Does networked globalization need networked governance? An inquiry into the applicability of the network metaphor to global environmental governance.

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Abstract

This paper on the applicability of the network concept to global environmental governance intends to do two things. First, it discusses two different strands of network literature that so far have rarely been employed together, but would benefit from cross-fertilization. Departing from some key definitions, it points out how literature on policy and governance networks attempts to conceptualize changing state-society relations and alternative governance mechanisms, and their impact on policy-making. This type of network studies has emerged mainly in the fields of public administration, public policy and political sciences. The paper also highlights the relevance of literature that looks at the network concept as a spatial metaphor, i.e. conceptualizations in political geography and sociology of contemporary practices that extend beyond the state. In this account, various places, actors and activities on the globe are increasingly connected to each other in large networks. These divergent conceptualizations of networks will be linked to research on city networks, which is characterized by a similar co-existence of two perspectives: authors who focus on inter-city cooperation via governance networks and scholars who conceptualize city networks as emerging transnational spaces in which globalization processes materialize.

Second, by bringing together insights from both strands, the paper formulates a possible framework to analyze these organizational and governance forms. This should make it possible to focus on the deeper question that drives this paper's research: What does globalization conceptualized from a spatial metaphorical network perspective imply for the governance of global environmental problems? This question touches on several issues: it asks to what extent networked governance is different from more traditional forms of governance, which instruments it has at its disposal to tackle environmental challenges, and whether there is congruence between the metaphor of globally connected practices and global network governance mechanisms. In other words: Does networked globalization need networked governance?

INTRODUCTION

This paper is part of a broader research effort that examines how cities' contribution to global environmental governance is getting a new meaning because of globalization processes. The perspective that cities matter in the international arena, not by acting on their own, but by being embedded in city networks, seemed a logical and rather unproblematic starting point. The empirical reality showed that, in the past decades, an increasing amount of city networks has been created, dealing with issues ranging from combating slum formation (e.g. Cities Alliance) to tackling climate change (e.g. C40 Cities Climate Leadership Group). Furthermore, literature that examines the importance of cities for global activities and conceptualizes cities as being part of global networks (e.g. the importance of New York, Tokyo and London for the global economy) strengthened the assumption that investigating global (environmental) governance from a city network perspective could offer interesting insights. Castells' reflections on our increasingly networked society (Castells 2004b, 2000b, 2000c) made it possible to place these developments in a broader theoretical framework. Furthermore, the persuasion that global environmental governance is increasingly characterized by complex environmental issues that ask for solutions that go beyond the state, made the network concept seem very useful.

However, it soon became clear how difficult it was to define the network concept. A search for a sound definition revealed that within the social sciences, it has been interpreted and operationalized from various theoretical perspectives and angles. However, broadly speaking, two strands of literature could be identified: one that focuses on policy networks and governance networks and one that looks at the network concept as a spatial metaphor. The former attempts to conceptualize changing state-society relations and alternative governance mechanisms, and their impact on policy-making. This type of network studies can mainly be situated in the fields of public administration, public policy and political science. The latter found ground in political geography and sociology and is about conceptualizations of contemporary practices that extend beyond the state. In this account, various places, actors and activities on the globe are increasingly connected to each other in large networks.

The literature on city networks turned out to be characterized by a similar co-existence of perspectives. Scholars that focus on inter-city cooperation via governance networks bear close resemblance to the literature on policy and governance networks. Those that conceptualize city networks as emerging transnational spaces in which globalization processes materialize share views with scholars that look at the network concept as a spatial metaphor.

Up to now, these divergent perspectives on networks and city networks have hardly ever been employed together. However, this paper argues that they would benefit from cross-fertilization. To illustrate this, the paper puts forward a framework to analyze (city) networks that brings together aspects from these various strands of literature.

The paper is structured as follows: the first two sections discuss the network and city network concept. A third section summarizes the common and diverging views on network characteristics and points to the relevance of bringing them together in order to study global environmental governance from a (city) network perspective. Then, an analytical framework to study (city) networks is put forward and the cases of two city networks illustrate its operationalization. A final section reflects upon what this analytical framework can learn us about three basic questions: To what extent is networked governance different from more traditional forms of governance? Which instruments does networked governance have at its disposal to tackle environmental challenges? Is there congruence between the metaphor of globally connected practices and global network governance mechanisms?

