

# **Transnational Municipal Networks**

Local action on climate change through global networks

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## **Abstract**

Transnational Municipal Networks (TMNs) are prominent networks in the international climate governance arena serving as drivers of and advocates for local action on climate change. The main objective of this exploratory research is to establish the relation between the internal governance structure of the TMNs and their ability to carry out certain types of activities. Internal governance encompasses the means through which a TMN regulates the authority and structure within the organization. External governance refers to interaction of the network with other stakeholders and the ability to respond to external pressures as well as to position the operation of the network in the multi-level climate governance arena. From the examined cases, namely ICLEI Local Governments for Sustainability (ICLEI), C40 Cities Climate Leadership Group (C40), and 100 Resilient Cities (100RC), and a networking event, it is clear that there is a considerable amount of similar internal governance practices utilised by networks with different historical backgrounds and structures. The applied analytical criteria, based on a framework developed by Kern and Bulkeley (2009), constituted such arrangements as information and communication, project funding and cooperation, and recognition, benchmarking and certification. These can be seen to be instrumental in delineating internal governance formation of the network. Considering key functional aspirations of TMNs which include learning, advocacy and financing, the examination of their internal governance architecture lead to the suggestion that there are preferred methods of internal governing capable of synergistic relation with the external governance dimensions and, hence, facilitating performance of their functions. Established patterns were evaluated in the context of international climate governance to reveal the importance of collaborative and cooperative interactions, climate negotiations and climate financing mechanisms in determining the factors potentially affecting the internal governance composition of TMNs.

**Keywords:** transnational municipal networks, climate change, climate governance, cities

## **Executive Summary**

Transnational Municipal Networks (TMNs) have formed in response to climate change pressures cities are facing, and as a result of the realisation of the potential physical, financial, human, social, natural and intellectual capital of the cities capable of leading a way in addressing climate change through innovation and policy design, active participation in international discussions and experience sharing. TMNs are characterised by the predominantly informal interaction of public and private actors with specialised and interdependent interests who cooperate on solving common issues on a centralised, but non-hierarchical basis. Merging the knowledge and information flows from the local, state and global levels and utilising them in the beyond city networks appropriate governance arrangements might be achieved, providing cities with the opportunity to respond to climate change challenges and become prominent actors in international climate negotiations.

This research takes the form of exploratory multiple case study examination focusing on three selected research units: ICLEI Local Governments for Sustainability (ICLEI), C40 Cities Climate Leadership Group (C40), and 100 Resilient Cities (100RC) as well as an additional case study with a different investigation boundary that shifts the research focus from the morphology of a given TMN comprised of numerous internal governance arrangements to a single structural aspect of internal governing, namely a major networking event. Shifting examination boundaries of the research units allowed for a more comprehensive analytical framework application and evaluation of the networks internal governance architecture with consideration of interrelations between their functions and external impacting factors.

Guiding the examination, the main research question was formulated as follows:

*How does the internal governance structure of TMNs relate to their ability to carry out certain types of activities?*

Based on the presented research question, the key objectives of this exploratory research were:

- To examine the applicability of the selected analytical framework through mapping internal governance architecture of the TMNs and identifying dominating patterns.
- To evaluate identified patterns in the context of international climate governance.

Methods of data gathering included a literature review, stakeholder interviews, web information sourcing and direct observations of a major networking event. The applied analytical framework encompasses theoretical perspectives from multi-level climate governance theory and it is conceptually enhanced with policy network and social network analysis standings used to evaluate structural attributes. With the complex and multi-level viewing of international climate governance, governance dimensions were further divided in relation to TMN operation including: internal and external governing domains. The analytical criteria used in mapping the internal governance morphology of networks was adapted from the work of Kern and Bulkeley (2009) and included a set of proposed internal governing strategies utilised in forming networks architecture capable of facilitating TMNs functioning in the transnational climate governance arena. The research approach is illustrated in figure 1-1, which outlines stages of analysis leading to evaluation.

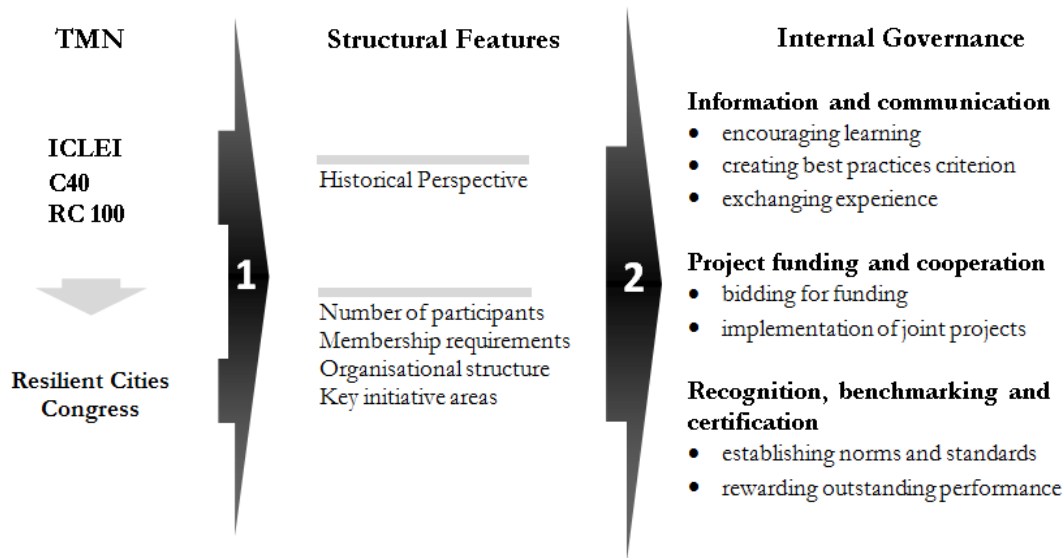


Figure 1-1. Methodological approach based on the analytical framework developed by Kern and Bulkeley (2009).

Analysis and evaluation of the cases in accordance with the adapted analytical framework unfolded four main research findings:

- **Internal governance.** The internal governance arrangements utilised for the fulfilment of the networks functions, be it learning, advocacy and representation, project funding and toolkit development for advancement of measures to address climate change and resilience challenges, are similar. In all studied cases, for information dissemination and advocacy, web based interaction is being actively supplemented with conferences, workshops and training sessions which allow member city representatives to interact with other stakeholders seeking to build capacity to address climate change adaptation and mitigation issues. Networks favour initiative area specification for projects and related activities, and in two of the examined cases thematic networking within a network was utilised to facilitate a more flexible and efficient knowledge exchange. TMNs try to promote public private partnerships extending the sources of finance and expertise available for the members and use collaborative and cooperative external interactions for enhanced leaning, advocacy, and development of international climate and resilience standards and practices.
- **Climate finance.** Financing climate projects has gained importance and recognition in moving the climate change agenda forwards. Resources for tackling climate change are in substantive amounts sourced from developed countries, invested in developing countries and they are managed by one or several international institutions. Instrumentally, climate finance can be mobilised from a range of sources: domestic and international, bilateral and multilateral, public and private. Key sources of investments used in climate financing comprise bi- and multi-lateral funds and development banks, green bonds, and crowd funding. Financial aspects encountered in the investigation of funding mechanisms required for TMN projects, events and general functioning present a complex collaborative arrangement, which are flexible and case based. Financial markets are evolving, so part of the challenges in addressing climate change adaptation and mitigation include adjusting economic mechanisms to achieve low carbon climate resilient economy and creating conditions for directing

climate capital flows. The emerging international climate finance structure might provide access to additional resources for TMNs and their members, resulting in changing constituency of TMNs which could accommodate the arrangements for partnerships and co-funding within their governance structure.

- **Climate governance.** From the historical perspective it has been noted that climate change adaptation and mitigation responses, advocacy and action often involved a certain level of interaction between the selected networks and other prominent actors in the climate change governance system. The morphology, or internal governing architecture of a given network, facilitates achieving its structural goals of learning, financing and/or advocacy through collaboration, cooperation and/or competition with other networks and stakeholders. Political context and international climate negotiations affect the formation of TMNs at the establishment stage, impact the composition of networks later in their operation determining their membership and geographical span, influence their ability to source funding and impact strategic direction of their advocacy agenda. It is therefore, possible to suggest that external collaboration, cooperation and competition among the networks, as well as among the networks and other stakeholders, present an important influencing factor in the formation of networks internal governing arrangement which in a responsive or precautionary manner reflects networks capacity to interact on different governance levels.
- **Analytical framework.** Methodologically, this research involved different types of municipal networks, where ICLEI represents a general purpose sustainability network, C40 has a more narrow climate focus, and 100RC is working explicitly with the concept of resilience. In the light of this statement, applying a single set of internal governance criteria with the aim of identifying which internal governance arrangements were adapted for working specifically with climate change presented a challenge. This uncertainty also relates to the wider international negotiations seeking to establish common approaches and standards for climate change adaptation, mitigation and resilience. Originally, the adapted criteria were designed based on a different set of municipal networking examples. The structure of the observed networks varies from ICLEI with layered hierarchy of internal architecture operated through representative democracy, to a flatter more compact organisation with an appointed overseeing leader and executive management teams in C40 and 100RC. It was found that despite the difference in size and complexity of the single networks morphology the selected internal governance criteria can be successfully applied to the TMNs with different architecture.

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## **Abbreviations**

|             |   |
|-------------|---|
| 100RC       | 100 Resilient Cities - Pioneered by the Rockefeller Foundation (100RC)                      |
| ACCCRN      | Asian Cities Climate Change Resilience Network  |
| AR5         | The Fifth Assessment Report of the United Nations Intergovernmental Panel on Climate Change |
| C40         | C40 Climate Leadership Group  |
| C2C         | City to City cooperation  |
| cCCR        | carbonn Cities Climate Registry   |
| CCI         | Clinton Climate Initiative  |
| CCP         | Cities for Climate Protection Campaign  |
| CGI         | Clinton Global Initiative   |
| COP         | Conference of the Parties   |
| CRO         | Climate Resilience Officer  |
| GCC         | Green Climate Cities Program  |
| GDP         | Gross Domestic Product  |
| GFDRR       | Global Facility for Disaster Reduction and Recovery   |
| GHG         | Greenhouse Gas  |
| GPC         | Global Protocol for Community Scale Emissions   |
| HABITAT I   | United Nations Conference on Human Settlements  |
| HABITAT II  | Second United Nations Conference on Human Settlements                                       |
| HABITAT III | Third United Nations Conference on Human Settlements  |
| HFA         | Hyogo Framework for Action of the United Nations Office for Disaster Risk Reduction         |
| ICLEI       | ICLEI Local Governments for Sustainability  |
| ICMA        | International City/County Management Association  |
| ICT         | Information and Communications Technology   |
| IDB         | Inter-American Development Bank   |
| IIED        | International Institute for Environment and Development                                     |
| INC         | Intergovernmental Negotiations Committee  |
| IPCC        | United Nations Intergovernmental Panel on Climate Change                                    |
| ISOCARP     | International Society of City and Regional Planners   |
| LA21        | Local Agenda 21   |
| LC2         | Low - Carbon Livable Cities   |
| LEAP        | Local Energy Action Plan Wizard   |
| MAF         | Mayors Adaptation Forum   |
| NGO         | Non – Governmental Organisation   |
| PURR        | Project for Urban Risk Reduction  |
| REDD+       | Reducing Emissions from Deforestation and Forest Degradation                                |
| RPA         | Rockefeller Philanthropy Advisors   |
| SACN        | South African Cities Network  |
| SALGA       | South African Local Government Association  |

|            |  |
|------------|--|
| TMN        | Transnational Municipal Network                          |
| UN         | United Nations   |
| UN-HABITAT | United Nations Human Settlement Programme                |
| UNCDF      | United Nations Capital Development Fund                  |
| UNCED      | United Nations Conference on Environment and Development |
| UNCSD      | United Nations Commission on Sustainable Development     |
| UNDP       | United Nations Development Programme                     |
| UNEP       | United Nations Environment Programme                     |
| UNFCCC     | United Nations Framework Convention on Climate Change    |
| UNISDR     | United Nations Office for Disaster Risk Reduction        |
| USA        | United States of America                                 |
| USAID      | United States Agency for International Development       |
| WACLA      | World Assembly of Cities and Local Authorities           |
| WMCCC      | World Mayors Council on Climate Change                   |
| WRI        | World Resource Institute                                 |
| WUF        | World Urban Forum  |



# 1 Introduction

Cities cover just over two percent of the Earth's land surface but account for almost 70 percent of the carbon emissions (Climate Action, 2013). It is believed though that up to 75 percent of these emissions could be reduced through local government measures (Hakelberg, 2014). One of the central problems in global and national policy making and administration is governing of common pool resources; climate change mitigation actions take place at numerous governance levels (Sovacool, 2011; Underdal, 2010), which is also correct for the climate adaptation measures, resulting in the uncertainty in identifying the most appropriate level for interaction and operationalising responses.

Local authorities play a key role in addressing sustainability challenge; being the closest governance level to people, local authorities construct and oversee environmental infrastructure and planning processes, establish local and assist in implementing national environmental policies, making them a vital actor in sustainable development (United Nations, 1992). Acknowledging the importance of the local dimension of climate change (Betsill & Bulkeley, 2007), emphasis has therefore been put on urban climate governance as cities can be often observed to utilise exogenous forces as a source of motivation for climate change action planning and implementation (Anguelovski & Carmin, 2011). In response to the global sustainability and climate change challenges municipalities and local collaborations are often found to form strategies and visions based on scientific knowledge contributing to sustainable urban transformation – a strategy for planned urban development, climate change adaptation and mitigation (McCormick, Anderberg, Coenen, & Neij, 2013).

Placing a city into the globalisation context, international transport systems, flow of people and numerous international meetings allow cities to become proactive in climate change issues. Cities were observed to actively lead a way in addressing climate change through innovation and policy design, active participation in international discussions and experience sharing (Puppim de Oliveira, 2013). Representing financial and knowledge centres cities can become hubs for climate change related industries investment and aid the information exchange. These qualities represent driving factors for cities participation in transnational municipal networks (Lee, 2013). Realising the potential physical, financial, human, social, natural and intellectual capital of the city appropriate governance arrangements might be achieved, merging the recourse knowledge and information flows from the local, state and global levels and utilising them in the beyond city networks (Puppim de Oliveira, et al., 2013).

This research analysed the current standings in a sector of global environmental governance – urban networking, development of which was partly triggered by the need to address climate change mitigation and adaptation, a problem of a transboundary nature, and explore the position of the transnational municipal networks (TMNs) in facilitating the city level climate change action through international cooperation. Examination comprises a mapping exercise to identify the structural form of the selected TMNs, namely ICLEI - Local Governments for Sustainability (ICLEI), C40 Cities Climate Leadership Group (C40) and 100 Resilient Cities (100RC) and evaluating them in relation to their capacity to foster transboundary collaboration between municipalities.

## 1.1 Problem Definition

### 1.1.1 Why map and investigate TMNs?

For analytical purposes this research adapted the definition of a network formed by Kenis and Schneider (1991) where networks were described as “webs of relatively stable and ongoing relationships which mobilise dispersed resources so that collective (or parallel) action can be orchestrated toward a solution of a common policy problem” (Kenis & Schneider, 1991, p. 36). Transnational municipal networks (TMNs) are characterised by the predominantly informal interaction of public and private actors with specialised and interdependent interests who cooperate on solving common issues on a centralised, but non-hierarchical level (Borzel, 1998, p. 260). These configurative aspects result in the ability of TMNs to act as a finance attracting mechanism for climate change action through obtaining funding from numerous sources in support of its operation and function provision.

In policy making networks should be established as specific structural arrangements, reflecting changed relationships of between the state and the society. The emergence of policy network could be attributed to the dominance of the organised actors in policy making, increased public participation, state fragmentation and blurring of the boundaries between private and public domains. Most commonly policy networks deal with complex problems with varied political, economic and technical agendas (Kenis & Schneider, 1991, p. 41). Transnational municipal networks seek to allow for sharing the knowledge and best practice, facilitating better communication and cooperation as well as innovative policy diffusion (Feldman, 2012). They also provide access to resources, markets and capabilities allowing for combination of different pieces of knowledge (Cassi, Corrocher, Malerba, & Vonortas, 2008). Bringing together city governments to cooperate on the common environmental problem TMNs serve as an international communication and representation platform providing cities with the opportunity to voice their concerns (Bouteligier, 2013).

Understanding municipal networking operations, although long established and widespread, presents a challenge for research undertaking of identifying the appropriate study scope, developing sound theoretical grounds and gathering quality comparative data. As an analytical tool mapping is seen to correspond well with the objectives and limitations of the research, providing clear criteria for categorisation and verification of structural patterns, allowing for formation of assumptions concerning constraints and opportunities in respect to the identified patterns, and organising multifaceted pieces data in a clear way.

The purpose of exploratory investigation was to move toward a clearer understanding of problem positioning, deriving appropriate data, developing ideas on significant relational lines and to evolve ones conceptual tools (Blumer, 1986, p. 40). Examination based on mapping requires to “freeze” the examination object in the moment of time in order to avoid losing focus. Should there be substantial changes taking place in the field of study upon research completion, the examination still provides value in theoretical development, or application terms (Betsill, 2014). Mapping, carrying an exploratory character, presents a meaningful perspective on the dynamic structure of the selected cases (Bulkeley, 2014).

### 1.1.2 Which frameworks to analyse TMNs?

The identified study interest area is sustainable urban transformation taking the form of inter municipal networking arrangements for the facilitation and implementation of climate change strategies and policies. It is important to adapt the dynamic view of interorganisational relationships to the researched entities, as TMNs are in a constant state of development and

are embedded in their surrounding social and political contexts (Granovetter, 1985; Larson, 1992). There are multiple theoretical frameworks used to approach the analysis of urban climate change policy-making and TMNs ranging from network and transition governance (Khan, 2013), actor-network theory, transition theory and multi-level perspectives (Geels, 2011), to polycentrism (Sovacool, 2011) institutional learning (Steele, 2011), resilience city transition (Bahadur & Tanner, 2013; Jabareen, 2013). This brief list serves as an example of the thinking approaches, or perspectives, developed in the field.

A number of previous research activities have concentrated on the role of the TMNs in the transnational governance and examined the rationale for the cities to participate in such networks (Bouteligier, 2013). Looking at stakeholders and their role in the formation of the network is one of the ways of approaching analysing TMNs. Stakeholder theory assists in explaining and predicting the functioning of the organisation with regards to influences forming its environment (Jones, 1995). Knoke (1990) summarised social network analysis, a form of structural analysis, to include two main components of a set of objects (nodes, positions, or actors) and set of relations between those objects (ties, edges, or links) (Knoke, 1990, p. 8). Merging stakeholder theory with aspects of social network analysis allows to identify the level of interaction, influence and dependency between the network actors using the concepts of ‘centrality’ (position of an individual actor in relation to others) and ‘density’ (structural characteristics that measures the relative number of ties that link actors together in a given network) (Rowley, 1997, pp. 896-901). Explaining networks through social network theory is often quantitatively demonstrated. Viewing cities and other stakeholders as actors, or nodes affecting the TMN configuration, although as an analytical perspective was limited in this research, still provides essential mechanism for understanding the composition of the network.

Dowding (1995) argued that formal network analysis allows researchers to depict some of the general features of the network structure that define, for instance, recourse flows, but it does not provide a comprehensive causal analysis of a particular network in structural terms. In the policy network perspective seeking explanation of the structural network properties might require both quantitative and qualitative approaches; theorising for network analysis might not be viable, as theory has to apply to a subject under different institutional arrangements, which might lead an examination to developing a classificatory scheme instead (Dowding, 1995). As an example, Van Warden (1992) classified networks according to actors, function, structure, institutionalisation, rule of conduct, power relation and actor strategies (Van Waarden, 1992); but Dowding undermined the usefulness of such approach assuming that it might be disconnected from the dynamic models of structural or causal explanations (Dowding, 1995, p. 141).

Moliterno and Mahogany (2011) applied multilevel theory on social network perspective creating a vision in which an observation on one structural level of a system of organisational networks can be related to the one on the higher or lower levels in the system. Applying the concept of nodes to elaborate on this theoretical suggestion, this view would encompass an assumption that at a given level of analysis each node of the network, is itself a network at a different level of analysis (Moliterno & Mahony, 2011, p. 444). The focus of this research is on the morphology of the network itself with the single dimensional viewing implied. Bringing the introduced theoretical perspectives to the attention of the reader and acknowledging the importance of inter relations between the member cities and the network, as well as the influence of the changes occurring on the international climate mitigation and adaptation arena, this research concentrates on the architecture of the TMN, seeing it as a defined unit of analysis.

Setting aside the issue of choosing the most objective and all-encompassing theoretical grounds for the analysis, it is essential to notice the growing number of TMNs on the global climate change governance arena, emphasising the necessity of studying the already well-established as well as the newly emerged networks in order to observe their evolution. Case based TMN research is seen to have numerous approaches. In the analyses section this research scrutinises the applicability of the framework previously developed by Kristine Kern and Harriet Bulkeley with a new set of cases.

Salvini (2010) conceptualised approaches to network analysis through the prism of symbolic interactionism. Reasoning behind the formed taxonomy is seen to be beneficial for demonstrating the process of the thinking framework development. Pragmatic approach implies mixing the methods and not emphasising coherence of the theoretical construct and methodological procedures, making it possible to highlight certain dimensions using different perspectives in one analysis. ‘Vocational’ approach is based on the assumption that in synthesising theoretical and methodological aspects a researcher might ignore history and formational background of these perspectives (Salvini, 2010, pp. 379-388). In designing a theoretical frame of reference and proceeding with the analysis, it was therefore important to balance theoretical perspectives, making a priority statements and avoiding unpredictable dependency or domination of one view over another.

With the suggested one level focus, where the architecture of the network is being of the research interest, the examination was, nevertheless, seen to have potential to be enhanced with multi-level perspective allowing to minimise the limitation associated with exclusion of the broader current contextual factors affecting the structure of the network. Similarly, this research was designed to not directly commit to a single theoretical perspective, but rather rely on the mix of theories as explanatory instrument, resulting in some conceptual factors from policy network and social network theory presented earlier in this section to be used in support of the elucidation.

## 1.2 Research question

Studying the internal dimension of the selected transnational municipal networks allowed this thesis author to explore current organisational governance models. Examination is carried out in a form of a mapping exercise which identifies internal governance arrangements (information and communication; project funding and cooperation; recognition, benchmarking and certification) utilised in the selected TMN cases (namely: ICLEI, C40 and 100RC). Based on the comparison of the selected cases in accordance with the suggested framework this research aims to establish the means by which TMNs operate within the wider context of multi-level governance for climate change. Subsequent evaluation, therefore, expands the understanding of the factors affecting the architecture of the network.

The research question took an instrumental form assisting in keeping the examination focus and avoiding compromising the scale of the established unit of analysis, and is formulated as follows:

*How does the internal governance structure of TMNs relate to their ability to carry out certain types of activities?*

Based on the presented research question, the key aims of this exploratory research were:

- To examine the applicability of the selected analytical framework through mapping internal governance architecture of the TMNs and identifying dominating patterns.



- To evaluate identified patterns in the context of international climate governance.

In accordance with the outlined aims, the objectives of this research were:

- To explore the historical perspective and structural features of the selected cases.
- To identify internal governance arrangements attributable to each of the selected TMNs.
- To evaluate the identified internal governance formations in the context of international climate governance with the intent to establish interrelations between the internal governance structure of TMNs and their function.

## 1.3 Methodology

### 1.3.1 Data collection

In posing the research problem and developing the analytical outlook it was recognised that data collection would take numerous forms to maximise information input. In studying few cases there is a high possibility of making numerous observations at different levels of analysis that might be relevant to the theoretical standings underpinning the selected examination criteria (King, Keohane, & Verba, 1994). This argument served as a guiding principle for obtaining primary data, assuring that even if the amount of collected information was limited, number of observations can still be sustained at the level sufficient for the evaluated theory.

- Literature review

Extensive review of published literature was conducted to get acquainted with transnational municipal networking research directions and key theoretical perspectives used. It also informed the historical development perspective and provided necessary definitional and argumentative inclusion.

