Looking Back and Thinking Ahead: A Decade of Cities and Climate Change Research. Local Environment: The International Journal of Justice and Sustainability 12, no. 5: 447 - 456.

Betsill, Michele M. 2001a. Mitigating Climate Change in US Cities: Opportunities and obstacles. Local Environment: The International Journal of Justice and Sustainability 6, no. 4: 393 - 406.

Betsill, Michele. 2001b. Acting Locally, Does it Matter Globally? The Contribution of U.S. Cities to Global Climate Change Mitigation. Paper prepared for the Open Meeting of the Human Dimensions of Global Environmental Change Research Community, Rio de Janeiro, 6-8 October 2001.

Bruin, K., R. B. Dellink, A. Ruijs, L. Bolwidt, A. Buuren, J. Graveland, R. S. Groot, et al. 2009. Adapting to climate change in The Netherlands: an inventory of climate adaptation options and ranking of alternatives. Climatic Change 95, no. 1-2 (4): 23-45.

Bulkeley, Harriet. 2006. Urban sustainability: learning from best practice? Environment and Planning A 38, no. 6: 1029 – 1044. doi:10.1068/a37300.

Bulkeley, Harriet, Anna Davies, Bob Evans, David Gibbs, Kristine Kern, and Kate Theobald. 2003. Environmental Governance and Transnational Municipal Networks in Europe. Journal of Environmental Policy & Planning 5, no. 3: 235.

Bulkeley, Harriet, Heike Schroeder, Katy Janda, und Jimin Zhao. 2009. Cities and Climate Change: The role of institutions, governance and urban planning. Paper presented at the World Bank urban symposium on climate change. http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1256566800920/6505269-1268260567624/Bulkeley.pdf.

Busch, Per-Olof. 2006. The OECD Environment Directorate: The Art of Persuasion and Its Limitations. Global Governance Working Paper No. 20. http://www.glogov.org/?pageid=22

Busch, Per-Olof, and Helge Jörgens. Forthcoming. Governance by diffusion: International environmental policy coordination in the era of globalization. Promotion eingereicht am Fachbereich Politik- und Sozialwissenschaften. Freie Universität Berlin. Oktober 2009.

Busch, Per-Olof, and Helge Jörgens. 2005. The international sources of policy convergence: explaining the spread of environmental policy innovations. Journal of European Public Policy 12 (Oktober): 860-884.

Busch, Per-Olof, Helge Jorgens, and Kerstin Tews. 2005. The Global Diffusion of Regulatory Instruments: The Making of a New International Environmental Regime. The ANNALS of the American Academy of Political and Social Science 598, no. 1 (März 1): 146-167.

Busch, Per-Olof, and Helge Jörgens. 2005. International patterns of environmental policy change and convergence. European Environment 15, no. 2: 80-101.

Box-Steffensmeier, Janet M., and Bradford S. Jones. 2004. Event History Modeling: A Guide for Social Scientists. Cambridge University Press.

Carmin, JoAnn, Debra Roberts, and Isabelle Anguelovski. 2009. Planning Climate Resilient Cities: Early Lessons from Early Adapters. http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1256566800920/6505269-1268260567624/Carmin.pdf

CCP. 2010. Sign Up Document. http://www.iclei-europe.org/fileadmin/templates/iclei-europe/files/content/CCP/CCP_Europe_sign-up-doc2010.pdf

Cooper, Richard. 2000. "International Approaches to Global Climate Change." The World Bank Research Observer 15:145–172.

Corfee-Morlot, Jan, Lamia Kamal-Chaoui, and Michael Donovan. 2009. Cities Climate Change and Multilevel Governance. In OECD Environmental Working Papers No. 14. Paris: OECD Publishing.

Dhakal, Shobhakar. Urban Energy Use and Greenhouse Gas Emissions in Asian Mega-Cities: Policies for a Sustainable Future | Clean Air Initiative. http://www.cleanairinitiative.org/portal/node/2385.

Diercke. 1996. Diercke Weltatlas. Braunschweig: Westermann.

DiMaggio, Paul J., and Walter W. Powell. 1983. The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. American Sociological Review 48, no. 2 (April): 147-160.

Dolowitz, David P., and David Marsh. 2000. Learning from Abroad: The Role of Policy Transfer in Contemporary Policy-Making. Governance 13, no. 1: 5-23.

Drezner, Daniel W. 2008. All politics is global: explaining international regulatory regimes. Princeton University Press.