NETWORKS

Inspired by macro sociological theories on our increasingly complex and globalizing world, the network concept – as a spatial metaphor, an analytical tool, and a new organizational and governance form – seems useful for an analysis of recent dynamics in global environmental governance. However, its definition and operationalization is problematic. A literature study illustrates that, not surprisingly, there exist as many definitions as there are authors and this overload in opinions and subtle distinctions creates more doubt than it helps demarcating what does and what does not constitute a network. The following section does not give an exhaustive overview of existing perspectives. Rather, it reflects on two central issues: to what extent are networks different from other organizational forms and which characteristics can be attributed to networks? Especially the second question reveals the existence of two approaches towards networks.

Hierarchies, markets and networks

The question whether networks are distinct from the other dominant forms of organization – hierarchy and market – emerged when reading Castells' trilogy on the network society (Castells 2000b, 2000c, 2004b), which serves as the core theoretical framework of the author's broader

research project. According to Castells, the network is pervasive and dominant. Thus, networks are everywhere. However, other forms of organization remain existent (Stalder 2006: 167). As a consequence, it is necessary to show how networks then differ from these forms of organization. Castells contrasts horizontal networks with vertical hierarchies and assigns dominance to the network form of organization because networks have overcome their past burdens due to the revolution in information- and communication technologies: "for the first time, the introduction of new information/communication technologies allows networks to keep their flexibility and adaptability, thus asserting their evolutionary nature. While, at the same time, these technologies allow for co-ordination and management of complexity, in an interactive system which features feed-back effects, and communication patterns from anywhere to everywhere within the networks. It follows an unprecedented combination of flexibility and task implementation, of co-ordinated decision making, and de-centralized execution, which provide a superior social morphology for all human action" (Castells 2000a: 15). In other words, the network, as an old form of organization, "has taken on a new life in the Information Age" (Castells 2000a: 15). Other scholars as well focus on the differences between networks, hierarchies and markets in order to show that networks possess their own logic. According to Podolny and Page, for example, networks do not possess a clearly recognized authority to resolve disputes that arise among actors, which distinguishes them from hierarchies. And contrary to markets, they are characterized by enduring relations (Podolny and Page 1998: 59). Actor Network Theory (ANT) stresses that a network is not an intermediate form between hierarchy and market, but is a set of relations between actors and techniques (Thompson 2003: p. 86).

Some scholars in policy network literature conceptualize networks as a new governance form that can be situated on the continuum between hierarchies and markets, as they combine characteristics of both, i.e. the capacity of hierarchies and the autonomy of markets (Maynthz 1993: 45). This leads to the assumption that networks can be more productive: "in an increasingly complex and dynamic environment, where hierarchical co-ordination is rendered difficult if not impossible and the potential for deregulation is limited because of the problems of market failure, increasingly governance becomes only feasible within policy networks, providing a framework for the efficient horizontal coordination of the interests and actions of public and private corporate actors, mutually dependent on their resources" (Börzel 1998: 262-263).

A third perspective, which stems from scholars of complexity theory and social network analysis (SNA), claims that everything is a network and that we can only distinguish between more hierarchical and more horizontal networks. According to Capra, for example, "things are themselves networks of relationships, embedded in larger networks" (Cortvriendt 2007: 19). De

Landa distinguishes between more meshworked and more hierarchical assemblages. Ecosystems and markets are examples of the former, species and states of the latter (Cortvriendt 2007: 19). SNA conceptualizes the network as an analytical tool that encompasses and explains both markets and hierarchies as variations of network structures (Thompson 2003: 86).

Global environmental governance arrangements do not always fit into the ideal-types of hierarchies, markets and networks. Ever more, we see hybrid constellations that bring together various actors from different levels. These networked forms of governance can be organized in a top-down or bottom-up way. Therefore, this paper uses the perspective offered by complexity theory and SNA and looks at networks as an organization form (structure) of which the way of functioning can be more hierarchic or more market based (horizontal).