- Stakeholder interviews

Interviews with the identified key stakeholders were held in the semi-structured manner (see appendix I and II for interviewees and interview questions accordingly). Interviews were divided in three main categories of academic focused, network focused, and third party stakeholder focused. There was a line of common questions asked across all of the categories, with time allocated for a more targeted question as well as any comments occurring during the discussion. This division allowed for conducting a part theory driven interviews with researchers and academics being informed of the theoretical perspectives considered and analytical framework used, which, in its turn, facilitated supplementing and further developing of the thinking framework underpinning the analysis. Interviews with TMN representatives and third parties were mainly aimed to inform the analysis and discussion chapters of this research, serving as confirmation to the observed patterns or assumptions derived from the literature review.

- Web information

Documentation available from the TMNs web sites, along with the data acquired during the interviews, provide the most up to date source of information about their operation, organisation and aspirations, which was seen to be the main source of data for the first stage of examination.

- Direct observations

To initialise the empirical network research and ensure reasonable data collection issues of boundaries specification, network sampling and measurement of relations were addressed in accordance with suggestions by Knoke and Yang (2008) who scrutinised social network analysis providing a guidance for methodological studying of networks. Prior to attending the 2014 ICLEI Resilient Cities Congress theoretical framework was developed to the extent where it could provide basis for meaningful observations. With that being stated, the necessity of keeping an open mind was recognised, making it possible to integrate unforeseen perspectives later in discussion section. Both formal and informal Congress sessions were attended for observation with numerous semi-interviews taking place. For the purposes of correct data presentation, though, information obtained in the semi-interviews would be referenced as “Resilient Cities Congress (2014)” so that to avoid deliberate disclosure and form a more prevalent attitude. Where possible, the view would be fully referenced, which relates mainly to the information presented in panels and discussions.

### **1.3.2 Analytical framework**

The analytical framework was based on, but not limited to, the principles derived from the complex and multi-level climate governance perspective (Andonova, Betsill, & Bulkeley, 2009; Marks, Hooghe, 2004; Okereke, Bulkeley, & Schroeder, 2009; Pattberg & Stripple, 2008), with the focus on soft power, learning and bottom up policy diffusion and supplemented with the concepts adapted from the policy and social network analysis used to explain structural attributes. Analysing literature from the historic perspective specified the role of the city and municipal networks in the multi-level governance arrangements for sustainability and specifically for climate change adaptation and mitigation. The research took the form of a multiple case study approach (Yin, 2011) focusing on the three selected TMNs :

- ICLEI Local Governments for Sustainability (ICLEI).
- C40 Cities Climate Leadership Group (C40).
- 100 Resilient Cities (100RC).

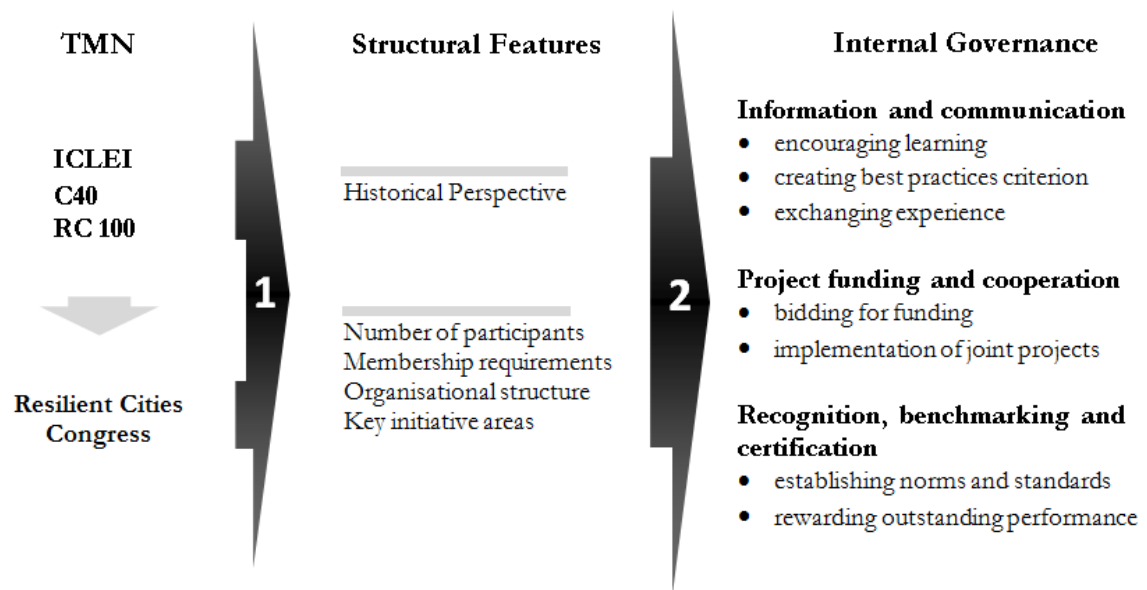
ICLEI was selected as a main case study. C40 was selected as a case for comparative analysis in order to facilitate examination of the analytical framework applicability. Similarly to C40, 100 Resilient Cities was chosen to examine governance criteria applicability, adding a different model of municipal network to the examined selection. Information synthesised in the literature review supplemented with perspectives and opinions derived from the conducted interviews allowed to perform an informed documentation and web based information review and to organise material for analytical examination and subsequent internal governance pattern identification.

Internal governing, as a form of self-governance, seeks to expand membership, stabilise the network, and assist in achieving its goals. Functionally aiming to influence the nature of the

climate change debate and action, TMNs employ strategic internal governance formations (Kern & Bulkeley, 2009, p. 319). With the internal governance being outlined in the selected manner, external governance then refers to the approaches that allow municipal networks to function within the multi-level governance context. Successful operation of the TMN also depends on the arrangements that translate into TMN influencing governmental actors, engaging with non-governmental actors and intermediating relations and actions between actors at the network and municipal level (Kern & Bulkeley, 2009, p. 323). The analysis criteria were adapted from the work of Kern and Bulkeley (2009) who identified forms of governing climate change through transnational municipal framework as follows:

- Information and communication (encouraging learning, creating best practices criterion and exchanging experience).
- Project funding and cooperation (bidding for funding, implementation of joint projects).
- Recognition, benchmarking and certification (establishing norms and standards, rewarding outstanding performance) (Kern & Bulkeley, 2009, pp. 319-323).

Supplemented with the structural features and organisational observations, systematising the data according to the suggested criteria facilitated the application of the adapted set of internal governance criteria (see figure 1-1).



*Figure 1-1. Methodological approach based on the analytical framework developed by Kern and Bulkeley (2009).*

*Source: authors own, developed based on the reviewed sources presented in the literature review.*

Figure 1-1 presents the methodological approach summarised in two main stages. The first stage, as mentioned above, included identifying organisational features of municipal networking namely requirements for membership, number of participants, key initiative areas and others. Classification was then further developed by adding structural criteria from the literature review such as polycentricity, hierarchy, voluntarism, responsiveness, flexibility and adaptability, attributable to network characterisation. The suggested analytical framework forms the first step in the overall methodological approach, which was divided into three key parts (see figure 1-2).

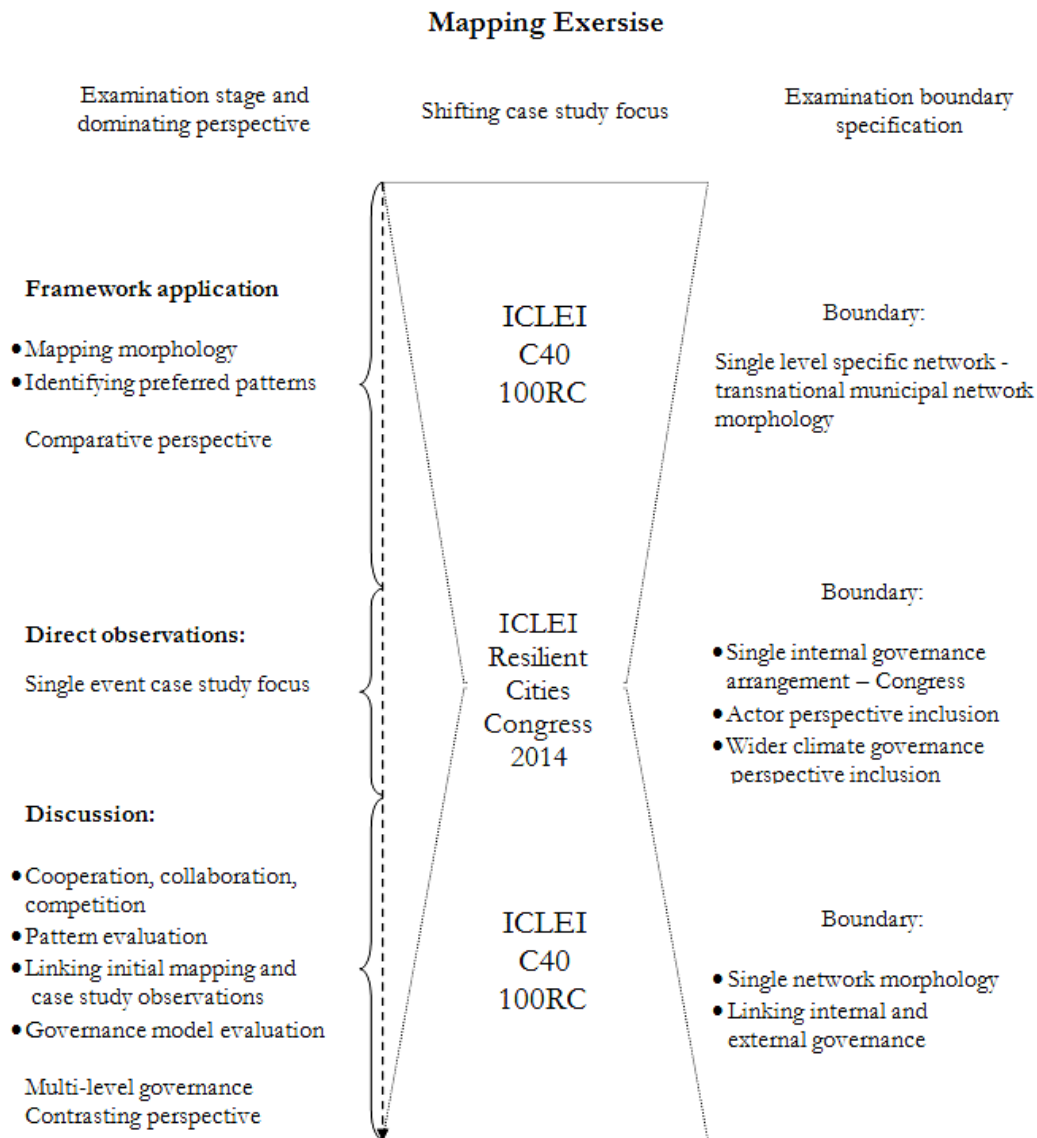


Figure 1-2. Stages of Research.

Source: authors own.

Obtaining a comparable descriptive information for each of the organisations in the first stage allowed for the application of the adapted set of forms of governance criteria (forms of governance by Kern and Bulkeley) with the aim of identifying the similarities, differences, development patterns and potential gaps in examining the operation of the transnational municipal networks. This second phase of analysis presented a foundation for additional case study inclusion and further discussion and evaluation. A single internal governance formation, namely networking event, is examined in addition to the three main TMN cases, in order to demonstrate the interaction between the internal and external governing dimensions and present argumentation in support of the preferred internal governing pattern evaluation.

Figure 1-2 presents overarching methodological staging of the analysis. The three selected TMNs were chosen as case studies, despite presenting a comparative challenge. Being significantly different, ICLEI and C40 are global networks with multiple focuses, which have been favoured as examples in the transnational municipal networking research. 100RC is a relatively new global network with a more narrow focus.

Applying the analytical framework to all three networks allowed for comparative analysis. Having this variety of networks facilitated a more thorough testing of application of the analytical framework, where criteria were applied to diverse set of transnational municipal networking models. This in turn allowed to examine the applicability of the framework for TMN researching, contrast the network models and identify the preferred methods of internal governing. In the interview with Michelle Betsill (2014), when discussing the scope of the study, it was suggested for the outlook to be settled in one level, therefore learning how the structure on the general network level allows for particular types of projects to emerge. Exploring existing network formation in this way allowed for the assumption formation regarding the longevity and adaptability of the selected network architecture.

Later in the examination research narrowed its focus to ICLEI. This allowed better contextualising and subsequent case study integration, where the 2014 Resilient Cities Congress was evaluated. Using ICLEI's Resilient Cities 2014 Congress as a complementary case study implies that boundary location was predetermined by the actors that were able to attend the event at a given time (Knoke & Yang, 2008). This, in a sense, comprises a new network boundary and also differed from the way the selected networks were looked at, focusing on actors in a single governance arrangement with a defined topic, identifying the structure of interaction in conjunction with the wider advocacy development.

Examining the governance arrangement differentiated in the suggested analytical framework made it possible to apply the framework to the real life case of network operation, conduct primary data collection, observe, to a certain extent, not only actor interaction guided by the formed setup, but also the way in which network morphology is affected by the external pressures in the climate change governance field and the way it results in the beyond network advocacy shifts. Advocacy discussion brought the selected three TMNs back into the research highlight, as all of them were participating in the Congress, finalising the analysis with the expanded analytical focus.

## 1.4 Scope and limitations

### 1.4.1 Scope

Hypothesising that transnational networks allow for the increasing knowledge and best practice transfer, it is reasonable to exercise caution and notice the fact that increased networking does not necessarily equal increased implementation. Keiner and Kim (2007)

stated that the virtual nature of most of the networks undermines the actual adaptation and implementation of the best practices as the locality aspects of the actors such as cultural or geographical differences cannot be fully reflected in the ICT based networking (Keiner & Kim, 2007). The examination of the implementation and knowledge transfer results was left outside of the scope of this paper, but was seen as the as a potential next step in utilising the findings of this research (see figure 1-3).

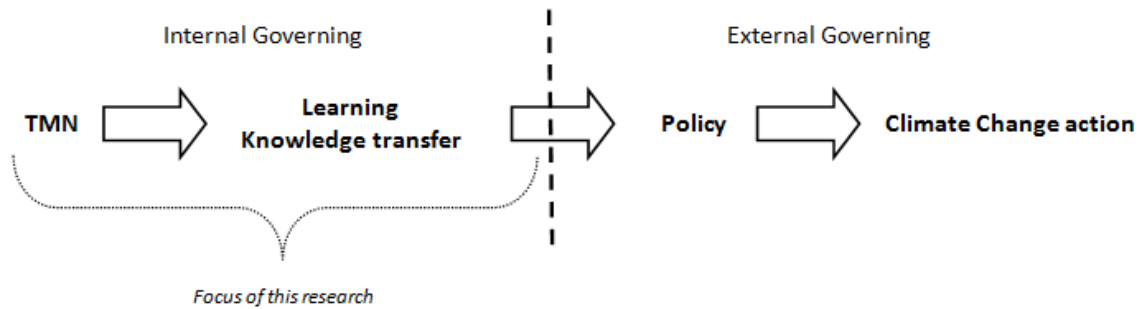


Figure 1-3. Research Focus.

Source: authors own, developed based on the reviewed sources presented in the literature review.

Figure 1-3 visualises the focus of this research. The examination was limited to the internal governing arrangements attributable to TMNs and their position in the international governance for climate change. The potential future research focus could then look into the external governance as an outcome of the TMN's functioning and concentrate on the urban level policy creation and implementation.

### 1.4.2 Limitations

Looking at the network as a whole, without examining the building blocks (the cities themselves), or influences from outside of the network in detail, is a limitation. It was recognised that due to the array of theories currently applied in social science research for the selected topic, the identified theoretical grounds might lack comprehensiveness presenting a constraint for the all-encompassing data analysis. It was also expected that with the progression of this research new perspectives were to occur, presenting new aspects to support the analysis; the structure of the research was therefore designed allowing for flexibility and further evolvement opportunities.

It was realised that due to the selected examination focus, the objectivity of findings might have been compromised as the research design has not allowed for gathering and analysis comprehensive collection of primary data. Using the evidence obtained in semi structured interviews in argumentation about non-interview facts presents an issue of validity determination (Wengraf, 2001). With the number of people interviewed, and the fact that their candidature was predetermined by the assumptions made in the process of analytical framework development, there is a possibility that some of the key stakeholders might have been missed. All the conclusions derived were, therefore, limited to the identification of the current standings of the TMNs and the determination of the further research potential, avoiding making of any prescriptive suggestions regarding the functioning of an successful transnational municipal framework.

## 1.5 Audience

The findings of this research are seen to be of interest for academics and researchers working in the field of sustainable development and climate change. This research could form a base for a further more in depth study focusing on primary data sourcing and observations, in its current form it is considered to carry value of an historical record for the observed municipal networks and their partners, as well as academic value for examining the applicability of the selected theoretical framework with a different set of variables in a given time period.

## 1.6 Disposition

Chapter 1 contains an outline of the nature of the problem which forms the direction of this research. It presents the methodological steps used to acquire data and perform the analysis, as well as suggests limitation and target audience and outlines the structure of the paper.

Chapter 2 presents the reader with a literature review to communicate historical perspective on the development of the TMNs aligned with reviewing the evolving governance arrangements for regulating resilience and climate change adaptation and mitigation. Reinstating the role of the city networking in the climate governing, this section establishes main definitions and associated theoretical movements as well as the academic discourse over the rationale of functioning TMNs.

Chapter 3 provides the main findings from the extensive web based research, literature review and gathered primary data. This section introduces initial observations, organised according to the suggested structural criteria. It frames the findings from non-academic sources and concentrates on the application of the selected analytical framework carried out in two stages of first identifying structural composition of the selected TMNs, and then analysing the findings applying the adapted criteria. Using the Kern and Bulkeley (2009) framework to outline the forms of governance utilised in the respective networks this section presents a comparative outlook on the researched TMNs.

Chapter 4 elaborates on the analytical approaches previously employed in TMN research. It discusses the patterns identified in the process of analytical framework application evaluating them in the context of international climate governance. This chapter also discusses intra-organisational interaction and addresses the correlation between the internal and external governing dimensions relevant to networking operations, with subsequent deliberation on the applicability of the selected analytical framework to the undertaken research.

Chapter 5 summarises the key findings of this research and provides suggestion for further research.

## 2 Literature Review

### 2.1 Climate Change adaptation and mitigation

Climate change refers to the alterations of the earth's atmosphere which lead to changing climate systems, resulting in the climate warming tendency and increased frequency of extreme weather events (UNDP; UNCDF; UNEP, 2010). Increased understanding of the climate systems re-established that continued emission of greenhouse gases would introduce further changes to the systems components and a clear connection of human influence on this process is evident (United Nations, 2014).

Urban responses to climate change can be divided into adaptation and mitigation measures. The Intergovernmental Panel on Climate Change has released its fifth assessment report (AR5) in 2014 which is a subject to final reviewing in Autumn of the same year. IPCC Working Group III defines climate change mitigation as a “human intervention to reduce the sources or enhance the sinks of greenhouse gases” to keep greenhouse gas concentration in the atmosphere at levels preventing detrimental effects of anthropogenic factors on the climate systems (IPCC, 2014, p. 4). Mitigation includes moving towards low carbon societies and reduction, or prevention, of greenhouse gas emissions (e.g. renewable energy, land-use management) (UNEP, 2014). The responses can be bridged depending on the aim of the action programme, but generally those related to emissions are characterised as mitigation. VijayaVenkataRaman, Iniyar and Goic (2012) in their review article outlined most important measures in mitigation to include clean development mechanisms, carbon sequestration, joint implementation and use of renewable and non-polluting sources of energy such as solar, wind and geothermal sources (VijayaVenkataRaman, Iniyar, & Goic, 2012).

IPCC Working Group II of the AR5 defined adaptation as follows: “The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects” (IPCC, 2014a, p. 5). Numerous climate change risks are concentrated in urban areas – heat stress, inland and coastal flooding, extreme precipitation, air pollution, drought, water scarcity and other extreme events pose risks to urban areas, assets, people, economies and ecosystems. For those areas lacking the necessary infrastructure, housing quality and services, these risks are amplified. Building resilience to address these threats can accelerate successful climate change adaptation which would also benefit from effective multi-level risk governance, alignment of incentives and policies, improved community adaptation capacity, appropriate financial and institutional development and strengthened local government (IPCC, 2014a, p. 18).

Moreover, adaptation refers to anticipating adverse effects and preventing or minimising damage, often through building resilience (e.g. green corridors for species migration, efficient scarce resource use) (European Commission, 2014). Biagini *et al* (2014) claimed that there is still a gap between the theoretical and practical sides of adaptation, and more research is needed to define adaptation measures (Biagini, Bierbaum, Stults, Dobardzic, & McNeeley, 2014). Barnett (2001) scaled definition of adaptation for policy purposes to include “modifying systems to accommodate long – term incremental changes” and “modifying systems to enable them to absorb and respond to short term changes without passing the threshold limits and so flipping into alternative states of equilibrium” (Barnett, 2001, p. 980). The author states that in policy making the latter definition could also be applied to explain resilience, but the two should not, or might not, be seen separately as the actions needed to



increase adaptive capacity are similar to those necessary for resilience (Barnett, 2001; Walker, et al., 2002). Resilience as a concept shall be discussed in more detail in the following section.

In climate policy making a comprehensive approach suggests going beyond adaptation and mitigation and examining wider development patterns of sustainability and equity; it is also advocated for collective action, economic evaluation to inform climate policy design along with considerations of justice, fairness and other societal goals creating the opportunity for co-benefits. The development of climate policy has also been stated to be influenced by perception of risk and uncertainties by individuals and organisations, implying that a diverse array of risks and uncertainties should be considered as some of them are difficult to measure, predict or estimate (IPCC, 2014, pp. 4-6).

In the perspective of the urban form function and climate action, mitigation might be more easily achieved than adaptation, for instance, mixed use, dense and compact development substantially reduces energy consumption of that development, hence translating into a successful mitigation measure. Adding the geographic context – hot-dry climate, the same type of development might result in increased resilience of the system, as through buildings that cast shadows this type of development increases its resilience by decreasing the need of air conditioning, and therefore translates into an adaptation achievement. Changing the climatic conditions to hot and humid areas, the same density of buildings will result in decreased air circulation and increased heat and humidity. This example demonstrates the uncertainty associated with boundaries between climate change adaptation and mitigation; should mitigation be viewed as the primary form of adaptation, or is the case that the interface is more complex, asymmetric, or even conflicting (Pizarro, 2009).

It is arguable that an integrated approach to mitigation and adaptation offers a more effective response to climate change. The nature of the interconnectedness depends on the number of dimensions – economic, institutional, environmental, as well as on the scale. The differences are substantial and persisting ranging from different spatial and temporal scales, to relevance for different economic sectors resulting in costs and benefits being distributed unevenly. For instance, mitigation is perceived to have a more global outlook, whereas adaptation is more localised; with that being stated, both approaches to climate change regulation are based on the decisions made by an individual at the local level (Swart & Raes, 2007).

With contextualised perspective, exploring synergies and trade-offs between mitigation and adaptation is seen essential for informing climate policy making. This research adopts a more holistic perspective on the climate change responses, based on the assumption that municipal governments should account for both emissions and non-emissions based drivers of climate change (Stone, Vargo, & Habeeb, 2012).

### **2.1.1 Climate resilience**

As humans are part of the natural world, we depend on ecological systems while impacting them at local and global scales. From a natural perspective a resilient ecosystem can withstand the impact and rebuild itself when necessary. From the social perspective resilience implies an added capacity of humans to anticipate and to plan for long-term perspectives (Resilience Alliance, 2014).

Walker *et al* (2002) viewed resilience through three main characteristics: amount of changes a system can undergo with retained control of function and structure; the degree of self-organisation capability; and degree of systems capacity for adaptation and learning (Walker, et al., 2002). Within the scientific research field, resilience has evolved into an intellectual

framework for understanding how complex systems self-organise and change over time (Anderies, Folke, Walker, & Ostrom, 2013). Carpenter and Brock (2008) present resilience as a broad and multifaceted set of concepts that could be related to “aspects of the interplay of transformation and resilience” (Carpenter & Brock, 2008).