Elkins, Zachary, and Beth Simmons. 2005. On Waves, Clusters, and Diffusion: A Conceptual Framework. The ANNALS of the American Academy of Political and Social Science 598, no. 1 (März 1): 33-51.

Fearon, James, and Alexander Wendt. 2002. Rationalism vs. Constructivism: A Skeptical View. In: Carlsnaes, Walter, Thomas Risse, and Beth Simmons. Handbook of international relations. London [u.a.]: Sage.

Finnemore, Martha. 1993. International Organizations as Teachers of Norms: The United Nations Educational, Scientific, and Cutural Organization and Science Policy. International Organization 47, no. 4 (Autumn): 565-597.

Finnemore, Martha, und Kathryn Sikkink. 1998. International Norm Dynamics and Political Change. International Organization 52, no. 04: 887-917.

Fleming, P. D., und P. H. Webber. 2004. Local and regional greenhouse gas management. Energy Policy 32, no. 6 (April): 761-771.

Granberg, Mikael, und Ingemar Elander. 2007. Local Governance and Climate Change: Reflections on the Swedish Experience. Local Environment: The International Journal of Justice and Sustainability 12, no. 5: 537.

Haas, Peter M. 1992. Introduction: Epistemic Communities and International Policy Coordination. International Organization 46, no. 01: 1-35.

Hardin, Garrett. 1968. The Tragedy of the Commons. Science 162, no. 3859 (Dezember 13): 1243-1248.

Hasenclever, Andreas, Peter Mayer, und Volker Rittberger. 1996. Interests, Power, Knowledge: The Study of International Regimes. Mershon International Studies Review 40, no. 2 (Oktober 1): 177-228.

———. 1997. Theories of international regimes. Cambridge studies in international relations ; 55. Cambridge <<[u.a.]>>: Cambridge Univ. Press.

Héritier, Adrienne, Christoph Knill, und Susanne Mingers. 1996. Ringing the changes in Europe: regulatory competition and the transformation of the state : Britain, France, Germany. Walter de Gruyter.

Holgate, Claudia. 2007. Factors and Actors in Climate Change Mitigation: A Tale of Two South African Cities. Local Environment: The International Journal of Justice and Sustainability 12, no. 5: 471.

Holzinger, Katharina, Helge Jörgens, and Christoph Knill. 2007. Transfer, Diffusion und Konvergenz von Politiken. Politische Vierteljahresschrift / Sonderheft. Wiesbaden: VS Verl. für Sozialwiss.

Holzinger, Katharina, and Christoph Knill. 2005. Causes and conditions of cross-national policy convergence. Journal of European Public Policy 12, no. 5: 775.

Holzinger, Katharina, Christoph Knill, and Thomas Sommerer. 2008. Environmental Policy Convergence: The Impact of International Harmonization, Transnational Communication, and Regulatory Competition. International Organization 62, no. 04: 553-587.

Holzinger, Katharina, and Thomas Sommerer. 2011. 'Race to the Bottom' or 'Race to Brussels'? Environmental Competition in Europe. JCMS: Journal of Common Market Studies 49, no. 2: 315-339.

Hox, J. J. 2002. Multilevel analysis: techniques and applications. Routledge.

ICLEI. 2010. ICLEI Strategy 2010-2015. http://www.iclei-europe.org/fileadmin/templates/iclei-europe/files/content/ICLEI_IS/Policy_and_Advocacy/ICLEI_Strategy_2010-2015.pdf

ICLEI. 1993. The Birth of CCP. http://www.iclei.org/fileadmin/user_upload/documents/Global/Progams/CCP/CCP_Reports/ICLEI_TheBirthofCCP_1993.pdf

IEA. 2009. Innovations in Multilevel Governance for Energy Efficiency. Information Paper Series. IEA/OECD Publishing. www.iea.org/papers/2009/mlg_final_web.pdf

IEA. 2008. Climate Policy and Carbon Leakage: Impacts if the European Emissions Trading Scheme on Aluminium. Information Paper Series. IEA/OECD Publishing. www.iea.org/papers/2008/Aluminium_EU_ETS.pdf

IPCC. 2007. Climate Change 2007: The Physical Science Basis. Intergovernmental Panel on Climate Change, February 11.

Jollands, Nigel. 2008. Cities and Energy – a discussion paper. Paper presented at the OECD's international conference on competitive cities and climate change. Milan, October 2008. www.oecd.org/dataoecd/54/18/42544964.pdf

Jones, Emma, Matthew Leach, and Joanne Wade. 2000. Local policies for DSM: the UK's home energy conservation act. Energy Policy 28, no. 3 (März 1): 201-211

Jörgens, Helge. 2004. Governance by Diffusion - Implementing Global Norms Through Cross-National Imitation and Learning. SSRN eLibrary (GOVERNANCE FOR SUSTAINABLE DEVELOPMENT. THE CHALLENGE OF ADAPTING FORM TO FUNCTION, William M. Lafferty, Edward Elgar, eds). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=652942.

Kamal-Chaoui, Lamia, and Alexis Robert. 2009. Competitive Cities and Climate Change. OECD Regional Development Working Papers No. 2. OECD Publishing.

Kathryn Harrison, and Lisa McIntosh Sundstrom. 2007. The Comparative Politics of Climate Change. Global Environmental Politics 7, no. 4. Global Environmental Politics: 1-18.

Keck, M. E., and K. Sikkink. 1999. Transnational advocacy networks in international and regional politics. International Social Science Journal 51, no. 159: 89-101.

Keohane, Robert O. 1973. Transnational relations and world politics. Cambridge, Mass.: Harvard Univ. Press.

Kern, Kristine, Claudia Koll, and Malte Schophaus. 2007. The diffusion of Local Agenda 21 in Germany: Comparing the German federal states. Environmental Politics Volume 16, no. Number 4 (August): 604-624.

Kern, Kristine, Niederhafner, und Rechlin. 2005. Kommunaler Klimaschutz in Deutschland - Handlungsoptionen, Entwicklung und Perspektiven. WZB Discussion Paper SP IV 2005-101.

Kern, Kristine, and Harriet Bulkeley. 2009. Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks*. JCMS: Journal of Common Market Studies 47, no. 2: 309-332.

Knill, Christoph. 2008. Europäische Umweltpolitik: Steuerungsprobleme und Regulierungsmuster im Mehrebenensystem. VS Verlag, Mai 27.

Kousky, Carolyn, und Stephen H Schneider. 2003. Global climate policy: will cities lead the way? Climate Policy 3: 359-372.

Lambright W. H, Changnon S. A, und Harvey L. D.D. Urban Reactions to the Global Warming Issue: Agenda Setting in Toronto and Chicago. Text. http://www.ingentaconnect.com/content/klu/clim/1996/00000034/F0020003/00115543.

Lankao, Patricia Romero. 2007. How do Local Governments in Mexico City Manage Global Warming? Local Environment: The International Journal of Justice and Sustainability 12, no. 5: 519.

Levi-Faur, David. 2005. The Global Diffusion of Regulatory Capitalism. The ANNALS of the American Academy of Political and Social Science 598, no. 1 (März 1): 12 -32.

McCarney, Patricia, Mohamed Halfani, und Eduardo Moreno. 2009. City Indicators on Climate Change: Implications for Policy Leverage and Governance. Paper presented at the Worldbank Urban Symposium on Climate Change.

http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTURBANDEVELOPMENT/0,,contentMDK:22497565~menuPK:360757~pagePK:210058~piPK:210062~theSitePK:337178~isCURL:Y,00.html.

Mintrom, Michael. 1997. Policy Entrepreneurs and the Diffusion of Innovation. American Journal of Political Science 41, no. 3 (Juli): 738-770.

Newell, Peter, und Harriet Bulkeley. 2010. Governing Climate Change. Taylor & Francis, April 2.

Offenbach am Main. 2010. Integriertes Klimaschutzkonzept – Endbericht. http://www.offenbach.de/stepone/data/downloads/18/0a/00/IKSKgesamt.pdf

Olson, Mancur. 1971. The logic of collective action: public goods and the theory of groups. Reprinted. Harvard economic studies ; 124. Cambridge, Mass. [u.a.]: Harvard Univ. Press.

Ostrom, Elinor. 2010. A Polycentric Approach for Coping with Climate Change. SSRN eLibrary. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1494833#.

Paterson, Matthew. 1996. Global warming and global politics. Routledge.

Paterson, Matthew, and Michael Grubb. 1992. "The International Politics of Climate Change." International Affairs 68:293–310.

Raab-Steiner, Elisabeth, and Michael Benesch. 2010. Der Fragebogen: Von der Forschungsidee zur SPSS/PASW-Auswertung. UTB, Juni.