Bahadur, Ibrahim and Tanner (2013) made an overview of the academic use of the concept resilience in social, ecological and socio - ecological systems and its use in climate, development and disaster nexuses. Despite identifying divergence of viewpoints and lack of clarity in measurements and operationalisation, authors were able to refine ten main characteristics of resilience to include: high diversity, effective governance and institutions, community involvement and inclusion of local knowledge, ability to work with uncertainty and change, high social and economic equity, preparedness in planning for disturbances, robustness of social values and structures, acknowledging non-equilibrium dynamics, and continual and effective learning and the adoption of cross - scalar perspective (Bahadur, Ibrahim, & Tanner, 2013).

This research works with the definition of resilience advocated by the 100 Resilient Cities Initiative. Acknowledging that understanding of resilience varies across the disciplines the Rockefeller Foundation proposes the following resilience definition: “an ability of the system, entity, community or person to withstand shocks while still maintaining its essential function” and “an ability to recover quickly and effectively from catastrophe, and a capability of enduring greater stress” with the further presented principles serving as core characteristics (The Rockefeller Foundation, 2008, pp. 2-3):

- Spare capacity, which ensures that there is a back-up or alternative available when a vital component of a system fails.
- Flexibility, the ability to change, evolve, and adapt in the face of disaster.
- Limited or “safe” failure, which prevents failures from rippling across systems.
- Rapid rebound, the capacity to re-establish function and avoid long term disruptions.
- Constant learning, with robust feedback loops that sense and allow new solutions as conditions change.

In the context of urbanisation and climate change the concept of resilience has been used to overcome the historical distinction between mitigation and adaptation, presenting, instead, a way to frame responses to change. The conceptualised resilience approach moves climate change thinking from shocks and crises with specific impact to a context of constant change, characterised by greater uncertainty and risk (Friend & Moench, 2013). Boyd *et al* (2008) propose to apply resilience to enhance the notion of climate friendly development, which is inherently interlinked and complex in both social and ecological domains end efforts to address global climate change issues. In climate change context a resilience approach is the one transforming the undesirable socioeconomic states without compromising the integrity of the atmosphere or the ecological systems on which human depend (Boyd et al, 2008, p. 392). In exploration of the climate agenda pursued by the selected TMNs it is important to take a notice of the way climate change and resilience are approached in their projects and communication, including the historic development of climate thinking, shift from mitigation to adaptation, if such took place, and conceptual integration or separation of resilience from climate change.

## 2.2 Governing Climate Change

In order to tackle issues and complexities associated with governance in the context of climate change, the international community has cooperated on a number of multilateral agreements, such as Kyoto Protocol aimed at cutting greenhouse gas emissions through internationally binding emissions reduction targets (United Nations Framework Convention on Climate Change, 2014). Kyoto Protocol represents national governments' efforts on tackling climate change, but there is an increasing belief that the more centralised approach should be supplemented with the multi-level and multi-scale actions, introducing the concept of governance at multiple levels (Wang & Chen, 2013).

Dingwerth and Pattberg (2006) formed a concept of global governance arguing for it to differ from perspectives of international governance with transnational actors, or transnational governance with international actors; norms and rules, rather than relationship between actors, form the centre of the analysis presumably allowing to focus the research on the emergence of global governance arrangements within and across policy arenas. Theoretical complexity should not undermine the objective to achieve simplicity and overall balance of the two, so further conceptual development and refinement is necessary for researching governance in the world politics (Dingwerth & Pattberg, 2006).

The United Nations system and national governments might be considered to have a central position in the global governance (Rosenau, 1995, p. 13). Global governance includes systems of rule at all the levels of human activity including local, sub-national, national, international and transnational control mechanisms (Rosenau, 1995). It is characterised by varying level of fragmentation; in many policy domains institutional arrangements differ in their character (organisation, regimes, implicit norms), their spatial scope (from bilateral to global), their constituencies (private and public), and subject matter (from a specific policy field to global concerns) (Biermann, Pattberg, van Asselt, & Zelli, 2009, p. 16). While the notion of international relations concept is linked to power relations, interest-based interstate bargaining and the role of norms, and advocacy networks perceived as drivers of beyond-state politics, global governance notion assumes that a wide variety of forms of governance coexist and that hierarchy among these various mechanisms is hard to depict (Dingwerth & Pattberg, 2006, p. 192).

Governance, as an operation method, is a self-organising network where nation state might be seen to collect common actions, and the government and other actors in the society regulate and contribute to this process (Adshead, 2002). Action can take place on the vertical governance level, referring to the top-down or bottom-up interaction between the international, national, regional and local layers. Alternatively, or complimentary, interaction can occur on the horizontal level between the actors belonging to the same layer, such as in the case of TMNs; despite the more horizontal, or flat, organisation of TMNs, vertical governance aspects are still of importance, and cannot be completely separated. Governance can therefore be viewed as a "totality of steering mechanisms" employed in the development and implementation of a particular programme (Lafferty, 2004, p. 7).

Stoker (1998) proposed five standings for understanding governance which were found to be useful for demonstrating the choice of governance perspective for analytical purposes in studying networks. Author puts his governance proposition as follows (Stoker, 1998, pp. 18-24):

- Governance is referred to as a set of institutions and actors that are drawn from and beyond the government.

- Governance recognises blurring of boundaries and responsibilities for tackling social and economic issues, implying that there is a certain level of ambiguity and uncertainty over which roles and responsibilities actors should take in policy making and implementation.
- Governance identifies the power dependence attributable to the relationships between institutions involved in collective action. As an interactive process it involves numerous actors and various forms of partnerships with shifting power relations and coordination.
- Governance implies autonomous self-governing network of actors. As a form of partnership, a self-governing networks are participants of the policy communities which not only influence the government's policy, but also take over some of the governments functions with the resources, capacity and leadership they might possess.
- Governance has the implementation capacity that does not depend on the governments command or authority; rather than that, it seeks to perceive the government as a guiding and steering power using new tools and techniques. This principle does not eliminate the possibility of governance failure and stresses the necessity for broader institutional and socio-economic factor consideration.

Multi-level governance and governance in networks are also helpful concepts in understanding the global governance interplay. Governance is spread across multiple jurisdictions and is, arguably, seen more efficient than a central state. So that to capture environmental policy externalities in its territorial reach governance must operate at multiple scales, and since the externalities in public goods provision vary, so should the scale of multi-level governance, allowing to better reflection of preference heterogeneity, credible policy commitments, and jurisdictional competition that fosters innovation (Marks & Hooghe, 2004, p. 17). Conceptually, policy network refers to polycentric governance arrangements that “integrate competing interests of actors within a horizontal structure” (Pattberg, 2010, p. 147). Ontologically, network comprises specific type of interest intermediation with different forms of institutionalised relations and exchanges between the state, private sector and civil society (Borzel & Heard-Laureote, 2009, p. 136).

Intergovernmental agreements, such as climate agreements, are assumed to be closely tied to and informed by processes at lower governance levels that involve multiple actors. Assuming that networks have a potential to support all levels of governance (Borzel & Heard-Laureote, 2009), it is possible to position more hierarchical forms of governance, such as negotiations of intergovernmental environmental agreements, as well as less hierarchical forms such as competitive markets into one analytical model (Reinecke, Pistorius, & Pregernig, 2014).

There is still a substantial level of uncertainty over the local consequences of the climate change impacts (UNDP; UNCDF; UNEP, 2010), for instance, how much rainfall patterns will change and subsequently whether reinforced flood management should be developed for the urban areas. Transnational networks have contributed to shaping of the urban responses to climate change; considering the multi scalar nature of governance, institutions governing carbon in the city encompass but also exceed the urban scale forming a complex multi-actor interaction, cutting across the public private domain in the attempt to create a functioning more dispersed form of ruling (Dowling, McGuirk, & Bulkeley, 2014).

UNDP Asia Pacific Regional Centre, United Nations Capital Development Fund Asia and Pacific and the United Nations Environment Programme published a discussion note on local governance and climate change in 2010 where they explored local governments' approaches to climate change. Discussion note argues for a more comprehensive approach to climate change also channelled through the United Nations Framework Convention on Climate Change under which signatory parties produce periodic national communications, and which were noticed to increasingly merge mitigation and adaptation issue, moving towards a comprehensive national climate change strategy with high levels of political engagement, visibility and transparency. Local governments are claimed to have an advantage in tackling adaptation and mitigation issues, as climate change is often highly localised; this implies that climate change action is context dependent in geographical terms and, hence, requires time and location specific response. Local authorities, arguably, have an advantage of possessing greater access to local knowledge and mobilising local resources and people (UNDP; UNCDF; UNEP, 2010, p. 8).

Local authorities can engage in both climate change mitigation and adaptation through (UNDP; UNCDF; UNEP, 2010, p. 13):

- Adaptation – assisting their divisions and local residents to adjust to changing climate regime or transformed natural resource base, potentially targeting poverty reduction, early warning and disaster planning, or asset building.
- Mitigation – helping their constituents to reduce their GHG emissions, for example, through sustainable forestry management, or energy and resource management.

Since resilience has become a topical agenda of climate change, there has also been more attention drawn towards local governance and its role and capacity. With climate change impacts shaped by local circumstances building resilient local institutions is part of the solution (Agrawal, Perrin, Chhatre, Benson, & Kononen, 2009). At this scale the local dimension of climate change can be addressed through institutionalised processes of representative, transparent and accountable nature, which are therefore better related to local needs (Friend, Jarvie, Reed, Sutarto, Thinphanga, & Toan, 2014).

Acquiring a more thorough understanding of climate change governance is essential for understanding the city networking capacity in delivering implementable strategies and actions. Bulkeley (2014) summarised drivers of urban responses and positioned them in the multilevel governance framework, which gives a clear idea of the complex interactions involved:

- Vertical – international and national arenas mandate, political support and resources;
- Horizontal – transnational networking and agencies providing learning resources and resources (Bulkeley, 2014).

Lafferty (2004) suggests moving away from the conventional top-down or bottom-up perception as one starts depicting parts of the mechanisms which depend on learning and cooperation - an example of TMN operation, or a non-governmental input. In the light of these statements, each programme of actions, depending on its nature and goals, will be based on a unique mix of governance mechanisms and instruments (Lafferty, 2004). This research concentrates on the interaction of actors involved in the municipal networking, facilitated through the structure of the network.

Linking this line of argument back to the multi scalar governance dimension, due to multi - sectoral and area based mandates of the local authorities institutionally they are well suited for the horizontal alignment of the climate change adaptation processes, as well as to counter the vertical alignment of the climate change agenda with the national and international levels (UNDP; UNCDF; UNEP, 2010, p. 13). As key building blocks of the TMNs, the capacity of the local authorities to engage in climate change mitigation and adaptation reflects the capacity of the network to facilitate it, as well as the function and the shape of the network which provides knowledge, expertise and sourcing opportunities for its member cities.

### **2.2.1 Climate Roadmap**

From the perspective of the United Nations Framework Convention on Climate Change the following events, selectively, represent the key milestones in international responses to climate change (United Nations Framework Convention on Climate Change, 2014):

- 1979 – The first World Climate Conference.
- 1988 – Setting up of the Intergovernmental Panel on Climate Change.
- 1991 – The first meeting of the Intergovernmental Negotiations Committee (INC).
- 1992 – At the Earth Summit in Rio the UNFCCC was opened for signatures, with the entry into force in 1994.
- 1995 – The first Conference of Parties (COP1) took place in Berlin. COP being a supreme decision-making body of the Convention, where all states that were parties to the Convention were represented for effective implementation and review process (United Nations Framework Convention on Climate Change, 2014a).
- 1997 – Kyoto Protocol formally adopted at COP3, with entry into force in 2005.
- 2001 – Release of the IPCC’s Third Assessment Report and adoption of the Bonn Agreement.
- 2007 – IPCC’s Fourth Assessment Report released. Bali Road Map agreed by the Parties at the COP13 and increased importance of the climate science acknowledged.
- 2009 – COP15 and drafting of the Copenhagen Accord; with later submission of the emissions reduction or mitigation action pledges by the countries.
- 2010 – Cancun Agreement accepted at the COP16.
- 2011 – The Durban Platform for Enhanced Action accepted at the COP17.
- 2012 – The Doha Amendment to the Kyoto Protocol, aspiration for greater ambition and action with the establishment of the Doha Climate Gateway.
- 2013 – Decisions on advancement of the Durban Platform. COP19 took place in Warsaw; establishment of the Warsaw Framework for REDD Plus and Warsaw International Mechanism for Loss and Damage.

The latter of the Warsaw agreements implies that developed nations shall become committed to providing expertise and to aid countries that suffer from climate related impacts. Final compromise achieved set a timeline for discussions in the light of the upcoming Paris summit in 2015, setting up pathway work and negotiations over the draft universal climate agreement for the next UN climate change Conference in Peru (UNEP Climate Action, 2013).

Focusing more on resilience, The Hyogo Framework for Action (HFA) was the outcome of the World Conference for Disaster Reduction held in Kobe, Hyogo, Japan in 2005. It was the first ten year framework to explain, detail and describe the multi-sector effort required to reduce disaster losses. The framework was designed to build the resilience of nations and communities to disasters including reduction of loss of lives and social, economic and environmental assets when facing a hazard (UNISDR, 2014).

One of the first agreements to attach particular importance to a city as an actor in the global sustainable development strategy was Agenda 21, adopted by more than 178 Governments at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in 1992, and represents a comprehensive multi-scalar action plan to be taken by organisations of the United Nations System, Governments and Major Groups in every area of human related environmental impact. Implementation progress and further agenda development was reaffirmed at the Johannesburg World Summit on Sustainable Development in 2002 (United Nations Department of Economic and Social Affairs, Division for Sustainable Development, 2014). Just before the UNCED at the world conference of municipalities held in Curitiba, Brazil, local governments agreed to establish local sustainable development strategies including the environmental action plans which became known as Local Agenda 21s (Gilbert, Stevenson, Giradet, & Stern, 2013).

In May 1994 a conference with 450 participants was organised by the City of Aalborg, Denmark, in collaboration with ICLEI where a declaration of European Towns and Cities was produced to motivate and guide mayors in European cities in achieving urban environmental sustainability. The same year a global forum was held in Manchester, UK, attended by mayors, NGOs and national governments to clarify the responsibilities of actors in urban sustainability and prepare a document for the presentation to the UN Commission on Sustainable Development (UNCSD). In August 1994 the meeting was held in New York to advance international municipal cooperation resulting in World Assembly of Cities and Local Authorities (WACLA) taking place as an associate activity of HABITAT II (Gilbert, Stevenson, Giradet, & Stern, 2013, pp. 94-95).

Habitat initiative refers to the 1976 UN conference – Habitat I - held in Vancouver, Canada, where the United Nations Commission on Human Settlements – an intergovernmental body – and the United Nations Centre for Human Settlements (the “Habitat”) were established to work with the challenges of urbanisation. The second conference, Habitat II, on cities within this framework took place in Istanbul, Turkey in 1996 resulting in the Istanbul Declaration on Human Settlements and the Habitat Agenda. In 2002 UN-Habitat was given a status of a programme within the UN system (UN Habitat, 2014). Habitat III, the Third UN Conference on Housing and Sustainable Urban Development, is planned for 2016.

Scoping the international efforts to address climate change to agreements and reports having direct relevance to local government this section further highlights some of the key climate negotiation milestones to provide the reader with the timeline outlook, or the climate roadmap, for the relevant political agreements being developed along the earlier presented global climate and sustainability negotiations (Local Government Climate Roadmap Secretariat, 2014):

- 1993 - Cities for Climate Protection Campaign.
- 2005 - US Mayors Climate Protection Agreement.
- 2007 - World Mayors and Local Governments Climate Protection Agreement.
- 2007 - European Covenant of Mayors.
- 2010 - The Global Cities Covenant on Climate - the Mexico City Pact and establishment of carbon Cities Climate Registry as a response of local authorities to reportable, measurable, and verifiable climate action (Carbonn Cities Climate Registry, 2014).
- 2011 - The Durban Adaptation Charter for Local Governments – a commitment to local climate action within the local authorities jurisdictions (launched at the UNFCCC COP17 through the partnership of ICLEI, the South African Local Government Association (SALGA), South African Cities Network (SACN), eThekweni Municipality and Department of Environmental Affairs (Durban Adaptation Charter, 2014).
- 2011 - African Mayors Climate Change Declaration.
- 2013 - Resilient Communities for America.
- 2013 - Nantes Declaration of Mayors and Sub national Leaders on Climate Change.

Without detailing each of the examples it is possible to notice, by relating outlined global international agreements to the local government focused ones, that at the time of the Rio Earth Summit in 1992 Local Government climate agenda started rapidly evolving into a defined and organised line of negotiations. To a certain extent interlinked, it is not always straightforward how to streamline sustainability, climate change, or resilience in a concrete agenda. Multiplicity of selected conferences and agreements present only a part of global, national and sub national environmental governance action taking place in that timeframe, and yet, it is possible to observe how different governance levels intervene and actors involvement increases. Local climate responses are formed and facilitated through the cooperation of multiple stakeholders with active participation of TMNs so the following section presents historical perspective on the intercity collaboration.

### **2.3 Development of international urban networking**

City-to-city cooperation (C2C) represents the main building block of city networking and encompasses all possible forms of relationships between local authorities in two or more countries collaborating on the common matter (United Nations Centre for Human Settlements (Habitat); UTO/FMCU, 2001). Networks vary in size, influence and sustainability approaches ranging from more general (e.g. urban development) to a more specific (e.g. energy, cultural heritage); also network typology varies considerably including mission, actors, scale, temporal aspects (contingency, formality), organisation, or sponsorship (Keiner & Kim, 2007).



Local governments are one of the key actors in the transnational networks, so in this research they were defined as formal institutions, mandated to deliver a variety of public goods and services at the local level. Local governments, or authorities, differ considerably depending on the size of the population, number of tiers in the government or planning system, resources, degree of accountability and functions (UNDP; UNCDF; UNEP, 2010); variables that could affect their representation, or influence in the transnational networking.

Transnational Municipal Networks could be dated back to the 13<sup>th</sup> Century and emergence of such influential co-operations as Hanseatic League (Kern & Bulkeley, 2009). Next step in the development of modern international city networking can be attributed to 1913-1914 when the International Union of Local Authorities and the International City/County Management Association (ICMA) were founded (Keiner & Kim, 2007). Local authorities in Western Europe and North America were entering the era of municipal internationalism in pursuit of new regulatory knowledge and skills. These early years of the twentieth century witnessed initial attempt of restructuring urban policy and changing perception and the role of city as an actor (Clarke, 2009).

Since approximately middle of the twentieth century town twinning has been developing as a tool, or device, for connecting distant localities through formalised agreements, trading arrangements, project and exchange visits for knowledge exchange utilised in multiplicity of geographical contexts (Clarke, 2009). One of the important qualities of sister-city twinning was the fact that entrance to the agreement was initiated by local authorities often with the local level support of residents without any encouragement from national agencies (Zelinsky, 1991) symbolising new capacity of local action and competence. Town twinning and twinning of sister cities actively developed in a context of the rise of new localism in 1970 and also the processes of institutionalisation and globalisation resulting in a changing role of regions and cities. Cities as new centres for attracting capital formed a competitive environment, tackling problems of migration, urbanisation and climate change and searching for new political responses, experimentation and accepting their new responsibilities (Clarke, 2009). Municipal twinning represents one of the most recognisable steps in the development of municipal internationalism.

Collaborative practices became more common for some policy arenas and fostered development of a new sort of institutions with various forms but shared characteristics: fluidity, evolution, networking, dialogue and distributed intelligence (Innes & Booher, 2003). These institutions were to a lesser extent defined by hierarchical structure, long-term routine behaviour patterns and structured roles, and to a greater extent by practices that sustain constant interaction, adaptation and learning (Healey, 1997). Municipal networks saw particular growth starting from the early 1980s (Keiner & Kim, 2007) and are a prominent actor in the European (Kern & Bulkeley, 2009) and international environmental governance (Bulkeley, 2005; Feldman, 2012).

Climate change and urban climate governance evolved rapidly in the early 1990s; in this period, many cities developed their own climate action plans and strategies and started actively pursuing membership in national and transnational city networks. In the early phase of local climate change policy mitigation was prioritised. Currently both climate adaptation and mitigation measures can be found in the local political agenda (Gotelind & Kern, 2009). As exemplified with the climate roadmap, historically, transnational environmental problems have been managed by a combination of bi-lateral national assistance programs and centralised multi-lateral organisations such as the United Nations. The United Nations Conference on Environment and Development's Local Agenda 21 Program and Article 10 of the Rio Declaration on Environment and Development both promoted local level decision

making, or localisation of the environmental protection measures. Subsequent Local 21 efforts resulted in a certain level of devolution of authority for climate change strategies and more local actions (Feldman, 2012).

Simultaneously, the increasing number of interdisciplinary international events, conferences and forums boosted the knowledge exchange between policy-makers, non-governmental organisations, scientists and bureaucrats. On this globalised arena number of initiatives have emerged stimulating inter municipal dialogue and leveraging global sustainability influence; active network building took place and significant knowledge networks such as ICLEI saw their establishment (Toly, 2008). The 2012 United Nations on Sustainable development, also referred to as Rio+20, resulted in the outcome publications with unprecedented number of references to cities and local governments, but did not provide any definitive proposals for functional governance framework allowing to achieve higher cross border involvement of municipal authorities with locally based sustainability strategies (Barrutia & Echebarria, 2013).

Non-hierarchical form of accountability underpins the work of networks with dispersed governance as they are based on collaborative work of different kinds of actors including decision makers, actors from corporate, governmental, multilateral and civil society sector (Backstrand, 2008, p. 81). As one of the means of multi-actor collaboration, transnational municipal networking in the shape presented in this research, functions internationally along with a number of other networking forms that involve local governments into collaborative sustainability work including innovation teams, communities of practice and virtual communities (Barrutia & Echebarria, 2013). From reconsidering their role and capacity at the beginning of the twentieth century, cities have undergone a substantial transformation path becoming prominent actors in nowadays climate governance and making networked approach feasible for international representation, learning and climate action.

### **3 Analysis and description**

Based on the networking characteristics presented in chapter one and the characteristics outlined in the step one of the methodological section, this chapter aims to combine the identified criteria and present the structural aspects of the selected TMN cases.

#### **3.1 Historical perspective**

Political history and contextualisation are essential in understanding the development of a specific governance formation. Particular governance arrangements emerge in a context of a particular political history, whether on the local, national or global level. The influence of historical legacy is traceable in the kind of interaction actors adopt in policy making processes of regulation (Leach, et al., 2007). Presented chronologically below follows the introduction to the selected cases.

##### **3.1.1 ICLEI**

ICLEI Local Governments for Sustainability was founded in 1989 after the meeting of 35 local government leaders from Canada, the USA and leading atmospheric scientists on the depletion of the ozone layer. The future organisation was seen to be coordinating local government responses to global environmental problems. The concept was developed in cooperation with the Centre for Innovative Diplomacy, the International Union of Local Authorities and the UN Environment Programme. The founding congress took place in New York UN quarters with more than 200 local authorities participating. Toronto, Canada was selected as the World Secretariat location, an Freiburg, Germany accommodated ICLEI European Secretariat, which was moved to Bonn in 2009. ICLEI's operations began in 1991 (ICLEI, 2008), bringing together local governments and national and regional government organisations to act on their sustainability commitments through participation in an international Association.

Climate work by ICLEI has been developing in three main directions: low carbon city, resilient city and advocacy. In 1993 Cities for Climate Protection (CCP) Campaign was initiated as the first international undertaking aimed at facilitating emission reductions at the local level through a flexible five step framework (UN Habitat; ICLEI, 2009). Five milestones included: conducting a baseline emissions inventory, adopting an emissions reduction target, developing a local climate action plan, implementing emission reduction measures and policies, monitoring, verifying and reporting results (ICLEI U.S.A., 2010). The US-CCP campaign was among the most successful in not only attracting more than 250 local governments across the U.S. to participate (ICLEI U.S.A., 2010), but also in incorporating climate change in the main political discussions (Otto-Zimmermann & Alebon, 2002).

Within the scope of adaptation to climate change, ICLEI developed Resilient Communities and Cities Initiative in 2002. ICLEI has been involved in various partnerships including Project for Urban Risk Reduction (PURR) and Asian Cities Climate Change Resilience Network (ACCCRN), and also developed an Adaptation Guidebook and Adaptation Toolkit for Cities (ICLEI, 2009). In response to the needs of its members seeking to find the ways to cope with natural disasters and uncertainties associated with people and ecosystems response to it, ICLEI added the topic of adaptation to its Strategic Plan in 2006. In 2009 it became a partner of the UNFCCC Nairobi Work Programme on Adaptation and was recognised to be the first transnational municipal network in this field (ICLEI Global, 2012). Series of annual

international congresses on cities and adaptation were introduced in 2010 when first Resilient Cities Congress took place in Bonn (ICLEI, 2009).