Risse-Kappen, Thomas. 1995. Bringing Transnational Relations Back In: non-state actors, domestic structures and international institutions. Cambridge studies in international relations ; 42. Cambridge <<[u.a.]>>: Cambridge Univ. Press.

Roberts, Debra. 2008. Thinking globally, acting locally — institutionalizing climate change at the local government level in Durban, South Africa. Environment and Urbanization 20, no. 2 (Oktober 1): 521 -537.

Rose, Richard. 1991. What Is Lesson-Drawing? Journal of Public Policy 11, no. 1 (Januar 1): 3-30.

Schreurs, Miranda A. 2008. From the Bottom Up. The Journal of Environment & Development 17, no. 4 (Dezember 1): 343 -355.

Shipan, Charles R., und Craig Volden. 2006. Bottom-Up Federalism: The Diffusion of Antismoking Policies from U.S. Cities to States. American Journal of Political Science 50, no. 4: 825-843.

Simmons, Beth A., Frank Dobbin, und Geoffrey Garrett. 2008. The global diffusion of markets and democracy. Cambridge University Press.

Sippel, Maike, und Till Jenssen. 2009. What about local climate governance? A review of promise and problems. MPRA Paper. November. http://mpra.ub.uni-muenchen.de/20987/.

Stern, Nicholas. 2007. The Economics of Climate Change: The Stern Review. Cambridge University Press.

Sugiyama, Natasha Borges. 2008. Theories of Policy Diffusion. Comparative Political Studies 41, no. 2 (Februar 1): 193 -216. doi:10.1177/0010414007300916.

Tanner, Thomas, Mitchell, und Polack. 2009. Urban Governance for Adaptation: Assessing Climate Change Resilience in Ten Asian Cities. IDS Working Papers - 315. http://www.ntd.co.uk/idsbookshop/details.asp?id=1069.

Tews, Kerstin. 2004. "Diffusion als Motor globalen Politikwandels - Potentiale und Grenzen." ffu-report 1–28.

True, J., und M. Mintrom. 2001. Transnational Networks and Policy Diffusion: The Case of Gender Mainstreaming. International Studies Quarterly 45, no. 1: 27-57.

World Bank. 2010. The World Development Report: Development and Climate Change. http://siteresources.worldbank.org/INTWDR2010/Resources/5287678-1226014527953/WDR10-Full-Text.pdf

Young, Oran R. 1997. Global governance: drawing insights from the environmental experience. MIT Press.

Zahran, Sammy, Samuel D Brody, Arnold Vedlitz, Himanshu Grover, und Caitlyn Miller. 2008. Vulnerability and capacity: explaining local commitment to climate-change policy. Environment and Planning C: Government and Policy 26, no. 3. Environment and Planning C: Government and Policy: 544-562.

Internet Sources

Act2 2011: http://www.concerto-act2.eu/.

ADEME. 2010. Fiche climat-energie. http://www2.ademe.fr/servlet/KBaseShow?sort=-1&cid=96&m=3&catid=23373

BMU 2011a: Klimaschutzinitiative. http://www.bmu-klimaschutzinitiative.de/de/projekte_nki?p=1&d=450. (23.02.2011)

BMVBS 2011: Elektromobilität-Modellregion Rhein-Main. http://www.bmvbs.de/SharedDocs/DE/Artikel/UI/modellregion-rhein-main.html?nn=36210. (last access: 23.02.2011)

Bordeaux 2011: Cadre de vie - Développement durable. http://www.bordeaux.fr/ebx/portals/ebx.portal?_nfpb=true&_pageLabel=pgPresStand8&classofcontent=presentationStandard&id=37983. (03.02.2011)

C40 2011a : Climate Leadership Group - History of the C40. http://www.c40cities.org/about/. (15.02.2011)

C40 2011b: Climate Leadership Group – Climate Change Action Plans. http://www.c40cities.org/ccap/ (23.02.2011)

C40 2011c: Climate Leadership Group - C40 Cities - Affiliate cities. http://www.c40cities.org/cities/affiliate/. (l4.02.2011)

C40 2011e: Climate Leadership Group - CCI City Programmes. http://www.c40cities.org/initiatives/ccicityprogrammes/. (24.02.2011)

C40 2011f: http://www.c40cities.org/initiatives/c40-urban-life.jsp. (24.02.2011)

C40 2011g: http://www.c40cities.org/summit/2007/attendees.jsp. (24.02.2011)

C40 2011d: Climate Leadership Group - Best practices. http://www.c40cities.org/bestpractices/. (24.02.2011)

Carbon Trust 2011: Business and Public Sector. http://www.carbontrust.co.uk/policy-legislation/business-public-sector/pages/business-public-sector-policy.aspx. (03.02.2011)

CCP 2011a: CCP Campaign. http://www.iclei-europe.org/ccp/ccp-campaign/ (17.02.2011)

CCP 2011b: Tools and Links. http://www.iclei-europe.org/ccp/tools-and-links/.(17.02.2011)

CCP 2011c: http://www.iclei-europe.org/ccp/ccp-campaign/. (17.02.2011)

CCP 2011d: http://www.climate-protection.eu/.(17.02.2011)

CCP 2011e: Campaign Involvement. http://www.iclei-europe.org/ccp/campaign-involvement/.(17.02.2011)

Climate Alliance. 2011a: "Climate Alliance: Home." http://www.klimabuendnis.org/home.html. (23.02.2011)

Climate Alliance 2011b: Best-Practice-Beispiele. http://klimabuendnis.org/best-practice0.html?&L=1. (23.02.2011)

Climate Alliance 2011c: Tools. http://klimabuendnis.org/tools0.html?&L=1. (23.02.2011)

Climate Alliance 2011d: Benchmarks. http://www.benchmark-kommunaler-klimaschutz.net/. (23.02.2011)

Climate Alliance 2011e: Geschichtlicher Rückblick. http://www.klimabuendnis.org/538.html?&L=1. (23.02.2011)

Climate Cities Benchmark 2011: http://www.climate-cities-benchmark.net/. (23.02.2011)

Climate Compass 2011a: Why a CLIMATE COMPASS? http://www.climate-compass.net/_why.html. (21.02.2011)

Climate Compass 2011b: Modules of the CLIMATE COMPASS methodology. http://www.climate-compass.net/_modules.html.(12.02.2011)

Climate Compass 2011c: Materials. http://www.climate-compass.net/materials.html. (17.02.2011)

COM 2011a. http://www.eumayors.eu/about_the_covenant/coordination_and_support_en.htm. (10.02.2011)

COM 2011b: http://www.eumayors.eu/benchmarks_of_excellence/index_en.htm. (23.02.2011)

COM 2011c: http://www.eumayors.eu/covenant_cities/towns_cities_en.htm. (23.02.2011)

COM 2011d: http://www.eumayors.eu/home_en.htm. (23.02.2011)

CORDIS 2011: Search : Advanced search. http://cordis.europa.eu/search/index.cfm?fuseaction=search.advanced. (28.01.2011)

Die Zeit. 2011: "Klimaflüchtlinge: Der große Treck" | Wirtschaft | ZEIT ONLINE. http://www.zeit.de/2009/42/Klimafluechtlinge. (28.01.2011)

EEA. 2011: http://www.european-energy-award.de/eea-und-klimaschutzkonzepte (25.02.2011)

ELENA 2010: http://ec.europa.eu/environment/etap/inaction/policynews/535_de.html. (24.02.2011)

ELTIS 2011 EU Funding Programmes. http://www.eltis.org/Vorlage.phtml?mainID=455&id=456 (25.02.2011

EM-DAT 2011: http://www.emdat.be/advanced-search. (25.02.2011)

energie-cités. 2010: Membership Package 2010 http://www.energy-cities.eu/IMG/pdf/membership_pack_2010_en.pdf (23.02.2011)

energie-cités 2011b: Les Ateliers Plan Climat Energie. http://www.energy-cities.eu/Les-Ateliers-Plans-Climat-Energie,2126. (23.02.2011)

energie-cités. 2011c: Best Practice Database. http://www.energy-cities.eu/cities/case_studies.php?lang=en. (23.02.2011)

energie-cités. 2011d : Publications. http://www.energy-cities.eu/-Publications,62-.(23.02.2011)

Energy Saving Trust 2011: Green Communities / UK Home - Energy Saving Trust. http://www.energysavingtrust.org.uk/cafe.(05.02.2011)

ENGAGE 2011: http://www.citiesengage.eu/. (03.02.2011)

Eurostat 2011a: Städtestatistiken – Urban Audit. http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/city_urban. (15.01.2011)

Eurostat 2011b: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/city_urban/data_cities/database_sub1 (15.01.2011)