ICLEIs Local Agenda 21 (LA21) Campaign was established in 1991 and adopted at the Rio Summit to promote sustainable development through participatory, multi stakeholder planning and implementation at the local level (Otto-Zimmermann & Alebon, 2002). One section of the Agenda 21 recognises nine major groups: business and industry, children and youth, farmers, indigenous people, local authorities, NGOs scientific and technological community, women, workers and trade unions, recognition of which became an important step in developing international sustainability governance. At the UNFCCC COP16 in 2010 the term “governmental stakeholder” was recognised for the first time to refer to local and sub-national governments as opposed to non-governmental stakeholders (Salz, van Begin, & Otto-Zimmermann, 2011). These examples were selected to demonstrate ICLEIs prominence in the international sustainability and climate debate, where the TMN persistently advocates for further involvement and recognition of cities, verifying constituencies, mandates and roles of actors in climate governance, while constantly increasing cities capacity to act through evolving networks services.

### **3.1.2 C40**

C40 Cities, a global network of large cities, was initiated by Mayor of London Ken Livingstone in 2005 with his call to eighteen megacities for pursuing action and cooperation on reducing greenhouse gas emission. Clinton Climate Initiative was invited in 2006 to become a delivery partner strengthening the organisation which had grown to 40 cities at that point giving it the name - C40. The network was established to develop and implement policies and programmes for GHG and climate risks reduction, and facilitate, in particular, creation of clean technologies procurement policies and alliances to influence the marketplace, with the C40 Secretariat based in London (C40 Cities, 2014).

In 2009 practical initiatives, such as C40-CCI Climate Positive Development Programme and Carbon Finance Capacity Building programme, were launched as a result of the C40 – CCI cooperation. In 2011 the CCIs Cities Programme and C40 expanded their alliance to engage cities in a more active reduction of carbon emissions (The Clinton Foundation, 2011). This integration was also reflected in the way the structure of the network operated as C40 executives and staff were coordinating their actions with CCI City Directors and programmatic teams (C40 Cities, 2014).

### **3.1.3 100RC**

The Rockefeller Foundation has four main focus areas – transforming cities , securing livelihoods, reevaluating ecosystems and advancing health. In the area of city transformation resilience stands out as a well-defined agenda with the organisations current work including a few resilience focused undertakings (The Rockefeller Foundation, 2014).

Firstly, Climate Change Resilience Initiative aimed at raising awareness, funding and action to promote resilience to climate change on several levels. There are three main action areas in this initiative: Asian urban environments (one of its outcomes is establishment of ACCCRN); informing federal and local U.S. government policy makers of benefits of acting on the local resilience to support international resilience efforts; African Agriculture and Climate Change Resilience (The Rockefeller Foundation, 2014a).

Secondly, Global Resilience Partnership aimed at supporting resilience in the Sahel, the Horn of Africa, and South and Southeast Asia through a network of regional hubs for sourcing, testing, scaling innovative localised solutions, facilitated by the partnership of the Rockefeller Foundation and the United States Agency for International Development (USAID) (The Rockefeller Foundation , 2014b).

Thirdly, 100 Resilient Cities – Pioneered by the Rockefeller Foundation (100RC) was established. As part of its commitment to building urban resilience the Rockefeller Foundation created a new organisation - 100 Resilient Cities – Pioneered by The Rockefeller Foundation (100 Resilient Cities), first announced at the annual Clinton Global Initiative (CGI). Partners joining the Foundation in its CGI commitment were Palantir, Swiss Re, the World Bank, the American Institute of Architects, and Architecture for Humanity (The Rockefeller Foundation, 2013). 100 Resilient Cities was launched to support cities in their pursuit of adopting resilience in their planning, development and community building. The first group of 32 cities was announced in December 2013, with nearly 400 cities across six continents applying to receive technical support and resources to improve their urban resilience over three years (The Rockefeller Foundation, 2014c).

### 3.2 Structural features

All of the identified networks possess the main structural characteristics of transnational networking; all four examples have a clear horizontal dimension focusing on municipalities and local governments and they are polycentric allowing for multiple inputs, power and knowledge centres. There is no clear hierarchy between the participating cities, apart from the organisational umbrella of the secretariat, or managing authority. Participation in the networks is voluntary, but depends on set prerequisites. There are also numerous differences including size, organisational arrangements and key focus areas specific for each examined case (see table 3-1).

*Table 3-1. Structural and Organisational Features of Case Networks.*

| <b>Criteria</b>                 | <b>ICLEI</b>  | <b>C40</b>   | <b>100RC</b>  |
|---------------------------------|---|--|---|
| <b>Participant number</b>       | 12 mega-cities<br>100 super-cities and urban regions<br>450 large cities<br>450 small and medium-sized cities and towns | 69 affiliated cities   | 32 cities selected for the 100RC Network                                    |
| <b>Membership requirements</b>  | Demonstration of environmental and sustainability commitment<br><br>Membership fee                                      | Three types of membership categories:<br>Innovator city<br>Megacity<br>Observer city | Municipal governments (>50,000 inhabitants)<br><br>Commitment demonstration |
| <b>Organisational structure</b> | The ICLEI Council Global Executive Committee<br>Regional Executive Committee<br>Management Committee                    | The Chair<br>Board of Directors<br>Steering Committee<br>Management and the C40 Team | The Rockefeller Foundation 100RC special division                           |

|                             |   |   |  |
|-----------------------------|---|---|--|
| <b>Key initiative areas</b> | <ul style="list-style-type: none"> <li>• Sustainable city</li> <li>• Resilient city</li> <li>• Biodiverse city</li> <li>• Low-carbon city</li> <li>• Resource-efficient city</li> <li>• Smart urban infrastructure</li> <li>• Green urban economy</li> <li>• Healthy and happy community</li> </ul> | <ul style="list-style-type: none"> <li>• Adaptation and water</li> <li>• Energy</li> <li>• Finance and economic development</li> <li>• Measurement and planning</li> <li>• Solid waste management</li> <li>• Sustainable communities</li> <li>• Transportation</li> </ul> | Building resilience through: <ul style="list-style-type: none"> <li>• Learning</li> <li>• Rapid rebound</li> <li>• Limited or safe failure</li> <li>• Flexibility</li> <li>• Spare capacity</li> </ul> |
|-----------------------------|---|---|--|

Source: (ICLEI, 2014; C40 Cities, 2014a; 100 Resilient Cities, 2014).

### 3.2.1 ICLEI

The network accepts local governments from the urban areas of different sizes for an annual fee. The amount of the annual fee paid is determined through the type of organisation, gross national income per capita and population (ICLEI, 2014; Madeira, 2014). Network is aiming at constant advancement and striving to be an organisation for the most committed of the cities, which partly explains the number of members not being calculated in tens of thousands (Zimmermann, 2014).

Networks governance is based on the nine world regions and three year term of office for all bodies. ICLEI receives its mandate from its member local governments and is democratically governed by its members through a Global Council – a supreme decision making and overseeing body, comprised of all voting members of the ICLEI Regional Executive Committees. The Council has a sole power to amend the Charter, elect members to the ICLEI Global Executive Committee, assist the Association and adopt the Strategic Plan (ICLEI, 2014a). The work of the Council is also supported by the Global Executive Committee which represents the membership Association at the global level. It adopts and amends Association’s by-laws, calls meetings of the Council, approves the establishment of regional, sub-regional and country offices, and also has powers to decide on policy for the Association. The Global Executive Committee is made up of one appointed member from each of the nine Regional Executive Committees and a maximum of six additional Portfolio seat Members nominated by the ICLEI Secretary General. The Regional Executive committee consists of three to five members who serve the Association according to the allocated Portfolio mandate and are appointed by the members of the Global Association in that region. Appointed by the Global Executive Committee the ICLEI Management Committee oversees the operation of the ICLEI World Secretariat and formally arbitrates ICLEI affiliated companies (ICLEI, 2014a).

ICLEI has continuously grown since its establishment and having gained more than thousand two hundred members the need for governance reform has been realised to maintain the growth while responding to new demands. Structural governance reform introduced Regional Executive Committees which represent their regions on a global platform allowing members to set the course and strategic priorities of ICLEI through representative democracy system. The governance reform allowed the organisation to become more flexible, agile and open for innovation (Madeira, 2014). Decentralisation is important for language reasons, cultural and contextual reasons (Zimmermann, 2014) and is essential for improving implementation.

The work is built around 8 main areas of focus for cities: sustainability, resilience, biodiversity, low-carbon city, resource efficiency, smart infrastructure, green economy, healthy communities with the locality and cooperation focus in achieving sustainability. Each of the

initiative areas comprise a set of certain thematic sections on which actions can be taken: commitments, networks, programs, tools, advocacy and regional activities (ICLEI, 2014b).

### **3.2.2 C40**

Currently the network has 69 members. After growing to 59 members C40 Chairman saw the need to clarify the membership requirements to make the selection criteria more transparent (C40 Cities, 2012):

- Megacities (formerly Participating City). Status for a city with population starting 3 million, or metropolitan area starting 10 million or more (current, or projected for 2025); alternatively, it can be one of the top 25 global cities, ranked by current GDP output, at purchasing power parity, either currently or projected for 2025.
- Innovator city (former Affiliate City). Cities that are not Megacities, but demonstrate clear leadership in environmental and climate work, including international recognition for barrier-breaking climate work, leadership in a sustainability field and regional recognition as an “anchor city” for the relevant metropolitan area.
- Observer city. A short term trial for the first time applicants, also a status for cities applying for Megacity or Observer city status until they meet requirements of one year participation. Alternatively, a long term category for cities meeting above categories, but unable to approve participation as such for regulatory or procedural reasons.

With this division only megacities have access to C40 leadership and governance opportunities (C40 Cities, 2012). Governance structure encompasses the chairman of the C40 (presently Rio de Janeiro Mayor Eduardo Paes), who is a leader and a strong advocate of the organisation who brings expertise and resources ensuring the work towards the common goals. Chairmanship is a rotating position (C40 Cities, 2014b). The Board of Directors oversees the management of C40 activities. The Steering Committee consists of C40 mayors (currently including mayors of the following cities: Tokyo, Hong Kong, Johannesburg, Buenos Aires, Houston, Berlin, London, Jakarta, Los Angeles, Rio de Janeiro, Copenhagen, Seoul) who serve there in rotation to provide strategic direction and governance (C40 Cities, 2014c) and the management team, sub-divided into management, region and city directors, initiative and network directors, research, special programmes, communications and finance and administration (C40 Cities, 2014d).

There are seven overarching common interest areas to achieve sustainable action on climate change: adaptation and water, energy, finance and economic development, measurement and planning, solid waste management, sustainable communities and transportation (C40 Cities, 2014e). These key initiative areas are structured to facilitate the achievement of the overall organisational goals and objectives of the TMN (C40 Cities, 2014f):

- Using knowledge sharing and metrics driven implementation to achieve measurable reductions in GHGs and climate associated risks and realise the benefits of local solutions such as lower energy costs and cleaner air and water, higher quality of life, less traffic congestion and creation of green jobs.
- Bringing the world’s megacities together to facilitate more efficient exchange and adoption of climate policies that have proved to be successful in one or more member cities.

- Preparing the world's megacities for addressing climate change and associated risks.
- Setting actionable and measurable goals at an individual city and organisational level to ensure implementation success.

### **3.2.3 100RC**

The first 32 cities were selected by seven appointed judges. For the selection purposes a city is defined as a settlement with a population of fifty thousand inhabitants or more with a municipal government. Applicants from regional or metropolitan areas are also permissible, as well as from associated institutions, but the connection to the city has to be demonstrated, or one municipal government must take a leadership role (100 Resilient Cities, 2014a).

With the second application period deadline of September the 10<sup>th</sup>, 2014, where next round 33 cities are to be selected to become members of the 100 Resilient Cities Challenge, the 100RC Team formed four shared characteristics of their strongest partners outlining those as a guide for potential applicants (Berkowitz, 2014):

- An innovative and engaged Chief Executive – a strong leader representing the city government who is committed to make decisions through a resilience lens and support politically stable environment for a long-term resilience building process.
- Recent catalyst for change - whether it was a recent shock, or a truly pressing stress that will ensure higher motivation to engage in the resilience building process.
- Demonstrated ability to work with a broad range of invested stakeholders – to allow for the participative resilience strategy development process where interests of poor and vulnerable are addressed.
- Willingness to engage in the partnership – participating in the Challenge requires close cooperation at multiple levels over multiple years.

The 100 Resilient Cities – Pioneered by the Rockefeller Foundation is financially supported by the Rockefeller Foundation and it is managed by the Rockefeller Philanthropy Advisors (RPA) as an independent non-profit organisation providing governance and operational Infrastructure to its sponsored projects (100 Resilient Cities, 2014b).

At the core of the 100RC is the idea of building resilience - creating communities and systems designed to withstand catastrophic events, shocks and stresses, both natural and manmade. The foundation outlines core characteristics, or pillars, of resilient systems to include – constant learning, rapid rebound, limited or safe failure, flexibility, and spare capacity (100 Resilient Cities, 2014c) (see section 2.1.1. on detailed outline of the resilience principles). Five characteristics of resilience were drawn from the experience the Rockefeller Foundation gained in establishing equity and resilience framework to assist revival of New Orleans after the disaster, and the work carried out in the ACCCRN for building resilience in cities across four countries – Vietnam, Thailand, Indonesia and India (Rodin, 2013).

## **3.3 Internal Governance**

In order to observe internal forms of governance adapted in these organisations and to possibly identify similarities, differences and any patterns, information for each TMN in this



section is presented in a table form using the criteria suggested in step two of the methodological section; some of the practices are explained in more detail below the tables.

### 3.3.1 ICLEI

Table 3-2 presents findings from the analytical framework application to the first TMN case study, namely ICLEI. With operation of the network taking place for over twenty years, the amount of activities and examples relevant for the adapted criteria is high. It is realised that climate change adaptation, mitigation and resilience agendas might be, and are pursued through other ICLEI initiative areas such as sustainable city, for instance, but for analytical purposes, selection of cases for demonstrative criteria application is limited to the areas of action ICLEI identifies as having direct relation to their climate programme, and is therefore constrained to “resilient city” and “low carbon city” activity areas.

Table 3-2. Internal governance: ICLEI.

| Internal governance: ICLEI              | Practices  |
|---|--|
| <b>A. Information and communication</b> |  |
| Encouraging learning                    | Initiatives, training, commitments, case studies, networks under 8 main agendas.<br>Programmes (selection limited to “resilient city” and “low carbon city” activities):<br>Climate Resilient Cities<br>Resilient Cities Global Forum<br>Bonn Center for Local Climate Action and Reporting (carbonn) and carbonn Cities Climate Registry (cCCR)<br>GreenClimateCities program (GCC)<br>Urban-LEDS.  |
| Creating best practices criterion       | Tools (selection limited to “resilient city” and “low carbon city” activities):<br>Adaptation Database and Planning Tool<br>Changing Climate, Changing Communities<br>Financing the Resilient City<br>Local Government Climate Adaptation toolkit<br>Preparing for Climate Change.<br>Climate and Air Pollution Planning Assistant<br>Covenant capacity Training Programme<br>HEAT+<br>Global Protocol for Community Scale GHG Emissions (GPC)<br>Local Energy Action Plan (LEAP) Wizard<br>Online Toolbox of Methodologies of Climate and Energy. |
| Exchanging experience                   | Networks (selection limited to “resilient city” and “low carbon city” activities):<br>Asian Cities Climate Change Resilience Network (ACCCRN) Making Cities Resilient: “My City is getting ready!”<br>Mayors Adaptation Forum<br>Resilient Cities Global Forum (Resilient Cities Congress)<br>World Mayors Council on Climate Change<br>GreenClimateCities Network<br>Local Renewables network<br>World Mayors Council on Climate Change<br>City-to-city exchange.<br>World Congress, events, workshops.   |

| <b>B. Project funding and cooperation</b>          |  |
|--|--|
| Bidding for funding                                | Call for interests, initiative/project based, finance strategies, partnerships.  |
| Implementation of joint projects                   | Programmes under 8 main working areas, listed initiatives and programmes, networks.<br><br>Partnerships:<br>Partnership for Urban Risk Reduction (PURR)<br>ACCCRN.   |
| <b>C. Recognition, benchmarking, certification</b> |  |
| Establishing norms and standards                   | Tools, annual and global reports, training guides, programmes.<br><br>Commitments (selection limited to “resilient city” and “low carbon city” activities):<br>Durban Adaptation Charter<br>Global Cities Covenant on Climate (Mexico City Pact).<br><br>ICLEI Strategic Plan 2010-2015 and Charter. |
| Rewarding outstanding performance                  | Encouraging participation in international awards.<br>Recognition – members in the Spotlight.  |

*Source: (ICLEI, 2014).*

### **Information and communication**

Launched at the World Mayors Summit on Climate in Mexico, November 2010, the carbon Cities Climate Registry as a global mechanism was developed for local governments to measure, report (GHG reduction commitments, emission inventories, climate mitigation and adaptation work) and verify climate action. The reported results of this tool and benchmarking arrangement are used in the Local Government Climate Roadmap, an advocacy process which is based on the UNs Climate Change Conference Climate Roadmap for nations, and the annual reports of cCCR were effectively used at the UN climate conferences in Durban (COP17), Doha (COP18) and Warsaw (COP19) (Carbann, 2014).

ICLEI encompasses a number of networks which are flexible and member interest based. Networks for local governments facilitate city-to-city cooperation and contain thematic networks that bring leading cities to cooperate on key sustainability issues such as urban disaster risk reduction; and networks of individuals, leaders in their respective institutions. (ICLEI, 2014c).

There are numerous tools available to the members providing a broad range of guidance and standards for regions, or global community, such as HEAT+ an online GHG emissions inventory tool that assists local authorities in making informed decisions when designing targeted actions for leveraging highest and most effective impact in emissions and pollutant abatement (ICLEI, 2011).

### **Project funding and cooperation**

Projects are undertaken under the umbrella of the eight main working areas and supplemented with other initiatives. A programme like GreenClimateCities might have numerous methodological tools and resources offered (GHG inventories, consultations, guidance, HEAT+ carbon Cities Climate Registry, and others), expertise, participation in a global network of cities committed to low emissions development, cooperation platforms - all part of the climate change mitigation programme (ICLEI, 2014d).

The Urban-LEDS project is funded by the European Union and implemented by the consortium of the UN-Habitat, ICLEI World Secretariat and five ICLEI Regional offices in Europe, Brazil, Indonesia, India and South Africa is aimed at enhancing the transition to low emission urban development in emerging economy countries. The project uses the GreenClimateCities methodology, guidance and tools, HEAT+ quantification and monitoring software and the cCCR global reporting platform; it is also, though, providing access to purposely developed technical and financial solutions and capacity building opportunities (Urban-LEDS, 2014). Some of the tools, mechanisms, or advocacy directions are shared between different projects, providing members with enhanced opportunity for cross-learning and sustaining the viability of a given mechanism allowing for its further development.

Members are sometimes notified when bidding opportunities arise to, for instance, host a conference as was done in 2009 for hosting the 8th EcoProcura Conference, within ICLEIs sustainable procurement agenda. In this case ICLEI provided a framework for cooperation and allocated the roles, leaving the funding and sponsorship to interested members (ICLEI, 2009a). There is a number of host cities that support ICLEIs regional work by providing grants, staff support, office space and other assistance: City of Bonn, Germany, Belo Horizonte, Brazil, City of Sao Paulo, Brazil, City of Seoul, South Korea, Jeju special self-governing province, South Korea, City of Suwon, South Korea, City of Freiburg, Germany, City of Melbourne, Australia (ICLEI, 2014e).

### **Recognition, benchmarking, certification**

ICLEI encourages its members to participate in the international competitions such as World Mayors Award, or European Mobility Week Award. Best performing members and case studies are highlighted in the special sections on the website. Networks commitments are reassured through the Durban Adaptation Charter and Global Cities Covenant on Climate (Mexico City Pact), as well as monitored and communicated in the series of reports and publications, meetings and conferences. Charters ensure commitments to action areas at the sub national level and foster city-to-city cooperation in an accountable manner (ICLEI Global, 2014a).

#### **3.3.2 C40**

Table 3-3 demonstrates application of the analytical criteria to the case of C40. The Cities Climate Leadership Group has a more narrow operational focus predefined since its establishment and confined with membership requirements, making framework application feasible.

Table 3- 3. Internal Governance: C40.

| Internal Governance: C40                           | Practices   |
|--|---|
| <b>A. Information and communication</b>            |   |
| Encouraging learning                               | Seven Initiative areas and associated networks:<br>Bus Rapid Transit<br>Climate Positive Development<br>Climate Risk Assessment<br>Connecting Delta Cities<br>Cool Cities<br>Global Standards<br>Green Growth<br>Low Emission Vehicles<br>Measurement and Reporting<br>Private Sector Buildings Energy Efficiency<br>Sustainable Infrastructure Finance<br>Sustainable Solid Waste Systems<br>Sustainable Urban Development . |
| Creating best practices criterion                  | Initiatives in seven main working areas, C40 Research, Eight Solutions to Addressing Climate Change (in the process of development on August, 2014).  |
| Exchanging experience                              | Networks by initiative area, workshops, communication platforms, events.  |
| <b>B. Project funding and cooperation</b>          |   |
| Bidding for funding                                | Programme based requirements, competitions, partnerships.   |
| Implementation of joint projects                   | Initiative areas and associated programmes.<br>City Adviser Programme.  |
| <b>C. Recognition, benchmarking, certification</b> |   |
| Establishing norms and standards                   | Conferences, biannual C40 Mayors Summit, annual reports.  |
| Rewarding outstanding performance                  | City Climate Leadership Awards.   |

Source: (C40 Cities, 2014a).

### **Information and communication**

Through the internal networks of interest aligned with the key initiative areas city representatives connect with one another. Peer-to-peer knowledge transfer and exchange takes place between individual city staff members responsible for implementation. engagement in the networks is fluid and changes over time, when, for example, an opportunity for action emerges in the member city (C40 Cities, 2014e). The networks are chaired by a member city and supported by the C40 staff, for instance, Stockholm and Sao Paulo lead the Climate Positive Development project in which models for large scale GHG reducing urban communities are developed in a set of real-world urban laboratories. The Climate Positive network provides knowledge sharing opportunities across the cities and projects, therefore facilitating successful strategies replication. Currently the programme is working with Development Partners on eighteen projects across six continents (C40 Cities, 2014g).

In C40s Research activities “C40 Cities Baseline and Opportunities” report quantified climate change efforts undertaken by the C40 Cities. “C40 Cities: the power to act” report also measured the power of mayors to influence the different areas of climate change actions in cities. “Protecting our capital” report was released in 2014 together with C40s official reporting partners CDP and AECOM demonstrated how city governments climate adaptation actions are capable of contributing to business resilience (C40 Cities, 2014h).

### **Project funding and cooperation**

C40 has a number of significant alliances (partners and funders) with the World Bank, Clinton Climate Initiative, ARUP, WRI and others which support the organisation. ICLEI is also among the C40 partners. The network and the World Bank cooperate on developing common international metrics for assessing the progress towards climate adaptation and mitigation and open another source of public and private capital to associated projects (C40 Cities, 2014i).

An example of incentivising mechanisms used in financing the projects is Climate+ development program - a framework for climate positive communities; member cities wishing to participate have to meet certain sets of requirements and are incentivised through the arrangement where a development partner would earn climate positive credits for emission reducing developments and offsetting (Clinton Foundation; C40; USGBC, 2013). C40 helps establish regular communication for a participating city official through virtual exchange, in-person meetings and also through providing access to resources such as research, funding or financing, technical expertise and analytical tools (C40 Cities, 2014f).

### **Recognition, benchmarking, certification**

In April 2013 C40 and Siemens established collaboration in which they proposed a global award competition to recognise innovative city climate strategies. The City Climate Leadership Awards are granted in ten categories with five of them being open to C40 cities only (urban transportation, solid waste management, finance and economic development, carbon measurement and planning and sustainable communities). This partnership gives C40 cities networks direct access to Siemens’ technical expertise and also facilitates involvement of Siemens in Measurement and Planning Initiative founded by C40. The 2014 Award recognition package includes a ceremony and exhibition, extensive global media coverage and a report for each winning city (City Climate Leadership Awards, 2014).