Eurostat 2011c:
http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/regional_statistics/data/main_tables. (15.01.2011)

Frankfurt 2011: Energiereferat.
http://www.frankfurt.de/sixcms/detail.php?id=3076&_ffmpar[_id_inhalt]=102231. (24.02.2011)

Grenelle 2011: http://www.legrenelle-environnement.fr/-Qu-est-ce-que-le-Grenelle-.html. (05.02.2011)

Grenelle 2011b: Processus du Grenelle - Le Grenelle Environnement.
http://www.legrenelle-environnement.fr/-Processus-du-Grenelle-.html.
(05.02.2011)

Hanover 2011a:
http://www.hannover.de/klimaschutzallianz/emissionen/index.html.
(24.02.2011)

Hanover 2011b: CO2-Bilanz.
http://www.hannover.de/klimaschutzallianz/emissionen/bilanz/index.html.
http://ec.europa.eu/environment/life/project/Projects/index.cfm.
http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/city_urban/data_cities/database_sub1. (24.02.2011)

ICLEI 2011a: Local Governments for Sustainability : History.
http://www.iclei.org/index.php?id=748. (17.02.2011)

ICLEI 2011b: Local Governments for Sustainability : History.
http://www.iclei.org/index.php?id=748. (17.02.2011)

IEA 2011: Climate Change Database. http://www.iea.org/textbase/pm/?mode=cc.
(28.01.2011)

Intelligent Energy Projects 2011:
http://ieea.erba.hu/ieea/page/Page.jsp?op=search. (28.01.2011)

KEMIN 2011: Kommunesamarbejde. http://www.kemin.dk/da-DK/KlimaogEnergipolitik/DanskKlimaogEnergipolitik/Kommunesamarbejde/Sider/Kommunesamarbejde.aspx. (28.01.2011)

klima:aktiv 2011: e5 - Programm für energieeffiziente Gemeinden.
http://www.klimaaktiv.at/article/archive/12058. (19.02.2011)

Klimafonds 2011: Details.
http://www.klimafonds.gv.at/home/foerderguide/details/themenfeld/smart-energy-demo-fit-for-set.html. (19.02.2011)

KLIMP 2011a: Climate Investment Programmes (Klimp) - Naturvårdsverket - Swedish EPA. http://www.naturvardsverket.se/en/In-English/Menu/Legislation-and-other-policy-instruments/Economic-instruments/Investment-Programmes/Climate-Investment-Programmes-Klimp/. (19.02.2011)

KLIMP 2011b:
http://klimp.naturvardsverket.se/mir/advancedSearch.do?&showSwedish=true. (19.02.2011)

LIFE Projects 2011: Environment - LIFE by Theme.
http://ec.europa.eu/environment/life/project/Projects/index.cfm (19.02.2011)

OECD.Stat 2011: Consumer Prices (MEI).
http://stats.oecd.org/Index.aspx?DatasetCode=MEI_PRICES. (18.02.2011)

Offenbach 2011a: Energiesparinitiative.
http://www.offenbach.de/offenbach/themen/leben-in-offenbach/umwelt/energiesparinitiative/. (18.02.2011)

Offenbach 2011b: http://www.offenbach.de/offenbach/themen/leben-in-offen-bach/umwelt/solarkataster/text/%C3%B6ffentliche%20Dachfl%C3%A4chen.html. (18.02.2011)

Offenbach 2011c : Hintergrund. http://www.offenbach.de/stadtwerke-offenbach-holding/holding/leitstelle-elektromobilitaet-der-modellregion-rhein-main/hintergrund-1/. (18.02.2011)

Offenbach 2011d : Projekte. http://www.offenbach.de/stadtwerke-offenbach-holding/holding/leitstelle-elektromobilitaet-der-modellregion-rhein-main/projekte-3/. (18.02.2011)

SESAC 2011: Sustainable Energy Systems in Advanced Cities - Other partners.
http://www.concerto-sesac.eu/spip.php?rubrique120. (18.02.2011)

SFOE 2011: The SwissEnergy programme.
http://www.bfe.admin.ch/energie/00458/index.html?lang=en. (18.02.2011)

SMILE 2009: http://www.smile-europe.org/frame1.html. (18.02.2011)

WRI 2011: EarthTrends: CO2 Emissions: CO2 emissions per capita (source: WRI).
http://earthtrends.wri.org/searchable_db/index.php?theme=3&variable_ID=466&action=select_countries. (18.02.2011)