C40 Mayors Summits are usually delivered in partnership with the host city; other events include thematic workshops and conferences, such as the Rio + C40: Megacity Mayors Taking Action on Climate Change, a side event arranged in conjunction with the Rio +20 conference on sustainable development (C40 Cities, 2012).

### **3.3.3 100RC**

Table 3-4 outlines criteria application to the most recently established TMN case – 100RC. With the focus of the network confined to resilience, the assumption is held of the sufficient interrelation between climate change mitigation and adaptation and resilience, making the framework application possible for subsequent comparative analysis.

Table 3- 4. Internal Governance: 100RC.

| Internal Governance: 100RC                         | Practices  |
|--|--|
| <b>A. Information and communication</b>            |  |
| Encouraging learning                               | 100 Resilient Cities Network.                                |
| Creating best practices criterion                  | 100 Resilient Cities Centennial Challenge, non-member input. |
| Exchanging experience                              | 100 Resilient Cities Network, workshops, planning sessions.  |
| <b>B. Project funding and cooperation</b>          |  |
| Bidding for funding                                | Challenge participation requirements, partnerships.          |
| Implementation of joint projects                   | 100 Resilient Cities Centennial Challenge.                   |
| <b>C. Recognition, benchmarking, certification</b> |  |
| Establishing norms and standards                   | Evaluating each group of member cities.                      |
| Rewarding outstanding performance                  | -  |

Source: (100 Resilient Cities, 2014).

### **Information and communication**

The Centennial Membership challenge and network membership provides the opportunity for cities to receive four forms of support (Rodin, 2013a):

- Support to hire or fund Chief Resilience Officer who would become a central contact point in the member city to oversee the resilience activities, coordinate stakeholder involvement, and ensure resilience to remain a city wide priority.
- Support to get technical assistance to develop a resilience strategy that is holistic and reflects member cities needs.
- Membership in the 100 Resilient Cities to sharing knowledge and best practice through the network.
- Support in accessing innovative platform with tools and resources for the plan and strategy development and implementation (innovative finance, innovative technology, infrastructure and land use, community and social resilience).

One of the main knowledge exchange platforms utilised by the 100RC are workshops. Member city Norfolk which held its resilience workshop is seen to have a potential to benefit from other members such as Oakland, or Bristol, facing similar resilience challenges and aspirations, so these interactions are aimed at advancing cooperation (Armstrong, 2014). In the first year of the Challenge over twenty workshops were run to accelerate action for resilience strategies planning (Schreiner, 2014).

### **Project funding and cooperation**

The Rockefeller Foundation made a 100 million US dollars commitment to building urban resilience, and keep attracting such partners as the World Bank, Architecture for Humanity etc. It is hoped that through the operation of this project a new market for resilience related

solutions would be created, with 100 organised cities being able to create and exchange strategies also benefitting from the private sector, academia and charities input (Berkowitz, 2014a).

### **Recognition, benchmarking, certification**

Approaching the deadline for the second round of applicant cities to join the Challenge, 100RC made first evaluation of the process concluding that there is a global interest in resilience judging by the application outreach and the variety of applicant cities. The prevailing tendencies in identifying resilience challenges cities were facing were outlined to include flooding as most pressing shocks, and aging infrastructure as the most threatening stress. With the initial evaluation the foundation is built for selecting next participants ensuring a diverse mix of strong and committed partners (Schreiner, 2014a).

## **3.4 Resilient Cities - Congress**

This section presents the findings from the Resilient Cities Congress. The congress in the context of this research is presented as a case study with a different examination boundary, shifting specification focus from the network level, to which the entire set of selected analytical criteria could be applied, to a single event, which could be referred to as a single internal governance criteria, presumably knowledge exchange, but which also holds the potential to contribute to wider area of networks functioning, for example advocacy, and could also be attributed to other internal governance arrangements such as cooperation, or recognition. The section outlines the background of the event, supplements it with the direct observations formed during the event attendance and also positions the case into the wider context of networks advocacy in the area of climate governance, bridging internal governance examination dimension with the external one.

Within the frames of this research the opportunity was presented to attend Resilient Cities 2014 – Annual Global Forum on Urban Resilience and Adaptation. Resilient Cities as a global platform for urban resilience and climate change adaptation was organised for the fifth time by ICLEI and co-hosted by the World Mayors Council on Climate Change (WMCCC) and the city of Bonn, Germany.

The WMCCC is an alliance of local government leaders concerned about climate change and was founded in 2005 by Yorikane Masumoto, Mayor of City of Kyoto, soon after the Kyoto Protocol entered into force; they advocate for enhanced engagement of local governments as governmental stakeholders in multilateral climate change and sustainability negotiations, and are supported technically and strategically by ICLEI (World Mayors Council on Climate Change, 2010).

The Congress took place over three days with the full day planned programmes and informal interaction, networking arrangements and side –meetings. All of the attendees received a full programme guide and a list of congress participants which was seen to assist the event logistics and assist in the networking processes (see figure 3-1 for participants overview). As networking and establishing new connection is one of the key aims and attraction points of such an event, with the amount of smaller, more private side interactions organised during the three days at the 2014 Congress, the proposal was made for such non-centralised meetings to be made part of the official schedule and was welcomed by the organisers willing to increase the efficiency of interaction.

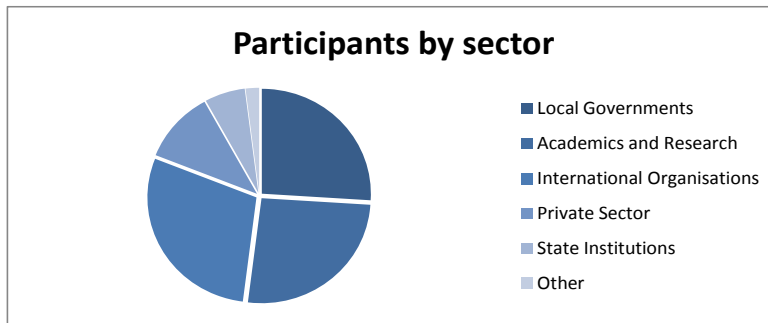


Figure 3-1. Resilient Cities 2014: participants by sector.

Source: Resilient Cities, 2014.

The program of the 2014 Congress focused on numerous key topics such as adaptation planning, financing the resilient city, city –region food systems, resilient infrastructure and blue – green development, risk data and biodiversity. The formats in which these topics were communicated included workshops, meetings, panels and presentations. Two of the formats could be further highlighted for their special features. First, “reality check workshops, adaptation on the ground” where selected cities got the opportunity to showcase their achievements, share experience and get feedback. Second is the Mayors Adaptation Forum event; Resilient Cities 2014 hosted the fourth Mayors Adaptation Forum (MAF) which is aimed at facilitating closer dialogue between local and global leaders, and this year was centred around urban adaptation and biodiversity, climate governance, Sustainable Development Goals and the Post – 2015 UN Development Agenda (Resilient Cities 2014, 2014). As part of the MAF cities were also provided the opportunity to become signatories to the Durban Adaptation Charter.

For observational purposes different formats were attended; in the majority of them participation and engagement was high, as well as was the level of interaction, as all of the sessions allowed for question and answer, discussion, or a workshop element.

### 3.4.1 Congress and advocacy

At the 2014 World Urban Forum which took place in Medellin, Colombia on the 11<sup>th</sup> of April new global collaboration for urban resilience was announced. The alliance between world’s largest UN and non-UN organisations includes UN Human Settlements Programme (UN-Habitat), the UN Office for Disaster Risk Reduction (UNISDR); The World Bank Group, the Global Facility for Disaster Reduction and Recovery (GFDRR), the Inter-American Development Bank (IDB), the Rockefeller Foundation, 100 Resilient Cities, the C40 and ICLEI. Combined these organisations represent work in over 2000 cities globally with more than 2 billion US dollars of fund committed to advancing urban resilience and sustainability annually (UN Habitat, 2014).

Collaboration is aimed to facilitate the flow of knowledge and financial resources targeted at assisting cities in becoming more resilient towards climate change disruptions, disasters caused by natural hazards and other systemic shocks and stresses through (World Urban Forum, 2014):



- Developing common resilience definitions and metric.
- Harmonising multiple approaches and tools available for cities.
- Catalising access to innovative finance mechanisms and existing international finance.
- Promoting resilience for investment.
- Strengthening partnerships with cities working towards resilience as well as with urban networks and private sector.
- Promoting greater alignment of urban resilience agenda.

It is possible to observe that representatives from a number of signatories to the Medellin Collaboration on Urban Resilience, namely (UNISDR, UN Habitat, the World Bank, IDB, 100RC) also attended the ICLEI Resilient Cities Congress. The 2014 Resilient Cities Congress took place under the patronage of UNDP, United Nations Framework Convention on Climate Change (UNFCCC) and ICLEI Vice President and Resilient Cities Portfolio Holder James Nxumalo, Mayor of eThekweni Municipality/Durban. Program committee, which had advisory and peer-review role, was composed of experts from partner organisations centrally involved in the field of climate change adaptation (The International Society of City and Regional Planners ISOCARP, International Institute for Environment and Development IIED, UNISDR, the World Bank and others), and local governments from different continents (City of Copenhagen, City of Cape Town, Makati City and others) (Resilient Cities 2014 Congress Secretariat, 2014).

The Congress was attended by several lead authors of the urban chapter of the IPCC 5<sup>th</sup> assessment report and could be considered an important stage of the global climate and resilience negotiation processes which are pursued intensively in 2014 with UNFCCC urbanisation focused meetings in June, The UN Secretary General's Climate Summit in New York in September, the annual UN Climate Conference in Lima at the end of 2014. Taking place along the series of other scientific assessment and meetings the Resilient Cities Congress comes at a critical time of the international work towards achieving a new universal climate agreement in Paris in late 2015 (Figueres, 2014).

ICLEI, C40, World Resources Institute (WRI) collaborated with the World Bank, UNEP and UN-HABITAT on the Low-Carbon Livable Cities (LC2) Initiative to support cities in developing countries to plan low-carbon and carbon-smart development and channel the finance flows through developing the Global Protocol for Community Scale Emissions (GPC), methodology that quantifies the GHGs associated with consumption and economic activity occurring at the city level (The World Bank Group, 2013).

### **3.4.2 Internal governance arrangement**

It is realised that, due to the fact that not all of the sessions could be attended, some of the conclusions are limited in their generalisation; to enhance data collection and perspective formation evaluation of personal experiences were also performed in informal interaction where participants would be asked to give their opinion on the importance of the attended event. Through these discussions it became possible to identify reoccurring topics and feedback from the congress including concerns and high interest in funding and climate finance; call for bridging the local and national efforts and potential national government

representatives involvement in events of similar character aimed at developing local responses to climate change; academia – practice gap (shelving problem) where issues of knowledge loss and the role of science were of concern; differentiating between climate adaptation and mitigation, and debate on how to approach it comprehensively.

Diversity of stakeholders is a prerequisite for a successful policy dialogue capable of finding answers and actions that can respond to numerous competing interests. Interdependency of those stakeholders is also important as it would facilitate collectively adaptive learning; stakeholders must be aware that they cannot meet their interests separately and see benefits in long-term voluntary collaborative processes (Innes & Booher, 2003, p. 40). With the variety of sectors represented by the participants the level of interaction was high and characterised by openness and willingness to learn and share knowledge. Participants also had different aims and aspirations ranging from establishing new connections and partnerships, presenting and sharing their experiences to learning from specialists or observing the way the event is organised as a model for reference. A few statements were also found similar including the praise to the clear organisation facilitating atmosphere favourable for interaction at such level and the benefit of meetings among participants who had established connection previously and are strengthening their commitments through formal and informal interactions (Resilient Cities Congress 2014, 2014).

In regards the expectations, it is difficult to generalise on what could be the desired outcomes of this Congress for the participants, should this be networking, or getting answers to topical global climate change issues it is not clear where to make assumptions about the outcomes. At this event feedback forms were provided for facilitators to evaluate their work, but even so there is a question of whether it is the general level of satisfaction that is a measure of success, or number of established connections, signed agreements, attendance of the following annual event etc. This takes the argumentation back to the issue of assessing the success of knowledge transfer.

As organisation ICLEI was established to bring local governments together, so it is a natural, that real time real life meetings are the prime way of interaction. Widespread advancement and use of electronic interaction platforms assists in the work of a transnational municipal network; when ICLEI was founded such electronic knowledge exchange was at its early stages of development. Now that it is well integrated into the operation of the network, it is still seen that electronic systems of exchange work better if there has been prior personal contact, turning meeting into a precondition for a further distance interaction (Zimmermann, 2014).

Addition of the new signatories (five cities) demonstrates that real life interaction is desirable for network expansion. Planning and hosting a Congress might be justified if there is a clear agenda and focus is kept throughout the entire event. For the network it is important to have a strategic outlook and clear vision of the outcomes for the event to make it successful. The overall rationale for organising the congress is motivating members to act. It has been noted that local authorities who have attended a meeting and were exposed to the environment of learning and interaction, got updated on the global trends, had a chance to interact with scientific community and other stakeholders would go back home with enhanced aspiration to act and implement (Zimmermann, 2014).

Events, summits in particular, might serve for the purposes of internal governance regulation, as governing city representatives gathered in one place can vote on strategic direction development and Charter drafting (Madeira, 2014), making such meetings instrumental not only in networking, information dissemination and knowledge exchange for city members and interested stakeholders, but also for the organisation itself which can then develop or

adjust its structure, strategy or function. Notably, attended by key players in the field of climate change governance, networking events serve for wider advocacy reinforcement and new partnership securing, embedding the event into larger transnational climate policy process. Resilient Cities 2014 was one of the collaborative steps for ICLEI and C40 who work on the common agenda towards the United Nations Climate Summit, and also presented an engagement opportunity for 100RC to bring in their expertise into the common agenda development process.

## **4 Discussion**

### **4.1 Internal governance patterns**

This section of the discussion relates directly to the examination where the analytical framework with a set of criteria was applied to the researched networks with the aim of identifying internal governance arrangements comprising morphology of a given network. In order to evaluate the findings in a comparative and contrasting manner, common patterns are identified forming a preferred method of internal governing. Pattern evaluation is also supported with the statements derived from researching current academic discourse underpinning the rationale for TMNs in the field of international climate governance.

#### **4.1.1 Main rationale for TMNs**

The local dimension of climate adaptation and mitigation is being both advocated for and criticised. As seen in the introductory section of this paper, urban areas do have the capacity of being an active actor in the globalised climate governance, although the critics highlight the weak coverage of climate action plans (Zimmerman & Faris, 2011), simplification of goals (Wheeler, 2008) and questionable incorporation of climate responsive land-use management into the development plans (Toly, 2008).

Feldman (2012) states that networks could become key channels in global environmental governance, due to their capacity to act and move ahead of national state or international inter-governmental organisations' actions. Author introduces the concept of 'glocalization' where climate change related knowledge and experience diffusion and application occurs best on local or regional levels (Feldman, 2012).

In the existing multi-centric and multi-level climate governance arena it is difficult to determine the prime purpose of the TMNs; reflecting on the local dimension discourse, it is possible to assume that inter-municipal dialogue is more successful in influencing the global political movement and representing the cities (Toly, 2008), rather than bringing in the desired change in the participant cities.

Focusing of one of the main objectives of TMNs – learning – Lee and van de Meen (2012) named key factors in the successful policy learning experience, namely: leadership, functional of multi-stakeholder governing body and principle of homophily (e.g. geographical proximity, cultural similarities, language) presence of which increases the likelihood of policy learning within the networks. Lee and van de Meen (2012) also found out that the distribution of learning in the given framework is likely to be uneven and participant cities with less experience would have to put more work into learning from those successfully implementing climate strategies.

Bouteligier (2013) challenged the expectation that a more horizontal character of TMNs would ensure a more equal governance arrangement and explored the power relations within the networks establishing the significance of the Global South undermined by other actors. The author revealed that the dominance of the global North in the networks might complicate the transfer of best practices as particular solutions are being favoured even though they do not necessarily represent the most appropriate actions (Bouteligier, 2013).

Hakelberg (2014) undertook a study on the TMN involvement of the European cities and came to similar conclusions of Fieldman (2012) confirming the success of learning

acceleration and climate policy innovation spread triggered by the TMNs. The author also observed, though, that some participant cities might be using their membership as publicly visible act signalling their involvement with the climate change agenda, but not contributing, or fulfilling their commitments (Hakelberg, 2014). Niederhafner (2013) compared European and Asian transnational city networks and discovered a much larger lobbying and financial capacity of the European networks, arguably due to the policy of the European Union which empowers city networking (Niederhafner, 2013).

Betsill and Bulkeley (2007) revisited numerous studies and their own contributions to researching urban climate change through the lens of multi-level governance and found that focusing on direct means through which climate change is governed might be limiting as increasing complexity and fragmentation of climate governance might cover the sources of authority and capability in addressing climate change at an urban level (Betsill & Bulkeley, 2007). It could be observed from these statements that the research on TMNs takes various shapes ranging from theoretical approach exploration to case study examination, focusing on the networks, or participant cities, and presents numerous critical perspectives for pattern identification and further evaluation.

#### **4.1.2 Common patterns in TMNs**

As soon as observing the main areas of the selected TMN operation it is possible to see the links between the direction of the TMNs work and the academic debate on climate change with reappearing concepts such as local action, empowering and representing cities, cooperation and knowledge sharing for resilience, climate change, or sustainability. Spread geographically these networks are linked structurally quite tightly through the organisational arrangement and learning interactions which precondition innovation and value-creation in the knowledge economy (Steele, 2011). It is important to notice that web based interaction is being actively supplemented with conferences, workshops and training sessions which allow member city representatives to meet and share good practices, and for the host city to get experience, recognition and benefits for the local economy.

ICLEI holds its international World Congresses every three years, which allows gathering stakeholders in one place to advance the operation of the network and its sustainability agenda. There is a rationale to host World Congresses in different continents to increase participation and representation from year to year (Madeira, 2014). The case study Resilient Cities Congress also carried similar aspirations for knowledge dissemination networking and advocacy. C40 holds its biennial summits gathering member cities representatives and other urban and climate change leaders for a series of roundtables and working sessions focusing on climate change (C40 Cities Mayors Summit Johannesburg, 2014). 100RC holds agenda-setting workshops in cities that participate in the challenge which are held to forward urban resilience strategy, but also to inform the work of the TMN providing information for building City Resilience Index and toolkit City Resilience Framework for establishing resilience baseline (ARUP; The Rockefeller Foundation, 2014). TMNs efforts in developing information exchange and communication means of internal governance through holding events is, therefore, seen to have a strong rationale and is being favoured in the selected study cases.

For cities to resolve complexities associated with climate change governance it is not sufficient to address sustainability at a local level (Neuens & Roorda, 2014). Tackling the perceived barriers of spatial scale (governing common goods), temporal scale (merging global agenda with local policy cycle) and institutional scale (capacity of local authority) (Bai, 2007) networking can present a new level playing field where concerns of individual city members

over their readiness to face these barriers can be addressed in the integrated way within the selected transnational network.

It is seen as a strength of networks that they operate on a voluntary basis, allow for choosing the level of involvement with different membership statuses (e.g. C40) and have variety of members with different capacities facilitating simultaneously a sense of equity and inspirational learning driven by a more climate active cities. With the roles of members within the network it is the case that cities would most like to cooperate with preferably active and advanced members (Caldas, 2014; Zimmermann, 2014). The voluntary and non-hierarchical nature, though, could be seen as a limitation: coordination in the projects is pursued through communication and meetings between the members, who curate and disseminate best practices to the rest of the network, which facilitates learning, but does not provide reliable means of directing city actions to coherent and coordinated objectives (Gordon, 2013).

Bai (2007) stated that over-localising the global issues may not be the most effective way of dealing with climate change; participating in the networks projects could potentially address that issue, as cities working in one interest project can experiment with the local policy designs (e.g. developing a resilience strategy in 100RC), get inspiration or adapt good practices from the most experienced members and get guidance and technical support from the experts all within the safe environment of a project - the idea of the 'living lab' approach to achieving sustainability advocated in the transition management (Nevens & Roorda, 2014) – and favoured in all of the selected networks. There is no guarantee, though, that involved in the city wide policy designs members would not pursue actions that might neglect the city region area (Gordon, 2013) and, thus, create regional disparities.

Networks are also connected to one another; C40, ICLEI, World Resource Institute and partners cooperated on establishing a single standard for measuring emissions for cities (ICLEI, 2012). Applying for 100RC Challenge the city of Melbourne, also a member of C40, noted that the two networks are complementary – C40 helps cities identify vulnerabilities in their systems and initiate a process of long term improvements, but climate change is only one part of building urban resilience and membership in 100RC shall reinforce the already taken actions (Lawler, 2013).

Two of the examined cases ICLEI and C40 highlight networking within a network as the preferred method of internal governing. Common aims of achieving sustainability, reduction of greenhouse gas emissions are attempted from numerous perspectives judging by the number of key initiative areas each of the networks represents. Examining approaches to resilience Stumpp (2013) suggested intensified collaboration to be a way forward (Stumpp, 2013). ICLEI began to focus on climate adaptation and included resilience as part of its seven main agendas. 100 Resilient Cities only concentrates on resilience. Following the progression of 100RC work would be valuable for further research to establish whether a more narrow networks focus brings more benefits to members interested in cooperating on a certain issue.

It is evident that benchmarking and standardising are commonly used internal governance arrangements, with recognition playing a somewhat smaller role, arguably, due to the focus of the participants on deriving all possible cooperation benefits and seeing implementation of good practice as a reward in itself. Nevertheless, two of the identified cases developed their awarding systems and try to incorporate incentives into the project design.

Another form of cooperation that is being actively used by these networks is partnership. Indeed, despite the central enabling character of network governance (Bulkeley & Betsill, 2013), TMNs try to promote public private partnerships extending the sources of finance and

expertise available for the members. Whether it is a participation of the Clinton Foundation in C40, investment from the Rockefeller Foundation in the 100RC, or front-end building of strong local links with other local actors advocated in the project requirements of ICLEI and 100RC, researched TMNs do not isolate themselves from other actors in climate change governance and seek to expand their connections to unlock the investments. Next section outlines aspects associated with partnerships and co-working in the same climate and resilience area of international multi-level environmental governance field.

## 4.2 Importance of climate finance

### 4.2.1 Defining climate financing

In the process of analysing data, direct observations as well as interviews and informal discussions with stakeholders it has been noted that there is one commonly reoccurring topic of climate finance and its rising importance and recognition in moving the climate change agenda forwards. Partnerships have increasingly been used to explain development in global finance flows where various structures, institutions and practices of global governance have been reversed in favour of the Global South (Abrahamsen, 2004). The roots of climate resilience could be traced back to rising acknowledgement of the development banks activity of engaging cities from the Global South, thinking less in terms of low carbon retrograde steps, and more about future more resilient economy creation (Bulkeley, 2014). These statements are part of the argumentation in favour of the changing constituency of transnational municipal networks which ought to accommodate the arrangements for partnerships and co-funding within their governance structure. The emerging international climate finance structure might provide access to additional resources for TMNs and their members. However, unlike traditional development aid, climate finance is most likely tied to specific processes and definitions concerning climate change, which might increase bureaucratic costs and limit eligible activities and projects financed by these new resources (Kerres, 2014).

At the Resilient Cities Congress's finance plenary it has been stated that fifteen years ago it was more likely for national governments to make direct investments into environmentally sound development or measures, whereas now finance mechanisms are much more complex (Resilient Cities Congress 2014, 2014). There is no widely accepted definition of climate finance; Climate Policy Initiative summarises climate financing as “total investment costs plus public framework expenditures” (Climate Policy Initiative, 2014, p. 5).

For explanatory purposes this section outlines the main terms and definitions associated with climate funding. Climate finance could refer to resources that catalyse low-carbon and climate resilient development. It includes the costs and risk assessment of climate action, contributes to creating an enabling environment for adaptation and mitigation, encourages research and development, as well as progressive technologies deployment. Instrumentally climate finance can be mobilised from a range of sources: domestic and international, bilateral and multilateral, public and private. Both public and private flows are essential parts of climate finance, where competitive profit oriented private initiatives are seen to be instrumental in facilitating climate change adaptation and mitigation (World Bank Group et al, 2011). Public sector plays a central role in climate financing providing incentives, risk coverage mechanisms, low cost loans, technical support and direct project investment, whereas private sector provides largest share of financing (Climate Policy Initiative, 2013).

The Copenhagen Accord agreed on the COP15, further supported by the Cancun Agreements negotiated in the COP16, established a commitment on the part of developed countries to provide new and additional resources for climate change activities in developing countries (World Bank Group et al, 2011). Green Climate Fund was established at the COP16 to provide long-term financing for developing countries, along with the fast-start finance – new and additional sources that developed countries Parties pledged to mobilise through international institutions, where mitigation and adaptation should receive balanced allocation, with expectation for adaptation funding to be prioritised in most vulnerable developing countries (United Nations Framework Convention on Climate Change, 2014c). Means for tackling climate change, therefore, are in substantive amounts sourced from developed countries, invested in developing countries and are managed by one or several international institutions.

The flow of resources can be directed in multiple other areas and geographies, but participation of third party managing institution is common and there is a set of characteristics which they functionally share. Climate finance mechanisms functions and roles predominantly include: oversight (setting policies, priorities, criteria), resource mobilisation (leveraging additional funding sources), resource allocation (e.g. between adaptation and mitigation), project cycle management (preparation and approval of projects, management of loan and grant agreements), standard setting (development and approval of performance metrics and environmental and social safeguards), scientific and technical advice, accountability (monitoring and evaluating projects) (Ballesteros, Nakhoda, Werksman, & Hurburt, 2010).

Key sources of investments used in climate financing comprise bi- and multilateral funds and development banks, green bonds (broadly defined as fixed income securities that raise capital for projects with specific environmental benefits (Sustainable Prosperity, 2012)), and crowd funding (small companies raise capital from a number of small investors in return for an equity stake, structured payments and products, or a combination of those) (Frankfurt School-UNEP Centre/BNEF, 2013). Johannesburg, which is a member of both ICLEI and C40, has recently issued its first green city bond, becoming the first C40 city to use this financing mechanism, demonstrating the investors' confidence in Johannesburg's climate change strategy and facilitating environmental stewardship while allowing for market related financial returns all with the purpose of increasing city resilience and sustainability (City of Johannesburg, 2014). Financial market is changing at a fast pace, so part of the challenges in addressing climate change adaptation and mitigation include adjusting economic mechanisms to achieve low carbon climate resilient economy and creating conditions for directing climate capital flows (Climate Bonds Initiative, 2014).

#### **4.2.2 Evaluating climate financing**

Climate financing was initially encountered in researching establishment of the selected TMNs from the historical perspective, where it was established that two of the three researched TMNs, namely C40 and 100RC, were founded with the support of beneficiary foundations. There is a high probability that associated donors do not only increase the capital capacity of a given network but also affect the way in which it is being formed (Bouteligier, 2014) and, hence, preference of certain internal governance arrangements to others. Due to the fact that no direct contact has been established with C40, or 100RC representatives during the period of this research, this assumption could not be tested; nevertheless, it is seen to hold a strong argument in the exploration of the factors potentially forming a given internal governance formation.



From the start of their collaboration in 2006 the Clinton Climate Initiative Cities (CCI) and C40 have been committed delivery partners. At the invitation of the C40 member cities CCI placed city directors in support of the programs in the applicant cities to assist the program team and expert partners. This pro bono support was targeting project development, local relationships and knowledge-sharing (The Clinton Foundation, 2011a). This alliance put C40 in the position where it provides its member cities with assistance required for fulfilling their commitment to GHG reduction through creation of a purchasing consortium enabling cities to increase their purchasing power to access expert technical assistance.

Through collaboration with CCI this opportunity multiplies as, for example, the 2011 expansion was claimed to double the budget of C40/CCI cities (The Clinton Foundation, 2011a). Engel (2009) claimed that local action on climate change is likely to intensify, but also points at the “exclusiveness” of financial opportunities available for larger, “world class” cities such as New York or Chicago, which could obtain a membership of such organisation as C40 and therefore benefit from increased opportunity to demonstrate their climate change commitments. With this example the author articulates for the increasing divide between the “world class” cities and the rest of the cities (Engel, 2009, pp. 433-434). C40 Secretariat and CCI are the main gatekeepers, or facilitators, representing the power source in the network; CCI has been criticised for having preference for multinational companies located in the Global North subsequently diminishing the possibilities of the smaller scale local stakeholders (Bouteligier, 2013).

Financial aspects encountered in the investigation of funding mechanisms required for TMNs projects, events and general functioning present a complex collaborative arrangement which is flexible and case based. As an example, the Resilient Cities Congress took place under the patronage of numerous sponsors, utilising the assistance of a recognised host city and was part funded through the attendance fees.

The Finance Plenary held at the Resilient Cities 2014 concentrated on the bottom up approaches to financing the resilient city and was led by the representatives of the World Bank, the Climate Bonds Initiative, 100 Resilient Cities, Global Infrastructure Basel, the International Institute for Environment and Development and the United Nations Capital Development Fund. Among the conclusions drawn there was a general optimistic view on resilience and adaptation finance mechanisms, with supporting examples from possible marketing and bundling at the city level, development investment possibilities and calls for appropriate financial governance for transparent and accountable transactions (Resilient Cities 2014, 2014). The topic of financing was also brought up in numerous other sessions during the Congress with participants searching for common solutions to climate planning and project implementation issues.

The divide is a reoccurring finding, whether it is a North – South divide studied in transnational networks (Bouteligier, 2013), or elite, non-elite cities divide exemplified in the article by Engel (2009). Whether there is an indeed a disparity between the cities within a given TMN is a question beyond the scope of this study, but considering this possibility is valuable for rationalising over the reasons for membership and, hence, structure of the network. Approached differently, there is still a substantial amount of identified internal governance patterns that are successfully utilised in all of the studied networks, so the question arises of what could be the reason for a member city to join, or retain, its membership in a given network, as some of the cities (e.g. London, Berlin, Rotterdam, Glasgow etc.) are members of numerous networks simultaneously. Funding mechanisms, potential partnerships and learning opportunities obtained through membership are one of the prime reasons to join, but it is also the case, arguably, that a status of a certain climate active and resourceful city

might attract other cities to this network, or retain the members thinking of leaving it (Bouteligier, 2014), referring to impact of voluntary nature of participation and membership as part of TMNs structural arrangement on its function.

## 4.3 International climate governance

### 4.3.1 Relating external and internal governing

This section expands the research boundary from single network morphology to wider multi-level climate governance and elaborates on the highlighted patterns supplementing them with the findings from the literature analysis and interviews which showed a reoccurring pattern of joint projects implementation and partnerships involving the researched TMNs and other stakeholders in the field of climate governance.

From the observed internal governance structure, it could be stated that learning and capacity building, or funding, are among the main functions of the researched TMNs. Learning from the historical perspective on the international climate negotiations, advocacy could also be attributed to TMN functioning. Three key structural goals of transnational municipal networks in multi-level governance perspective, are, therefore: networking, lobbying and funding. Using the these suggestions and theoretical grounds informing this research these structural goals could be evaluated and presented in the following manner (Niederhafner, 2013, pp. 381-382):

- Learning (dictated by the lack of comprehensive knowledge framework applicable to all levels of the vertical governance, hence pushing cities to seek learning in the horizontal governance dimension, or networking).
- Advocacy (representation of cities on the international arena of climate governance).
- Financing (expanding the concept of funding to argue for new finance mechanisms available for climate change resilience and mitigation that are designed for leveraging financial return on investment, bringing confidence to investors wishing to contribute and participate in climate change related projects).

It has been noted that climate change adaptation and mitigation response, advocacy and action often involved a certain level of interaction between the selected networks and other prominent actors in the climate change governance system such as the UNFCCC, development banks, research centres etc. It is, arguably, possible to identify external factors affecting the internal governing of a given network as collaborative, cooperative and competitive influences. The selected analytical framework embedded learning and funding as parts of internal governing of a municipal network, and primary data analysis demonstrated significance of advocacy, which could also be attributed to internal governing dimension. From the historical perspective it became known that political context and international climate agenda development affected the formation of networks; therefore, it is reasonable to suggest that external collaboration, cooperation and competition among the networks, as well as among the networks and other stakeholders, present an important influencing factor in formation of networks internal governing arrangement which in responsive or precautionary manner reflects networks capacity to interact.

Networks collaborate, but still want to differentiate themselves as they compete to get member cities and funders. Where to strike the right balance between cooperation and distinction and how to collaborate on delivering most advanced replicable tools and practices

that would be beneficial for managing climate change issues, were some of the questions occurring while comparing and contrasting observed examples.

Relating the external influencing factors to the structural goals of TMNs allows to envision the pursuing of climate change and resilience agenda in the work of the network in three interrelated dimensions bridging the internal and external governance, which could be theoretically formulated as: the morphology, or internal governing architecture of a given network facilitates achieving its structural goals of learning, financing and/or advocacy through collaboration, cooperation and/or competition with other networks and stakeholders. This statement is presented to guide the reader through supporting cases making it possible to relate them to multi-level governance perspective and researched governance arrangements. Following section aims to demonstrate internetworking and external network interaction observed in the examination process and further depict the connection between the networks structure and its function.

### **4.3.2 Collaboration, cooperation and competition**

C40s partnership with ICLEI began in 2011 when it was decided on the project to establish global accounting and reporting standards that could be used across multiple platforms (C40 Cities, 2014i). In the partnership for the Global Protocol for Community Scale GHG Emission (GPC) standard developed by WRI, ICLEI and C40 with support of the World Bank, UNEP and UN-HABITAT the pilot version of the project was released for testing in 35 cities in 2012. In the next six months three core partners contemplated on the joint standard development and engagement of cities with the final decision of WRI taking the lead in the development of the GPC, while ICLEI and C40 would leverage participation of the cities as pilot testers (World Resources Institute, 2014). This decision could be attributed the function of TMNs as well as their internal governance structure which allows to engage member cities into such collaborations, undertake a selection process for the most appropriate pilot study participants and provide communication necessary for implementation and monitoring stages of project management. With the initial pilot project successes and finalisation of the GPC development the aspiration is to influence more than 500 cities to use the tool by 2018 (World Resources Institute, 2014).

Collaboration of the Rockefeller Foundation and ICLEI can be exemplified with the ACCCRN network where the two are engaged in the strategic regional partnership. Since 2008 The Rockefeller Foundation has supported ACCCRN and is responsible for strategy and coordination of the networks and ICLEI acts on expansion to new cities (ACCCRN, 2014). Within this partnership ICLEI has also developed the ICLEI-ACCCRN Guide and Toolkit to help local governments in Asia build resilience to climate change. The guide was one of the first products to emerge out of the grand extended to ICLEI which was provided by the Rockefeller Foundation in 2012; as the tool was completed ICLEI then proceeded with involving the cities in the region to develop City Resilience Strategies using the new toolkit (ICLEI, 2013).

100RC is one model through which the Rockefeller Foundation delivers the work on its resilience agenda; it is geographically dispersed, aims to become the foundation for the new network of professionals and other engaged stakeholders to continue building urban resilience, but it also carries innovative learning enabling, collaborative and to a certain extent temporary character. With a Challenge being initially planned to encompass hundred participant cities it is still to be established how the network would evolve. The Rockefeller Foundation continues to explore new models for addressing resilience issues and has established a new Global Resilience Partnership with USAID in August 2014 to improve

resilience to chronic stresses and increasing shocks in Africa and Asia, focusing on the Sahel, the Horn of Africa, and South and Southeast Asia – regions particularly susceptible to hazards. The initiative, therefore, has a local and regional focus. The challenge is designed to coordinate current efforts, engage new actors and forward analytical tool development to ensure lasting investments yielding resilience dividend for investing and receiving sides. Similarly to 100RC, this challenge will feature a competitive aspect, calling for non-profit organisation, academic institutions and private sector to present most innovative solutions for the three selected regions (USAID, 2014).

Network cooperation can be mainly observed in international diplomacy and their efforts to create political space for cities. There are numerous shared platforms on which network cooperative interaction takes place, for instance the United Nations summits and side events. The C40 Summit in Johannesburg made clear that cities are gaining newfound prominence in the UN-led climate policy process (Hammer, 2014). Former NYC Mayor (and former C40 chair) Michael Bloomberg had been appointed UN Special Envoy for Cities and Climate Change. Representing over 1,000 local governments worldwide, ICLEI met with UN Special Envoy for Cities and Climate Change on 7 March 2014 in New York to discuss opportunities for further engaging local and sub national governments in the global efforts on climate change. The ICLEI delegation proposed to work together on priority action areas and activities such as: reporting through the carbon// Cities Climate Registry, strengthening the role of local governments in the global climate regime through the Local Government Climate Roadmap, and collaborating on the upcoming Resilient Cities Congress, the 2014 UN Climate Summit and the 2015 Paris Climate Conference (ICLEI, 2014f).

Competition between the networks used to be characterised more in the realms of member attraction and retention, but now networks recognise that the biggest cities would most likely be part of multiple networks. As selected TMNs offer different services in the market place, competition for new members is not seen to be as critical (Bulkeley, 2014). Competition is seen to be more principal in bidding for foundation funding and striving to achieve partnerships with influential actors such as the World Bank, or the European Commission; in this realm a TMN could potentially take a mediating or advocating role, channelling finance, facilitating city level project implementation, or increasing networks capacity to fulfil its functions with acquired investments.

### **4.3.3 Internal governing patterns and structural synergies**

As part of the 100 Resilient Cities membership offer support can be obtained for Chief Resilient Officer hiring or funding (The Rockefeller Foundation, 2013). Aiming to build a lasting global community of urban resilience practice, 100RC sought their CROs to facilitate local community involvement and global representation and engagement, management and support of cross-discipline functions and effective communication. Fulfilling these functions in connecting local governments resilience efforts to the ones of the network, the CROs are seen by 100RC to form the foundation of the new resilient community and affect the evolution of 100RC as a network (Salkin, 2014). Similar sponsorship efforts were recognised by ICLEI Australia in supporting climate managers for overlooking and monitoring implementation of local climate plans (Bulkeley, 2014). C40 City adviser programme also offers member cities to host a C40 Adviser to assist with development and implementation of climate priority policies (C40 Cities, 2014j).

This suggests that one of the instrumental support mechanisms provided by the TMNs relates directly to structural arrangements of their member city authorities, facilitating the functioning

of the preferred method of internal governing such as, for instance, project running or experience exchange through conferences, or workshops.

Local authorities might not have necessary staff capacity to actively engage in the TMN activities. To a certain extent it is a financial constraint that prevents local government representatives from actively participating in the international congresses, this has been observed in Scotland (Beswick, 2014), and the United States (Zimmermann, 2014). Part of the reasoning can also be attributed to the associated carbon footprint, that comes with travelling required for event and workshop attendance. Considering the established importance of real life event interaction, this could be a limiting factor in the successful utilisation of this type of internal governance arrangement. In this case, financial restrictions could be addressed in a number of ways:

(a) budgeting, with assistance of the network, an appointment of a specialised officer in a given the local authority staff as used by the 100RC through Chief Resilient Officer, number of which is going to rise with the next city group selection; or by C40 through allocating City Advisers to selected cities based on the needs and potential for impact. In the period of 2014–2015 C40 aspires to grow the number of Advisers from six to fourteen, approximately two per region with over twenty percent coverage of member cities (C40 Cities, 2014).

(b) seeking sponsorship for event participation from the stakeholder organisations such as the development banks (Kerres, 2014).

(c) source the expertise without directly attending the event from non-governmental bodies, such as Sniffer in Scotland which funded its employees attendance and is therefore able to provide expertise to local authorities seeking it (Beswick, 2014).

This argumentation is directly linked to the assumption of the shared internal governing patterns which TMNs utilise overcoming their structural and functional differences. By investing into the creation of a more efficient, responsive and direct connection between the network and the member city the possibility arises for better information channelling, increased implementation and accountability opportunities, all contributing to improved synergy between the architectures of the network and the city, its building block, as well as between the networks themselves through creation of defined operational layer of climate change networking.

#### **4.4 Applicability of the analytical framework**

It is seen that the Kern and Bulkeley (2009) governance criterion is a useful tool allowing to structure multiple data reflecting the work TMNs carry out in climate change adaptation, mitigation and resilience. Some of the examples identified according to the selected framework, though, were found to not fit into just one criteria. Structured findings, therefore, lacked representation due to subjectivity of selection process and a certain level of assumption involved. It is recognised that this uncertainty could be eliminated with the suggested further methodology expansion and larger interview sample.

The applied criteria framework was developed in early 2000 and was based on observing “first generation” of networks (Bulkeley, 2014), and was also formulated by examining a different set of climate networks – climate protection networks operating in Europe. The kind of tasks TMNs perform now, therefore, differ from what was viewed as their main function in the last decade. The criterion is seen to contain essential elements of the internal governance characteristic of TMNs and allows for depict complex reality of its functioning. It is also seen

beneficial to outline structural arrangements of a studied network and perform historical research to develop informed grounds for subsequent analysis. Analysis of data has demonstrated the changing importance of advocacy, or campaigning, as well as financing, in the way climate change and resilience agenda is pursued or addressed by a given network. The role of external partners, such as development banks, is affecting the architecture of the network and implementability of some of the internal governance arrangements, for instance projects, or event organising. It is therefore suggested that criteria could be complimented with expanded finance outlook that would not be focused on project funding, but incorporate “partnerships” and “collaboration” along with already included “funding” and “cooperation”. This might provoke integration of political economics perspective in the framework and allow to reflect on the advocacy standings.

The structure of observed networks differs from the reformed ICLEI with layered hierarchy of internal architecture, to a flatter more compact organisation with appointed overseeing leader and executive management teams in C40 and 100RC. It is seen that the selected internal governance criteria can be successfully applied to the TMNs with different architecture, and also suggests that despite the difference in size and complexity of the single networks structure, the internal governance arrangements utilised for the fulfilment of the networks functions, be it learning, advocacy and representation, project funding and toolkit development for advancement of measures to address climate change challenges, are similar.

It has been concluded from data analysis that projects implementation success might not be the final aim of engaging in this type of activity. Networks invest resources into developing monitoring and evaluation criteria to detect the impact, or change process (Busch, 2014). Participating in projects also facilitates networking and knowledge exchange. Nevertheless, pilot study approach to implementation allows to plan the projects in a way that would allow greater flexibility making testing or applicability, rather than resulting predicted positive change, a prime desired outcome. In case of a negative outcome, the same pilot study could be taken to another location and tested again (Bulkeley, 2014). Interpreting “implementation of joint projects” criteria, approached in this research as the main working areas in which member cities can be involved in the projects, could be reviewed from another angle; it is understood that the framework does not allow to examine implementability of the projects or the extent of policy transfer, so it is suggested that “implementation” could be substituted with “facilitation” reflecting the changing role of the TMNs in the global climate change governance.

Climate change as an area of action presents an analytical challenge, as looking further into the initiatives and projects run by the selected networks it is difficult to depict which one of them might be more or less relevant for achieving the targets of climate change adaptation and mitigation. From complex initiatives like ICLEIs GreenClimateCities multi level program to 100RC resilience workshop these initiatives might leverage similar results despite the difference design and resources available; this statement takes the argumentation to the implementation aspects, though, which were left out of the scope of this paper. Is it possible to assess the architecture of the network without examining implementation outcomes of its function or could it be the case that the role of climate financing and structural reforms have more weight in facilitating local climate action? Global TMNs have difficulties monitoring success and implementation of their projects. How can they make sure that their members are on the right track, as well as whether the direction the network is choosing for itself is the most optimal one - what defines it? What is the right scale of operation to allow for the actual sustainability change to take place?

It is difficult to define boundaries between the networks; back in the days they were much clearer, but now they make alliances, share members so it might be more difficult to establish the 'use' of one or another TMN (Betsill, 2014). It is suggested that studying individual actors as well as the networks themselves in more detail might undermine the statement related to the flat structure of TMNs, also linked to the equality arguments and power relations among the city members, which are not obvious at the introductory stages of exploration, but were previously highlighted in the academic research (e.g. Acuto, 2013; Bouteligier, 2013). Selecting 100RC as one of the study cases also presented a comparative analysis challenge as the network has been established relatively recently and there was not sufficient data available for examination; despite this fact, 100RC presents an unconventional networking arrangement with narrow focus and different financial support, future development of which, depending on the outcomes, might impact the way TMN operates.

## 5 Conclusions

### 5.1 Main findings

This chapter presents the main findings of the research based on the research question designed to guide the examination. This research was undertaken to explore:

*How does the internal governance structure of TMNs relate to their ability to carry out certain types of activities?*

Based on the presented research question, the key objectives of this research were:

- To examine the applicability of the selected analytical framework through mapping internal governance architecture of the TMNs and identifying dominating patterns.
- To evaluate identified patterns in the context of international climate governance.

Addressing the first objective, historical research and determination of structural aspects of the researched TMNs, namely ICLEI, C40 and 100RC, was undertaken to acquire insights into the way TMNs form and function. Applying a set of internal governance criteria to the three selected networks, revealed that adapted analytical framework is instrumental in attempting to depict internal governance arrangements utilised in the case study networks. Identified examples from the networks practices served as a base for comparative analysis and allowed to formulate most reoccurring patterns of internal governance.

Answering the second objective of this research, the main findings derived from the application of the analytical framework and subsequent evaluation of key identified patterns of internal governing in relation to external climate governance dimension could be delineated to form two main interrelationship perspectives: the relationship between the morphology of the TMNs and their capability to perform their key functions of learning, financing and advocacy; and the connection between internal governing and external multi-centric and multi-layered climate governance. Informed by the literature review and primary data processing these perspectives could be elaborated on in four established discussion outlooks, including internal governance, climate finance, climate governance and analytical framework.

#### ***Internal governance***

Evaluating the internal governing mechanisms favoured by the selected TMNs it has been established that information and communication, project funding and cooperation, recognition, benchmarking and certification – are, in different models, and with different prioritisation, used in the selected cases. Depending on TMNs nature and goals, common internal governance arrangements would be used selectively in a given networks creating its unique internal governance architecture. The internal governance arrangements utilised for the fulfilment of the TMN functions, be it learning, advocacy and representation, project funding and toolkit development for advancement of measures to address climate change and resilience challenges, were, therefore, found to be similar.

In all studied cases, for information dissemination and advocacy, web based interaction is being actively supplemented with conferences, workshops and training sessions which allow member city representatives to interact with other stakeholders seeking to build capacity to



address climate change adaptation and mitigation issues. Networks favour initiative area specification for projects and related activities, and in two of the examined cases thematic networking within a network is utilised to facilitate a more flexible and efficient knowledge exchange. TMNs try to promote public private partnerships extending the sources of finance and expertise available for the members and use collaborative and cooperative external interactions for enhanced learning, advocacy, and development of international climate and resilience standards and practices.

With the examination of the selected networking event, as a single internal governance arrangement, importance of real life interaction for the quality (bonding, transparency, legitimacy) and speed of knowledge transfer could be observed. The value of real life interaction in forming common practices and strategies to address climate change is recognised in all TMN cases.

### **Climate finance**

Financing climate projects has gained importance and recognition in moving the climate change agenda forwards. Fifteen years ago it was likely for national governments to make direct investments into environmentally sound development or measures, but now finance mechanisms are much more complex (Resilient Cities 2014, 2014). Climate finance mechanisms, functions and roles predominantly include: oversight, resource mobilisation, resource allocation, project cycle management, standard setting, scientific and technical advice, and accountability.

Financial aspects encountered in the investigation of funding mechanisms required for TMN projects, events and general functioning present a complex collaborative arrangement which are flexible and case based. Instrumentally, climate finance can be mobilised from a range of sources: domestic and international, bilateral and multilateral, public and private. Key sources of investments used in climate financing comprise bi- and multi-lateral funds and development banks, green bonds, and crowd funding (Climate Policy Initiative, 2013; World Bank Group et al, 2011). With the appearance of a new kind of climate finance, a change has occurred in the constituency of transnational municipal networks which might accommodate the arrangements for partnerships and co-funding within their governance structure.