Annex

Annex I: Providers of data on TMN accession dates

CCP

Javier Gómez Prieto
Project Assistant, Climate and Air Team
ICLEI – Local Governments for Sustainability
European Secretariat
Leopoldring 3
D-79099 Freiburg
Phone: +49-761 / 36 89 2-0
e-mail: ccp-europe@iclei.org

Mabel Chow
Project Assistant Intern, Climate and Air Team
ICLEI – Local Governments for Sustainability
European Secretariat
Leopoldring 3
D-79099 Freiburg
Tel: +49-761 / 36 89 2-0
e-mail: ccp-europe@iclei.org

Climate Alliance

Stephanie Sternheimer
Klima-Bündnis - Europäische Geschäftsstelle
Galvanistr. 28
60486 Frankfurt am Main
Tel: +49-69-717139-01
e-mail: s.sternheimer@klimabuendnis.org

Energie-cités

Blandine Pidoux

Information Manager

Energie-cités

2 Chemin de Palente

F-25000 Besançon

Tel: +33 3 81 65 36 87

e-mail: blandine.pidoux@energy-cities.eu

Annex II: Compendia of Questions

Hanover

Mit der Einsetzung der Klimaschutzleitstelle 1994 und der Verabschiedung des ersten Klimaschutzprogramms 1996, gehört Hannover zu den Pionieren lokaler Klimapolitik.

- Wie und wann entstand in der Stadtverwaltung, bzw. der Politik das Bewusstsein dafür, dass Klimaschutz auf lokaler Ebene möglich und sinnvoll ist?
- Gab es eine Person, bzw. Gruppe, die das lokale Engagement besonders gefördert hat? Falls ja, woher bezogen diese Personen ihr Wissen, wie wurden sie selbst für das Thema sensibilisiert?
- Woher bezog die Stadtverwaltung das Wissen, wie Klimaschutz auf lokaler Ebene umzusetzen ist?
- Welches Verhältnis bestand zu anderen Städten, die zeitgleich ähnliche Initiativen erarbeitet haben?

Hannover ist bereits seit 1990 Mitglied des Klimabündnisses und von ICLEI.

- Wer gab den Anstoß, sich diesen Netzwerken anzuschließen?
- Was hat man sich von der Partizipation in Städtenetzwerken versprochen? Welche Anreize gab es, mitzumachen?
- In welcher Weise hat Hannover im Endeffekt von seinen Mitgliedschaften profitiert? Gibt es in dieser Hinsicht Unterschiede zwischen den Netzwerken?
- Wurden die Aktivitäten anderer Netzwerkmitglieder näher verfolgt? Wenn ja, wie wurde mit diesen Informationen umgegangen?
- Auf welche Weise hat sich Hannover in die Aktivitäten der Netzwerke eingebracht?

Eine Vorreiterrolle in einem neuen, vielen Menschen unbekannten Politikfeld zu übernehmen ist meistens mit Widerständen verbunden.

- Wie wurde die Notwendigkeit lokaler Klimapolitik gegenüber den verschiedenen lokalen Akteuren begründet?

- Welche Argumente wurden herangezogen, um das Thema zu „verkaufen“?

- Auf welche Weise wurde der lokale Klimaschutz anfangs in die kommunalen Verwaltungsstrukturen eingebettet?

- Wurde das Thema innerhalb der Stadtverwaltung sofort akzeptiert? Falls nein, wie wurde diese Akzeptanz geschaffen?

Die meisten Kommunen haben mit finanziellen Engpässen und geringer werdenden Einnahmen zu kämpfen. Hannover gehörte Anfang der 90er nicht zu den reichsten Kommunen (gemessen am lokalen BIP pro Kopf).

- Warum konnte sich Hannover eine freiwillige Aufgabe wie den Klimaschutz damals leisten?

- Warum wurde dieses Thema anderen Investitionen vorgezogen und wie wurde dies gerechtfertigt?

Als unterste Politikebene sind Kommunen vom regulativen Rahmen, den Land, Bund und EU vorgeben, abhängig.

- Welchen Einfluss hatte dieses regulative Korsett? Gab es in diesem Zusammengang Unterschiede zwischen den jeweiligen, übergeordneten Politikebenen?

- Welche Wirkung hatten klimapolitische Initiativen auf diesen Politikebenen auf die lokale Klimapolitik?

Welche Ziele wurden mit der Einführung des ersten Klimaschutzprogramms verbunden?