Events, meetings and workshops – are key facilitating arrangements for moving the cities climate agenda forward. Funding the Resilient Cities Congress is a collaborative agreement with sources obtained from the host city agreements, partnership with development banks, and attendance fees. To make sure representatives of local authorities (especially from the Global South) could attend, or that the information disseminated at the event could reach all member cities, three main solutions representing synergistic relations between internal governing mode – network structure – and external governance, were suggested to include: budgeting with assistance of the TMN, seeking sponsorship from stakeholder organisations, and sourcing expertise from an attended NGO representative.

### **Climate governance**

It is possible to suggest that external collaboration, cooperation and competition among the networks, as well as among the networks and other stakeholders, present an important influencing factor in the formation of networks internal governing arrangement which in a responsive or precautionary manner reflects a networks capacity to interact on different governance levels.

From the historical perspective it has been noted that climate change adaptation and mitigation response, advocacy and action often involved a certain level of interaction between the selected networks and other prominent actors in the climate change governance system. The morphology, or internal governing architecture of a given network, facilitates achieving its structural goals of learning, financing and/or advocacy through collaboration, cooperation and/or competition with other networks and stakeholders.

Political context and international climate negotiations affected the formation of networks. In particular, the Global North and South divide impacts the composition of a network, determining its membership and geographical span, influences its ability to source funding and impacts strategic direction of its advocacy agenda. Rising involvement of various stakeholders, formation of sub-units and collaborations of public and private actors for specific aims was observed, acknowledging the importance of TMNs in the global climate governance arena. From the UN negotiation platforms, national government and network interactions, to internetworking horizontal synergy, and network and member city cooperation – TMNs function on multiple governance levels, and their internal governance architecture reflects these points.

### **Analytical framework**

The structure of the observed networks differs from ICLEI with a layered hierarchy of internal architecture operated through representative democracy, to a flatter more compact organisation with an appointed overseeing leader and executive management teams in C40 and RC100. It is seen that the selected internal governance criteria can be successfully applied to the TMNs with different architecture, and despite the difference in size and complexity of a networks morphology.

As methodologically this research involved examination of different types of municipal networks, where ICLEI represents a general purpose sustainability network, C40 has a more narrow climate focus, and 100RC is working explicitly with the concept of resilience, applying a single set of internal governance criteria with the aim of identifying which internal governance arrangements were adapted for working specifically with climate change presented a challenge. During the examination it was seen unclear how to identify a particular action program or initiative area that would be seen to be more or less relevant to climate change adaptation and mitigation, or to resilience, unless it has been identified by the network. This uncertainty is closely connected to the direction and outcome of advocacy related strategic action pursued by networks and international agreements and norms achieved, partly as an outcome of this advocacy function.

Referring to the findings derived from evaluating climate governance and climate finance it could be noted that international negotiation on approaching climate change take numerous perspectives. UNFCCC advocates for a more comprehensive approach and merging adaptation and mitigation in one strategy, implying that there is still a conceptual divide between the approaches; climate resilience is gaining prominence in climate change agenda as a defined area also aimed at overcoming historical distinction between adaptation and mitigation; in climate financing, adaptation and climate resilience are thematically united for directing and allocating investment, which is also, in conceptual terms, found in for example the C40 Climate Leadership Awards and the ICLEI Resilient Cities and Communities Initiative.

## 5.2 Reflections

As agile as the architecture of a given network should be to be able to function in such a dynamic field as climate change, it still has to have a structured and resilient core that would allow the network to be proactive, as opposed to responsive, in pursuing its main functions. What forms this strong base, could be different for different networks, whether it is narrow focus, strong methodology and secured financing utilised by 100RC, influential partnership and selective membership of the most climate active mega cities serving as a foundation of C40, or active advocacy, broad scope of activities and extensive geographical outreach of ICLEI. Networks are resilient as structures as they operate across multiple geographies, sectors and scales. It is seen reasonable to assume that the existing internal governance structure with “networks within networks”, decentralisation, and flexibility in project design is to a certain extent deliberate (or might have formed this way naturally) to allow for metamorphosis of interaction, easier stakeholder inclusion and adaptation capacity of the network to perform its functions in the global climate change negotiation arena.

Acuto (2010) positioned global cities in the multilayered context of global governance and stated that they act directly in politics through such political practices, such as governance and advocacy, shaping the environment of international affairs and facing the same challenges as other political organisations. Global cities with their resources and strategic capacity to address issues at the local level shape international affairs operating “as providers of, facilitators for, and nodes within the articulation of the global networks” (Acuto, 2010, p. 435). Up scaling this perspective, and considering the fact that global cities are found as members of the studied networks, it is possible to say that TMNs also carry political weight in international climate governance, operating channels of governance and advocacy, drawing their strengths from the member cities and providing the cities with the capacity to act and have influence on the global arena.

Often TMNs are focused on the solutions, implementation of the climate change relevant projects and action, hence making them highly relevant for international climate governance. Yet, they seem disconnected from the efforts undertaken on the national scale. Bouteligier (2014) exemplified this with the reference to the UN Copenhagen Climate Conference in 2009 where national governments discussed the challenges of greenhouse gas reduction; while simultaneously in the parallel city summit the mayors were sharing their successful efforts in battling climate change. Similar statements were made at the 2014 ICLEI Resilient Cities Congress, where numerous participants expressed concerns over the need of better integration of efforts between the city and the national governments, with ICLEI representatives confirming that with their proposal to invite government representatives to interact in the following ICLEI events.

Networks grow gaining new members, partners and expanding into new regions, and these shifts can be constantly observed. Assessing implementability of their projects or transferability of sustainable practices they develop is a way of evaluating a successful network. Bringing about change in the member cities climate and resilience practices is important, learning and facilitating financial mechanisms are a key in municipal networking functions, but so is their contribution to forming an efficient international governance regime. Active advocacy by transnational municipal networks working with climate change adaptation, mitigation and resilience changed the position of cities in the international climate governance: the upcoming UN Climate Summit in New York in 2014 is going to reinstate the importance of cities in addressing climate change challenges. There are views that “TMNs might give a nation state a way out of climate change, but other people would say - it gives them somewhere to go” (Bulkeley, 2014).

### **5.3 Suggestions for further research**

It is of interest to follow the direction of climate change conceptualisation and its impact on the structure, internal governance and functions of the networks. With the development of the Global Collaboration for Urban Resilience which aligns UN organisations and key stakeholders (including ICLEI, C40 and 100RC) committed to building urban resilience, it is relevant to explore the changing operationalisation of resilience in the agenda and function of TMNs, therefore affecting their governance architecture. Arguing from the assumption that resilience is prioritised, or pursued, in different ways in the studied networks it is seen as a potential research continuation to expand the scope and examine cross network cooperation on resilience, and the rationale behind the TMNs choice of internal governing aimed at facilitating effective cooperative and collaborative synergies.

In the same line of argumentation, but changing focus from exploring governance arrangements, to examining the connection between certain governance formation and outcome of its operation in terms of implementability of climate change strategy at an urban scale, further research could engage with scrutinising the impact of the selected TMNs on their city members. This examination could establish the interrelation between the internal governance modes and development of climate change strategies and action in member municipalities, looking into the possibility that particular governance formation has an effect on the implementation capacity of the initiatives by TMNs.

As climate financing is a rapidly developing sector of the global climate change investment flows it is seen as a possible research opportunity to explore the impact climate financing has on TMNs internal governing formation and external governance responses. In particular with climate financing, how should TMNs assist their member cities in acquiring financial aid? With the proclaimed probability of associated donors having impact on not only the capital capacity of a given network, but also on its internal governance architecture, which would seek to accommodate provisions for efficient finance channelling, this research direction could look into the funding (or financing) function of TMNs, exploring this function and corresponding internal governing.

## Bibliography

- 100 Resilient Cities. (2014). *100 Resilient Cities*. Retrieved July 28, 2014, from 100 Resilient Cities: <http://www.100resilientcities.org/>
- 100 Resilient Cities. (2014a). *About the Challenge*. Retrieved July 27, 2014, from The Rockefeller Foundation 100 Resilient Cities Centennial Challenge: <http://100resilientcities.rockefellerfoundation.org/pages/about-the-challenge>
- 100 Resilient Cities. (2014b). *About Us*. Retrieved August 3, 2014, from 100 Resilient Cities: <http://www.100resilientcities.org/pages/about-us>
- 100 Resilient Cities. (2014c). *What is resilience*. Retrieved August 3, 2014, from The Rockefeller Foundation: <http://www.100resilientcities.org/resilience>
- Abrahamsen, R. (2004). Third World Quarterly. *The power of partnerships in global* , 25 (8), 1453-1467.
- ACCCRN. (2014). *ACCCRN Partners*. Retrieved July 12, 2014, from ACCCRN: <http://www.acccrn.org/about-acccrn/acccrn-partners>
- Acuto, M. (2010). Global Cities: Gorillas in Our Midst. . *Alternatives: Global, Local, Political* , 425-448.
- Acuto, M. (2013). The new climate leaders? *Review of International Studies* , 39 (4), 835-857.
- Adshead, M. (2002). *Developing European Regions: comparative governance, policy networks and European integration*. Aldershot: Ashgate Publishing Limited.
- Agrawal, A., Perrin, N., Chhatre, A., Benson, C., & Kononen, M. (2009). *Climate Policy Processes, Local Institutions, and Adaptation Actions: Mechanisms of Translation and Influence*. Washington, DC: The World Bank.
- Anderies, J. M., Folke, C., Walker, B., & Ostrom, E. (2013). Aligning Key Concepts for Global Change Policy: Robustness, Resilience, and Sustainability. *Ecology and Society* , 18 (8).
- Andonova, L. B., Betsill, M. M., & Bulkeley, H. (2009). Transnational Climate Governance. *Global Environmental Politics* , 9 (2), 52-73.
- Anguelovski, I., & Carmin, J. (2011). Something borrowed, everything new: innovation and institutionalization in urban climate governance. *Current Opinion in Environmental Sustainability* , 3, 169-175.
- Armstrong, A. (2014). *Reflections from a Resilient City: Norfolk*. Retrieved June 13, 2014, from 100 Resilient Cities: <http://100resilientcities.rockefellerfoundation.org/blog/entry/reflections-from-a-resilient-city-norfolk>
- ARUP; The Rockefeller Foundation. (2014). *City Resilience Framework*. London: Arup & Partners International Limited 2014.
- Backstrand, K. (2008). Accountability of Networked Climate Governance: The Rise of Transnational Climate Partnerships. *Global Environmental Politics* , 8 (3), 74-102.
- Bahadur, A. V., & Tanner, T. (2013). Policy climates and climate policies: Analysing the politics of building urban climate change resilience. *Urban Climate* .
- Bahadur, A. V., Ibrahim, M., & Tanner, T. (2013). Characterising resilience: unpacking the concept for tackling climate change and development. *Climate and Development* , 5 (1), 55-65.

- Bai, X. (2007). Integrating Global Environmental Concerns into Urban Management: The Scale and Readiness Arguments. *Journal of Industrial Ecology* , 11 (2), 15-29.
- Ballesteros, A., Nakhoda, S., Werksman, J., & Hurburt, K. (2010). Power, responsibility, and accountability: Rethinking the legitimacy of institutions for climate finance. *Climate Law* , 261-312.
- Barnett, J. (2001). Adapting to Climate Change in Pacific Island Countries: The Problem of Uncertainty. *World Development* , 29 (6), 977-993.
- Barrutia, J. M., & Echebarria, C. (2013). Why do municipal authorities participate in- and are loyal to- LA21 networks? *Journal of Cleaner Production* , 42-52.
- Berkowitz, M. (2014, August 6). *What Makes a Good 100RC Application?* Retrieved August 10, 2014, from 100 Resilient Cities: <http://www.100resilientcities.org/blog/entry/what-makes-a-good-100rc-application1>
- Berkowitz, M. (2014a). *Building resilience in rapidly growing cities*. Retrieved June 11, 2014 from UNEP Climate Action: [http://www.climateactionprogramme.org/climate-case-studies/building\\_resilience\\_in\\_rapidly\\_growing\\_cities/](http://www.climateactionprogramme.org/climate-case-studies/building_resilience_in_rapidly_growing_cities/)
- Beswick, A. (2014, July 9). Programme Manager at Adaptation Scotland. (personal communication).
- Betsill, M., & Bulkeley, H. (2007). Looking Back and Thinking Ahead: A Decade of Cities and Climate Change Research. *Local Environment* , 12 (5), 447-456.
- Biagini, B., Bierbaum, R., Stults, M., Dobardzic, S., & McNeeley, S. M. (2014). A typology of adaptation actions: A global look at climate adaptation actions financed through the Global Environment Facility. *Global Environmental Change* .
- Biermann, F., Pattberg, P., van Asselt, H., & Zelli, F. (2009). The Fragmentation of Global Governance Architectures: A Framework for Analysis. *Global Environmental Politics* , 9 (4), 14-40.
- Blumer, H. (1986). *Symbolic Interactionism: Perspective and Method*. Berkeley; Los Angeles: University of California Press.
- Borzel, T. A. (1998). Organising Babylon - on the different conceptions of policy networks. *Public Administration* , 253-273.
- Borzel, T. A., & Heard-Laureote, K. (2009). Networks in EU Multi-level Governance: Concepts and Contributions. *Journal of Public Policy* , 135-151.
- Bouteligier, S. (2013). Inequality in new global governance arrangements: the North-South divide in transnational municipal networks. *Innovation: The European Journal of Social Science Research* , 26 (3), 251-267.
- Bouteligier, S. (2014, June 26). Policy Advisor - Unit Policy Innovation - European Policies OVAM. (personal communication).
- Boyd, E., Osbahr, H., Ericksen, P. J., Tompkins, E. L., Lemos, M. C., & Miller, F. (2008). Resilience and 'Climatizing' Development: Examples and policy implications. *Development* , 390-396.
- Bulkeley, H. (2014, July 15). Professor of Geography at Durham University, United Kingdom; Visiting Professor at Department of Political Science, Lund University. (personal communication).
- Bulkeley, H. (2005). Reconfiguring environmental governance: Towards a politics of scales and networks. *Political Geography* , 24 (8), 875-902.

- Bulkeley, H. (2014). *Sustainable cities and climate change*. Retrieved June 12, 2014 from UN sustainable development: <http://sustainabledevelopment.un.org/content/documents/5373bulkeley.pdf>
- Bulkeley, H., & Betsill, M. M. (2013). Revisiting the urban politics of climate change. *Environmental Politics*, 22 (1), 136-154.
- Busch, H. (2014, July 11). PhD Candidate at Lund University. (personal communication).
- C40 Cities. (2012). *AGENDA: Rio + C40: Megacity Mayors Taking Action on Climate Change*. Retrieved June 14, 2014, from C40 Cities: [http://c40.org/blog\\_posts/agenda-rio-c40-megacity-mayors-taking-action-on-climate-change](http://c40.org/blog_posts/agenda-rio-c40-megacity-mayors-taking-action-on-climate-change)
- C40 Cities. (2012, October 3). *C40 announces new guidelines for membership categories*. Retrieved June 13, 2014, from C40 Cities climate leadership group: [http://c40-production-images.s3.amazonaws.com/press\\_releases/images/25\\_C40\\_20Guidelines\\_20FINAL\\_2011.14.12.original.pdf?1388095701](http://c40-production-images.s3.amazonaws.com/press_releases/images/25_C40_20Guidelines_20FINAL_2011.14.12.original.pdf?1388095701)
- C40 Cities. (2014). *History of the C40*. Retrieved July 13, 2014, from C40 Cities climate leadership group: <http://www.c40.org/history>
- C40 Cities. (2014a). *C40 Cities Climate Leadership Group*. Retrieved July 28, 2014, from C40 Cities Climate Leadership Group: <http://www.c40.org/>
- C40 Cities. (2014b). *Chair of the C40*. Retrieved July 14, 2014, from C40 Cities: <http://www.c40.org/leadership>
- C40 Cities. (2014c). *Steering Committee*. Retrieved August 20, 2014, from C40 Cities: [http://www.c40.org/steering\\_committees](http://www.c40.org/steering_committees)
- C40 Cities. (2014d). *C 40 Team*. Retrieved July 5, 2014, from C40 Cities Climate Leadership Group: [http://www.c40.org/our\\_team](http://www.c40.org/our_team)
- C40 Cities. (2014e). *Networks*. Retrieved August 5, 2014, from C40 Cities Climate Leadership Group: <http://www.c40.org/networks>
- C40 Cities. (2014f, June 24). *Fact sheet: C40 Cities Climate Leadership Group*. Retrieved August 5, 2014, from C40 Cities.
- C40 Cities. (2014g). *Network Overview*. Retrieved August 15, 2014, from C40 Cities: [http://www.c40.org/networks/climate\\_positive\\_development](http://www.c40.org/networks/climate_positive_development)
- C40 Cities. (2014h). *C40 Research*. Retrieved August 3, 2014, from C40 Cities: <http://c40-production.herokuapp.com/research>
- C40 Cities. (2014i). *Our Partners & Funders*. Retrieved August 5, 2014, from C40 Cities: <http://c40-production.herokuapp.com/partners>
- C40 Cities. (2014j). *City Adviser Programme*. Retrieved July 28, 2014, from C40 Cities Climate Leadership Group: [http://www.c40.org/city\\_advisers](http://www.c40.org/city_advisers)
- C40 Cities Mayors Summit Johannesburg. (2014). *C40 Cities Climate Leadership Group Mayors Summit*. Retrieved July 16, 2014, from C40 Cities Mayors Summit Johannesburg: <http://c40summitjohannesburg.org/>
- Caldas, T. (2014, May 30). owner and senior consultant at ecotropic consulting GmbH. (personal communication).

Carbonn. (2014). *About the carbonn Registry*. Retrieved August 3, 2014, from Carbonn Cities Climate Registry: <http://citiesclimateregistry.org/about/>

Carbonn Cities Climate Registry. (2014). *About the carbonn Registry*. Retrieved July 17, 2014, from Carbonn Cities Climate Registry: <http://citiesclimateregistry.org/about/>

Carpenter, S. R., & Brock, W. A. (2008). Adaptive Capacity and Traps. *Ecology and Society*, 13 (40).

Cassi, L., Corrocher, N., Malerba, F., & Vonortas, N. (2008). Research Networks as infrastructure for knowledge diffusion in European regions. *Economics of Innovation and New Technology*, 663-676.

City Climate Leadership Awards. (2014). *City Climate Leadership Awards*. Retrieved August 5, 2014, from City Climate Leadership Awards: <http://cityclimateleadershipawards.com/>

City of Johannesburg. (2014). *04/06/2014: The City of Johannesburg issues the first ever JSE listed Green Bond*. Retrieved July 16, 2014, from City of Johannesburg: [http://www.joburg.org.za/index.php?option=com\\_content&view=article&id=9073:04062014-the-city-of-johannesburg-issues-the-first-ever-jse-listed-green-bond-&catid=217:press-releases-2013&Itemid=114](http://www.joburg.org.za/index.php?option=com_content&view=article&id=9073:04062014-the-city-of-johannesburg-issues-the-first-ever-jse-listed-green-bond-&catid=217:press-releases-2013&Itemid=114)

Clarke, N. (2009). In what sense 'spaces of neoliberalism'? The new localism, the new politics of scale, and town twinning. *Political Geography*, 496-507.

Climate Action. (2013). *Sustainable cities: building cities for the future*. London: Adam Nethersole.

Climate Bonds Initiative. (2014). *Bonds and climate change: the state of market in 2014*. London: Climate Bonds Initiative.

Climate Policy Initiative. (2013). *The Landscape of Climate Finance*. Retrieved August 29, 2014, from Climate Policy Initiative: <http://www.climatefinancelandscape.org/#cover>

Climate Policy Initiative. (2014). *What is climate finance? Definitions to improve tracking and scale up climate finance*. Climate Policy Initiative.

Clinton Foundation; C40; USGBC. (2013). *CLIMATE+ Development Program*. Retrieved July 12, 2014, from C40 Cities: [http://c40-production-images.s3.amazonaws.com/other\\_uploads/images/1\\_Climate\\_Positive\\_Framework\\_v1.1\\_Aug\\_2013.original.pdf?1390706960](http://c40-production-images.s3.amazonaws.com/other_uploads/images/1_Climate_Positive_Framework_v1.1_Aug_2013.original.pdf?1390706960)

Dingwerth, K., & Pattberg, P. (2006). Global Governance as a Perspective on World Politics. *Global Governance*, 185-203.

Dowling, K. (1995). Model or Methaphor? A Critical Review of the Policy Network Approach. *Political Studies*, 136-158.

Dowling, R., McGuirk, P., & Bulkeley, H. (2014). Retrofitting cities: Local governance in Sydney, Australia. *Cities*, 38, 18-24.

Durban Adaptation Charter. (2014). *Durban Adaptation Charter*. Retrieved July 16, 2014, from Durban Adaptation Charter: <http://www.durbanadaptationcharter.org/about>

Engel, K. H. (2009). Whither Subnational Climate Change Initiatives in the Wake of Federal Climate Legislation? *Publius: The Journal of Federalism*, 432-454.