- In Bezug auf die Reduzierung von CO2 Emissionen.

- In Zusammenhang mit anderen, nicht direkt mit der Abmilderung des Klimawandels verbundenen Bereichen.

- Welche Kriterien spielten bei der Instrumentenwahl eine Rolle?

- In welchen Bereichen (Energie, Verkehr, Stadtplanung) wurden hauptsächlich Maßnahmen ergriffen? Wie ist diese Auswahl zu begründen?

- Welche Vorteile wurden mit einem, im Vergleich zu anderen Kommunen, frühzeitigen und intensiven Engagement im Bereich Klimaschutz verbunden?

Offenbach

Fragenkatalog

- Wie und wann entstand in der Stadtverwaltung, bzw. der Politik das Bewusstsein dafür, dass Klimaschutz auf lokaler Ebene möglich und sinnvoll ist?

- Gab es eine Person, bzw. Gruppe, die das lokale Engagement besonders gefördert hat? Falls ja, woher bezogen diese Personen ihr Wissen, wie wurden sie selbst für das Thema sensibilisiert?

- Woher bezog die Stadtverwaltung das Wissen, wie Klimaschutz auf lokaler Ebene

umzusetzen ist?

- Welches Verhältnis bestand zu anderen Städten, die zeitgleich/ zuvor ähnliche Initiativen erarbeitet haben?

Offenbach ist Mitglied des Klimabündnisses.

- Wer gab den Anstoß, sich diesem Netzwerk anzuschließen?

- Was hat man sich von der Mitgliedschaft versprochen? Welche Anreize gab es, mitzumachen?

- Wurden die Aktivitäten anderer Netzwerkmitglieder näher verfolgt? Wenn ja, wie wurde mit diesen Informationen umgegangen?

- Auf welche Weise hat sich Offenbach in die Aktivitäten des Netzwerks eingebracht?

Klimapolitik ist für die Kommunen eine freiwillige Aufgabe. Es erschließt sich nicht sofort, warum eine einzelne Stadt etwas zur globalen Herausforderung der Emissionsminderung beitragen sollte, während andere Städte bzw. ganze Weltregionen untätig bleiben.

- Wie wurde die Notwendigkeit lokaler Klimapolitik gegenüber den verschiedenen lokalen Akteuren begründet?

- Welche Argumente wurden herangezogen, um das Thema zu „verkaufen“?

- Auf welche Weise wurde der lokale Klimaschutz anfangs in die kommunalen Verwaltungsstrukturen eingebettet?

- Wurde das Thema innerhalb der Stadtverwaltung sofort akzeptiert? Falls nein, wie wurde diese Akzeptanz geschaffen?

Die meisten Kommunen haben mit finanziellen Engpässen und geringer werdenden Einnahmen zu kämpfen. Offenbach gehört ebenfalls nicht zu den reichsten Kommunen (gemessen am lokalen BIP pro Kopf).

- Warum kann sich Offenbach Investitionen in den Klimaschutz leisten?

- Warum wurde dieser Bereich anderen Investitionsfeldern vorgezogen und wie wurde dies gerechtfertigt?

Als unterste Politikebene sind Kommunen vom regulativen und finanziellen Rahmen, den Land, Bund und EU vorgeben, abhängig.

- Welchen Einfluss hatte dieses regulative Korsett? Gab es in diesem Zusammengang Unterschiede zwischen den jeweiligen, übergeordneten Politikebenen?

- Welche Wirkung hatten klimapolitische Initiativen auf diesen Politikebenen auf

die lokale Klimapolitik?

- Hätte Offenbach eine Klimastrategie entworfen, wenn auf Bundes- bzw. EU E-bene die entsprechenden Fördergelder nicht vorhanden gewesen wären?

Welche Ziele wurden mit der Einführung des Klimaschutzprogramms verbunden?

- In Bezug auf die Reduzierung von CO2 Emissionen.
- In Zusammenhang mit anderen, nicht direkt mit der Abmilderung des Klimawan-dels verbundenen Bereichen.
- Welche Kriterien spielten bei der Instrumentenwahl eine Rolle?
- In welchen Bereichen (Energie, Verkehr, Stadtplanung) wurden hauptsächlich Maßnahmen ergriffen? Wie ist diese Auswahl zu begründen?
- Welche Vorteile für die Stadt wurden mit einem intensiven Engagement im Be-reich Klimaschutz verbunden?