- European Commission. (2014, January 30). *Adaptation to climate change*. Retrieved July 10, 2014 from European Commission Climate Action: [http://ec.europa.eu/clima/policies/adaptation/index\\_en.htm](http://ec.europa.eu/clima/policies/adaptation/index_en.htm)
- Feldman, D. L. (2012). The future of environmental networks—Governance and civil society in a global context. *Futures*, 787-796.
- Figueres, C. (2014). *Resilient Cities 2014: Foreword from Executive Secretary, UN Framework Convention on Climate Change*. Bonn: Resilient Cities 2014 Congress Secretariat.
- Frankfurt School-UNEP Centre/BNEF. (2013). *Global Trends in Renewable Energy Investment 2013*. Frankfurt: Frankfurt School of Finance & Management.
- Friend, R., & Moench, M. (2013). What is the purpose of urban climate resilience? Implications for addressing poverty and vulnerability. *Urban Climate*, 98-113.
- Friend, R., Jarvie, J., Reed, S. O., Sutarto, R., Thinphanga, P., & Toan, V. C. (2014). Mainstreaming urban climate resilience into policy and planning; reflections from Asia. *Urban Climate*, 7, 6-19.
- Geels, F. W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions*, 24-40.
- Gilbert, R., Stevenson, D., Giradet, H., & Stern, R. (2013). *Making Cities Work: Role of Local Authorities in the Urban Environment*. Stirling: Earthscan.
- Gordon, D. J. (2013). Between local innovation and global impact: cities, networks, and the governance of climate change. *Canadian Foreign Policy Journal*, 19 (3), 288-307.
- Gotelind, A., & Kern, K. (2009). Governing Climate Change in Cities: Modes of Urban Climate Governance in Multi-Level Systems. In *OECD Conference Proceedings* (pp. 171-196). Paris: OECD.
- Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, 91, 481-510.
- Hakelberg, L. (2014). Governance by Diffusion: Transnational Municipal Networks and the Spread of Local Climate Strategies in Europe. *Global Environmental Politics*, 14 (1), 107-129.
- Hammer, S. (2014, March 3). *Cities act on climate change: Thoughts on the C40 Summit in Joburg*. Retrieved August 20, 2014, from The World Bank: <http://blogs.worldbank.org/sustainablecities/cities-act-climate-change-thoughts-c40-summit-joburg>
- Healey, P. (1997). *Collaborative Planning: Shaping Places in Fragmented Societies*. Vancouver: UBC Press.
- ICLEI. (2008). *The ICLEI Story*. Retrieved June 16, 2014, from ICLEI Local Governments for Sustainability: <http://archive.iclei.org/index.php?id=748>
- ICLEI. (2009, October 14). *Action pledge of ICLEI – Local Governments for Sustainability to the Nairobi work programme on impacts, vulnerability and adaptation to climate change*. Retrieved July 16, 2014, from UNFCCC: [http://unfccc.int/files/adaptation/sbsta\\_agenda\\_item\\_adaptation/application/pdf/iclei\\_14\\_oct\\_09.pdf](http://unfccc.int/files/adaptation/sbsta_agenda_item_adaptation/application/pdf/iclei_14_oct_09.pdf)
- ICLEI. (2009a). *8th EcoProcura Conference – Call for Interest*. Retrieved July 13, 2014, from ICLEI: [http://www.ecoprocura.eu/fileadmin/template/events/ecoprocura2009/files/EcoProcura\\_2011\\_Call\\_for\\_Interest.pdf](http://www.ecoprocura.eu/fileadmin/template/events/ecoprocura2009/files/EcoProcura_2011_Call_for_Interest.pdf)

ICLEI Europe. (2014). *Sustainable Procurement*. Retrieved July 5, 2014, from ICLEI Europe: <http://www.iclei-europe.org/topics/sustainable-procurement>

ICLEI Global. (2012). *Adaptation*. Retrieved July 28, 2014, from ICLEI Global: <http://archive.iclei.org/index.php?id=10832>

ICLEI Global. (2014a). *ICLEI Global*. Retrieved June 13, 2014, from Low-Carbon, Climate-Resilient Cities: <http://archive.iclei.org/index.php?id=800>

ICLEI. (2012, May 14). *International Partners Release Pilot Global Protocol for Community-Scale Greenhouse Gas Emissions*. Retrieved July 28, 2014, from ICLEI Local governments for sustainability: <http://www.iclei.org/en/details/article/international-partners-release-pilot-global-protocol-forcommunity-scale-greenhouse-gas-emissions.html>

ICLEI. (2013, June 1). *ICLEI Completes Urban Resilience Toolkit as ACCCRN Scales Up to New Countries*. Retrieved July 12, 2014, from ICLEI: <http://www.iclei.org/details/article/iclei-completes-urban-resilience-toolkit-as-acccrn-scales-up-to-new-countries.html>

ICLEI. (2014). *ICLEI Local Governments for Sustainability*. Retrieved July 28, 2014, from ICLEI Local Governments for Sustainability: <http://www.iclei.org/>

ICLEI. (2014a). *Our Governance*. Retrieved June 13, 2014 from ICLEI: <http://www.iclei.org/iclei-global/our-governance.html>

ICLEI. (2014b). *Local Action for global change*. Retrieved June 13, 2014, from ICLEI: <http://www.iclei.org/our-activities.html>

ICLEI. (2014c). *ICLEI: A network of networks*. Retrieved July 17, 2014, from ICLEI local governments for sustainability: <http://www.iclei.org/iclei-members/iclei-networks-communities.html>

ICLEI. (2014d). *GreenClimateCities Program*. Retrieved July 28, 2014, from ICLEI local governments for sustainability: <http://www.iclei.org/our-activities/our-agendas/low-carbon-city/gcc.html>

ICLEI. (2014e). *Host Cities*. Retrieved August 20, 2014, from ICLEI: <http://www.iclei.org/iclei-global/our-host-cities.html>

ICLEI. (2014f, March 13). *ICLEI meets with UN Special Envoy for Cities and Climate Change*. Retrieved August 20, 2014, from ICLEI Local Governments for Sustainability: <http://www.iclei.org/details/article/iclei-meets-with-un-special-envoy-for-cities-and-climate-change.html>

ICLEI. (2011). *Overview*. Retrieved July 28, 2014, from ICLEI HEAT Plus: <http://heat.iclei.org/heatplusgpc/indexnew.aspx>

ICLEI U.S.A. (2010). *ICLEI's Cities for Climate Protection Campaign*. Retrieved August 3, 2014, from Association of Bay Area Governments : [http://www.abag.ca.gov/lgep/pdfs/climate/ICLEI\\_Fact-Sheet.pdf](http://www.abag.ca.gov/lgep/pdfs/climate/ICLEI_Fact-Sheet.pdf)

Innes, J. E., & Booher, D. E. (2003). Collaborative policymaking: governance through dialogue. In M. A. Hajer, & H. Wagenaar, *Deliberative Policy Analysis: Understanding Governance in the Network Society* (pp. 33-49). Cambridge: Cambridge University Press.

IPCC. (2014). *Summary for Policymakers, In: Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge; New York: Cambridge University Press.

- IPCC. (2014a). *Summary for policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge; New York: Cambridge University Press.
- Jabareen, Y. (2013). Planning the resilient city: Concepts and strategies for coping with climate change and environmental risk. *Cities* , 220-229.
- Jones, T. M. (1995). Instrumental stakeholder theory: a synthesis of ethics and economics. *Academy of Management Review* , 20, 404-437.
- Keiner, M., & Kim, A. (2007). Transnational City Networks for Sustainability. *European Planning Studies* , 15 (10), 1369-1395.
- Kenis, P., & Schneider, V. (1991). Policy networks and policy analysis: scrutinizing a new analytical toolbox. *Policy networks: Empirical evidence and theoretical considerations* , 25-59.
- Kern, K., & Bulkeley, H. (2009). Cities, Europeanization and Multi-level Governance: Governing Climate Change through Transnational Municipal Networks. *JCMS* , 47 (2), 309-332.
- Kerres, M. (2014, September 6). Consultant – Climate Change and Sustainability Division, IDB, Inter-American Development Bank. (personal communication).
- Khan, J. (2013). What role for network governance in urban low carbon transitions? *Journal of Cleaner Production* , 50, 133-139.
- King, G., Keohane, R. O., & Verba, S. (1994). *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton, New Jersey: Princeton University Press.
- Knoke, D. (1990). *Political Networks: The Structural Perspective*. Cambridge: Cambridge University Press.
- Knoke, D., & Yang, S. (2008). *Social Network Analysis*. Thousand Oaks: Sage Publishing Inc.
- Lafferty, W. M. (2004). Introduction: form and function in governance for sustainable development. In W. M. Lafferty, *Governance for sustainable development: the challenge of adapting form to function* (pp. 1-23). Cheltenham: Edward Elgar Publishing Limited.
- Larson, A. (1992). Network Dyads in Entrepreneurial Settings: A Study of the Governance of Exchange Relationships. *Administrative Science Quarterly* , 37, 76-104.
- Lawler, G. (2013, December 17). *Management report to Council: Melbourne's involvement in the Rockefeller Foundation's 100 Resilient Cities*. Retrieved July 8, 2014, from City of Melbourne:  
<http://www.melbourne.vic.gov.au/AboutCouncil/Meetings/Lists/CouncilMeetingAgendaItems/Attachments/11212/DEC13%20CCL%20AGENDA%20ITEM%206.5%20ROCKEFELLER%20FOUNDATION%20100%20RESILIENT%20CITIES.pdf>
- Leach, M., Bloom, G., Ely, A., Nightingale, P., Scoones, P., Shah, E., et al. (2007). *Understanding Governance: pathways to sustainability, STEPS Working Paper 2*. Brighton: STEPS Centre.
- Lee, T. (2013). Global Cities and Transnational Climate Change Networks. *Global Environmental Politics* , 13 (1), 108-127.
- Lee, T., & van de Meene, S. (2012). Who teaches and who learns? Policy learning through the C40 cities climate network. *Policy Sciences* , 45, 199-220.

Local Government Climate Roadmap Secretariat. (2014). *Climate Roadmap: resources*. Retrieved July 28, 2014, from Local Government Climate Roadmap: <http://www.iclei.org/climate-roadmap/resources/one-stop-shop.html>

Madeira, E. (2014, May; August 29; 27). Head of Global Membership and Governance at ICLEI- Local Governments for Sustainability, Germany . (personal communication).

Marks, G., & Hooghe, L. (2004). Contrasting Visions of Multi-level Governance. In I. Bache, & M. Flinders, *Multi-level Governance* (pp. 16-30). Oxford : Oxford University Press .

McCormick, K., Anderberg, S., Coenen, L., & Neij, L. (2013). Advancing sustainable urban transformation. *Journal of Cleaner Production* , 50, 1-11.

Moliterno, T. P., & Mahony, D. M. (2011). Network Theory of Organization: A Multilevel Approach. *Journal of Management* , 37, 443-467.

Nevens, F., & Roorda, C. (2014). A climate of change: A transition approach for climate neutrality in the city of Ghent (Belgium). *Sustainable Cities and Society* , 10, 112-121.

Niederhafner, S. (2013). Comparing functions of transnational city networks in Europe and Asia. *Asia Europe Journal Studies on Common Policy Challenges* .

Niederhafner, S. (2013). Comparing functions of transnational city networks in Europe and Asia. *Asia Europe Journal Studies on Common Policy Challenges* , 11 (4), 377-396.

Okereke, C., Bulkeley, H., & Schroeder, H. (2009). Conceptualizing Climate Governance. *Global Environmental Politics* , 9 (1), 58-78.

Otto-Zimmermann, K., & Alebon, K. (2002, September). ICLEI : Working with Cities to Promote Sustainable Development. *Habitat Debate* , 8 (3).

Pattberg, P. (2010). The role and relevance of networked climate governance . In F. Biermann, P. Pattberg, & F. Zelli, *Global Climate Governance Beyond 2012: Architecture, Agency and Adaptation* (pp. 146-164). Cambridge: Cambridge University Press.

Pattberg, P., & Stripple, J. (2008). Beyond the public and private divide: remapping transnational climate governance in the 21st century. *International Environmental Agreements* , 367-388.

Pizarro, R. (2009). Urban Form and Climate Change: towards appropriate development patterns to mitigate and adapt to global warming. In S. Davoudi, J. Crawford, & A. Mehmood, *Planning for Climate Change: Strategies for Mitigation and Adaptation for Spatial Planners* (pp. 33-45). London: Earthscan.

Puppim de Oliveira, J. A., Doll, C. N., Balaban, O., Jiang, P., Dreyfus, M., Suwa, A., et al. (2013). Green economy and governance in cities: assessing good governance in key urban economic processes. *Journal of Cleaner Production* , 58, 138-152.

Puppim de Oliveira, J. A. (2013). Learning how to align climate, environmental and development objectives in cities: lessons from the implementation of climate co-benefits initiatives in urban Asia. *Journal of Cleaner Production* , 58, 7-14.

Reinecke, S., Pistorius, T., & Pregernig, M. (2014). UNFCCC and the REDD+ Partnership from a networked governance perspective. *Environmental Science & Policy* , 30-39.

Resilience Alliance. (2014). *Resilience*. Retrieved July 10, 2014, from Resilience Alliance: <http://www.resalliance.org/index.php/resilience>

- Resilient Cities 2014. (2014). *About Resilient Cities 2014*. Retrieved July 8, 2014, from Resilient Cities 2014 : <http://resilient-cities.iclel.org/bonn2014/about/>
- Resilient Cities 2014 Congress Secretariat. (2014). *Program*. Bonn: Resilient Cities 2014 Congress Secretariat, ICLEI.
- Resilient Cities Congress 2014. (2014, May 29-31). Resilient Cities 2014. (personal communication).
- Rodin, J. (2013a). *33 Resilient Cities Announced by Rockefeller Foundation*. Retrieved July 8, 2014, from 100 Resilient cities: <http://100resilientcities.rockefellerfoundation.org/blog/entry/33-resilient-cities-announced>
- Rodin, J. (2013, July 01). *The City Resilient*. Retrieved June 13, 2014, from 100 Resilient Cities: <http://www.100resilientcities.org/blog/entry/the-city-resilient>
- Rosenau, J. N. (1995). Governance in the Twenty-first Century. *Global Governance* , 13-43.
- Rowley, T. J. (1997). Moving beyond dyadic ties: a network theory of stakeholder influences. *Academy of Management Review* , 22, 887-910.
- Salkin, A. (2014, January 14). *What is a Chief Resilience Officer?* Retrieved August 5, 2014, from 100 Resilient Cities: <http://www.100resilientcities.org/blog/entry/what-is-a-chief-resilience-officer>
- Salvini, A. (2010). Symbolic Interactionism and Social Network Analysis: An Uncertain Encounter. *Symbolic Interaction* , 33, 364-388.
- Salz, S., van Begin, G., & Otto-Zimmermann, K. (2011, January). Models for Local Government Organizations (LGOs) involvement in a strengthened UNEP. *Perspectives Series* (2).
- Schreiner, D. (2014a, July 17). *Five Lessons from the First Round of 100 Resilient Cities Applicants*. Retrieved August 10, 2014, from 100 Resilient Cities: <http://www.100resilientcities.org/blog/entry/five-lessons-from-the-first-round-of-100-resilient-cities-applicants>
- Schreiner, D. (2014, August 14). *Learn about 100 Resilient Cities - Video*. Retrieved August 18, 2014, from 100 Resilient Cities : <http://www.100resilientcities.org/blog/entry/learn-about-100-resilient-cities>
- Sovacool, B. K. (2011). An international comparison of four polycentric approaches to climate change and energy governance. *Energy policy* , 39, 3832-3844.
- Steele, W. (2011). Strategy-making for Sustainability: An Institutional Learning Approach to Transformative Planning Practice. *Planning Theory & Practice* , 12 (2), 205-221.
- Stoker, G. (1998). Governance as theory: five propositions. *International Social Science Journal* , 50 (155), 17-28.
- Stone, B., Vargo, J., & Habeeb, D. (2012). Managing climate change in cities: Will climate action plans work? *Landscape and Urban Planning* (3), 263-271.
- Stumpff, E.-M. (2013). New in town? On resilience and “Resilient Cities”. *Cities* , 32, 164-166.
- Sustainable Prosperity. (2012). *Economy-wide and emerging issues, policy brief*. Ottawa: University of Ottawa.
- Swart, R., & Raes, F. (2007). Making integration of adaptation and mitigation work: mainstreaming into sustainable development policies? *Climate Policy* , 7, 288-303.

The Clinton Foundation. (2011). *Building a better world: William J. Clinton Foundation Annual Report*. The Clinton Foundation.

The Clinton Foundation. (2011a, April 13). *Press Release: President Clinton and Mayor Bloomberg Join Forces to Combat Climate Change*. Retrieved August 10, 2014, from The Clinton Foundation:  
<https://www.clintonfoundation.org/main/news-and-media/press-releases-and-statements/press-release-president-clinton-and-mayor-bloomberg-join-forces-to-combat-climat.html>

The Rockefeller Foundation . (2013, December 3). *The Rockefeller Foundation Announces Inaugural Members of 100 Resilient Cities Network*. Retrieved August 12, 2014, from The Rockefeller Foundation :  
<http://www.rockefellerfoundation.org/newsroom/rockefeller-foundation-announces>

The Rockefeller Foundation. (2008). *Rebound: Building a More Resilient World*. New York: Rockefeller Foundation.

The Rockefeller Foundation. (2014). *Current work*. Retrieved August 13, 2014, from The Rockefeller Foundation:  
<http://www.rockefellerfoundation.org/our-work/current-work/climate-change-resilience>

The Rockefeller Foundation. (2014a). *Climate Change Resilience*. Retrieved August 20, 2014, from The Rockefeller Foundation: <http://www.rockefellerfoundation.org/our-work/current-work/climate-change-resilience/our-strategy>

The Rockefeller Foundation. (2014b). *Global Resilience Partnership*. Retrieved August 19, 2014, from The Rockefeller Foundation : <http://www.rockefellerfoundation.org/our-work/current-work/global-resilience-partnership>

The Rockefeller Foundation. (2014c). *About the Challenge*. Retrieved June 12, 2014, from The Rockefeller Foundation 100 Resilient Cities Centennial Challenge:  
<http://100resilientcities.rockefellerfoundation.org/pages/about-the-challenge>

The World Bank Group. (2013, September 25). *Planning and Financing Low-Carbon, Livable Cities*. Retrieved July 20, 2014, from The World Bank Group: working on the world free of poverty:  
<http://www.worldbank.org/en/news/feature/2013/09/25/planning-financing-low-carbon-cities>

Toly, N. J. (2008). Transnational Municipal Networks in Climate Politics: From Global Governance to Global Politics. *Globalizations* , 5 (3), 341-356.

UN Habitat. (2014). *History, mandate & role in the UN system*. Retrieved July 10, 2014, from UN HABITAT:  
<http://unhabitat.org/about-us/history-mandate-role-in-the-un-system/>

UN Habitat. (2014a, April). *New Global Collaboration for Urban Resilience Announced At WUF7*. Retrieved July 12, 2014, from UN Habitat: for a better urban future: <http://unhabitat.org/new-global-collaboration-for-urban-resilience-announced-at-wuf7/>

UN Habitat; ICLEI. (2009). *Sustainable Urban Energy Planning A handbook for cities and towns in developing countries*. Nairobi: UNON, Publishing Services Section.

Underdal, A. (2010). Complexity and challenges of long-term environmental governance. *Global Environmental Change* , 20 (3), 386-393.

UNDP; UNCDF; UNEP. (2010, December). *Local governance and climate change: a discussion note* . Retrieved July 27, 2014, from UNDP-UNEP Poverty-Environment Initiative:  
<http://www.unpei.org/sites/default/files/publications/LocalGovernanceAndClimateChangeDiscussionNote.pdf>

UNEP Climate Action. (2013, November 25). *COP 19: Warsaw climate deal finalised*. Retrieved July 16, 2014, from Climate Action : [http://www.climateactionprogramme.org/news/cop\\_19\\_warsaw\\_climate\\_deal\\_finalised/](http://www.climateactionprogramme.org/news/cop_19_warsaw_climate_deal_finalised/)

UNEP. (2014). *Climate Change Mitigation*. Retrieved June 20, 2014, from UNEP Environment for Development: <http://www.unep.org/climatechange/mitigation/>

UNISDR. (2014). *Hyogo Framework for Action (HFA)*. Retrieved July 12, 2014, from UNISDR The United Nations Office for Disaster Risk Reduction: <http://www.unisdr.org/we/coordinate/hfa>

United Nations Centre for Human Settlements (Habitat);UTO/FMCU. (2001, May 3-6). *City-to-City Cooperation: Issues Arising from Experience*. Retrieved June 25, 2014, from United Nations: <http://www.un.org/ga/Istanbul+5/city-to-city.pdf>

United Nations Department of Economic and Social Affairs, Division for Sustainable Development . (2014). *Agenda 21*. Retrieved July 20, 2014, from Sustainable Development Knowledge Platform: <http://sustainabledevelopment.un.org/index.php?page=view&nr=23&type=400&menu=35>

United Nations. (2014). *Facts*. Retrieved July 6, 2014, from Gateway to the United Nations system work on climate change: <http://www.un.org/climatechange/the-science/facts-and-figures/>

United Nations Framework Convention on Climate Change. (2014a). *Background on the UNFCCC: The international response to climate change*. Retrieved July 16, 2014, from United Nations Framework Convention on Climate Change: [https://unfccc.int/essential\\_background/items/6031.php](https://unfccc.int/essential_background/items/6031.php)

United Nations Framework Convention on Climate Change. (2014b). *Bodies*. Retrieved July 16, 2014, from United Nations Framework Convention on Climate Change: <https://unfccc.int/bodies/items/6241.php>

United Nations Framework Convention on Climate Change. (2014c). *Cancun Agreements*. Retrieved August 29, 2014, from United Nations Framework Convention on Climate Change: [http://unfccc.int/meetings/cancun\\_nov\\_2010/items/6005.php](http://unfccc.int/meetings/cancun_nov_2010/items/6005.php)

United Nations Framework Convention on Climate Change. (2014). *Kyoto Protocol*. Retrieved June 14, 2014, from United Nations Framework Convention on Climate Change: [https://unfccc.int/kyoto\\_protocol/items/2830.php](https://unfccc.int/kyoto_protocol/items/2830.php)

United Nations. (1992, June). *Rio Declaration on Environment and Development* . Retrieved June 27, 2014, from UN Documents Cooperation Circles: <http://www.un-documents.net/a21-28.htm>

Urban-LEDS. (2014). *At a glance*. Retrieved August 10, 2014, from Urban low emission development strategies : <http://urbanleds.iclei.org/index.php?id=108>

USAID. (2014, August 4). *USAID and Rockefeller Foundation Announce \$100 Million Global Resilience Partnership in Africa and Asia*. Retrieved August 16, 2014, from USAID: <http://www.usaid.gov/news-information/press-releases/aug-4-2014-usaid-and-rockefeller-foundation-announce-100-million-global-resilience-partnership>

Van Waarden, F. (1992). Dimensions and types of policy networks. *European Journal of Political Research* , 21, 29-52.

VijayaVenkataRaman, S., Iniyar, S., & Goic, R. (2012). A review of climate change, mitigation and adaptation. *Renewable and Sustainable Energy Reviews* , 878-897.

Walker, B., Carpenter, S., Anderies, J., Abel, N., Cumming, G. S., Janssen, M., et al. (2002). Resilience Management in Social-ecological Systems: a Working Hypothesis for a Participatory Approach. *Conservation Ecology*, 6 (14).

- Wang, Q., & Chen, X. (2013). Rethinking and reshaping the climate policy: Literature review and proposed guidelines. *Renewable and Sustainable Energy Reviews* , 21, 469-477.
- Wengraf, T. (2001). *Qualitative Research Interviewing* . Thousand Oaks: Sage Publications, Inc.
- Wheeler, S. M. (2008). State and Municipal Climate Change Plans: The First Generation. *Journal of the American Planning Association* , 74 (4), 481-496.
- World Bank Group; IMF; OECD; Regional Development Banks; IFC; EBRD; ICAO; IMO. (2011). *Mobilizing Sources of Climate Finance: Paper prepared at the request of G20 Finance Ministers*. The World Bank.
- World Mayors Council on Climate Change . (2010). *Mission and Method*. Retrieved July 13, 2014, from World Mayors Council on Climate Change : <http://www.worldmayorscouncil.org/about/mission-and-method.html>
- World Resources Institute. (2014). *60 Cities and Communities Use New Standard to Measure and Reduce Greenhouse Gas Emissions*. Retrieved July 17, 2014, from World Resources Institute: <http://www.wri.org/our-work/top-outcome/60-cities-and-communities-use-new-standard-measure-and-reduce-greenhouse-gas>
- World Urban Forum. (2014, April 11). *Medellin Collaboration on Urban Resilience 11 April 2014*. Retrieved July 12, 2014, from World Urban Forum Madellin: [http://wuf7.unhabitat.org/Media/Default/PDF/FINAL%20Medellin%20Urban%20Resilience%20Colaboration\\_11%20April.pdf](http://wuf7.unhabitat.org/Media/Default/PDF/FINAL%20Medellin%20Urban%20Resilience%20Colaboration_11%20April.pdf)
- Yin, R. K. (2011). *Applications of Case Study Research*. Thousand Oaks, California: SAGE Publications, Inc.
- Zelinsky, W. (1991). The Twinning of the World: Sister Cities in Geographic and Historical Perspective. *Annals of the Association of American Geographers* , 1-31.
- Zimmerman, R., & Faris, C. (2011). Climate change mitigation and adaptation in North American cities. *Current Opinion in Environmental Sustainability* , 3 (3), 181-187.
- Zimmermann, M. (2014, July 27). Deputy Secretary General at ICLEI - Local Governments for Sustainability, Germany. (personal communication).



## **Appendix**

### **Appendix I. Personal Communications**

List of stakeholder interviews; note that this list does not contain semi-interviews carried out during the fieldwork.

Michelle Betsill, Associate Professor in the Department of Political Science, Colorado State University, United States

Eva Madeira, Head of Global Membership and Governance at ICLEI, Germany

Tadeu Caldas, owner and senior consultant at Ecotropic consulting GmbH / s.a., Germany

Martin Kerres, Consultant – Climate Change and Sustainability Division, IDB, Inter-American Development Bank, United States

Sofie Bouteligier, Policy Advisor - Unit Policy Innovation - European Policies OVAM, Belgium

Anna Beswick, Programme Manager at Adaptation Scotland, United Kingdom

Henner Busch, PhD Candidate at Lund University, Sweden

Harriet Bulkeley, Professor of Geography at Durham University, United Kingdom; Visiting Professor at Department of Political Science, Lund University, Sweden

Monika Zimmermann, Deputy Secretary General at ICLEI - Local Governments for Sustainability, Germany

## Appendix II. Guiding interview questions

### **List of question used selectively in the semi-structured interviews:**

- Which transnational municipal networks internal governance arrangements are the most and least valuable for working in the field of climate change adaptation and mitigation?
- What are the main strengths and weaknesses of transnational municipal networks in climate governance?
- What are the main challenges and future development potential of transnational municipal networks in climate governance?
- How important is real life interaction for stakeholders taking part in the transnational municipal networks events?
- What is the role of climate financing in the operation of a transnational municipal network?
- What is the role of advocacy in transnational municipal networking?
- Is there competition, cooperation and collaboration between transnational municipal networks?

### **List of questions used in semi-interviews conducted to support case study event observations:**

- Which organisation do you represent?
- Is this your first time attending this annual event?
- What is your main purpose for attending this event?
- Has the event met your expectations?