Network characteristics

In order to identify the network features that need to be analyzed, this section brings together network definitions from two strands of literature. Scholars that focus on *policy networks and governance networks* pay a lot of attention to changing relations between actors. The literature that conceptualizes the *network as a spatial metaphor* focuses on the emergence of complex systems of interaction. Some key insights and definitions from both strands are highlighted in order to show how they both provide useful perspectives to formulate an analytical framework.

Policy networks and governance networks

Literature on policy and governance networks attempts to conceptualize changing state-society relations and alternative governance mechanisms, and their impact on policy-making. Networks are created by (policy) actors with the purpose that these hybrid constellations will lead to solutions in a certain policy area. This type of network studies has emerged mainly in the fields of public administration, public policy and political sciences. Several praiseworthy attempts to give an overview of this literature have been undertaken in order to identify common and diverging views on networks. Two of them serve our purposes very well: Börzel's conceptual article on policy networks and Sørenson and Torfing's writings on network governance. Policy networks refer to "different forms of relationships between interest groups and the state" (Börzel 1998: 255), the term governance network "shifts the focus from the question of vertical interest representation to the matter of the role of horizontal networks in processes of societal governance. The analytical vantage point is not that of the interest organizations and their attempt to gain influence on public policy through formal and informal contacts with the central decision makers;

rather, the focus is on the production of public policy through political interaction between public and private actors" (Sørenson and Torfing 2005: 201).

Although the concept of governance networks seems to render more closely the study object, the concept of policy networks is useful because it has attention for interest representation. The discussion of city networks of global environmental governance further below shows that the issue of interest representation does play a role in these networks. Börzel identifies a group of scholars that conceives policy networks as "a particular form of governance in modern political systems" and "shift the unit of analysis from the individual actor to the set of interrelationships" (Börzel 1998: 259). Consequently, they focus on "the structure and processes through which joint policy-making is organized, i.e. on governance" (Börzel 1998: 259). Policy networks from a governance perspective "reflect a changed relationship between state and society" and signal "a real change in the structure of the polity" (Börzel 1998: 260). As the broader research project focuses on shifting spaces of governance, this aspect of change is crucial. Policy networks from a governance perspective are defined as:

> "Webs of relatively stable and ongoing relationships which mobilize and pool dispersed resources so that collective (or parallel) action can be orchestrated towards the solution of a common policy. A policy network includes all actors involved in the formulation and implementation of a policy in a policy sector. They are characterized by predominantly informal interactions between public and private actors with distinctive, but interdependent interests, who strive to solve problems of collective action on a central, non-hierarchical level" (Börzel 1998: 260).

From the various schools of policy network literature identified by Börzel, this approach and definition are most useful for our purposes. However, the studied city networks of global environmental governance are characterized by more formal interactions, with informal relations probably being significant, but not predominant.

Sørenson and Torfing's definition of a governance network focuses on the production of public policy and helps to acknowledge the role of the framework in which interactions take place:

> "A relatively stable horizontal articulation of interdependent, but operationally autonomous actors; who interact through negotiations; which take place within a regulative, normative, cognitive and imaginary framework; that to a certain extent is self-regulating; which contributes to the production of public purpose within or across particular policy areas" (Sørenson and Torfing 2005: 203).

In its identification of network features, SNA adds one aspect to the abovementioned definitions that is particularly relevant, i.e. the relation between the network and individual

actions of the actors in the network. This illustrates how these actors are interdependent, while at the same time remain autonomous and shows that conflicts between the network and the individual can occur:

> "actors and their actions are interdependent; the relational ties that networks set up are conceived as a 'structure' […]; relational ties or linkages between agents are channels for the transfer or flow of resources […]; the network structural environment is providing opportunities for, or constraints on individual action; socio-network structures establish lasting patterns of relationships amongst actors" (Thompson 2003: 55-56).

These three definitions are put together as they reflect the general understanding of networks in this strand of literature and because they point to the following network features that are of relevance for the creation of an analytical framework:

- the network structure consists of relatively stable, lasting relationships
- an exchange is taking place within the network
- a variety of actors is involved that are interdependent but autonomous
- interaction is happening in a horizontal way
- actors share common purposes and frameworks and aim at governance

The network as a spatial metaphor

Scholars that look at the network concept as a spatial metaphor examine how various places, actors and activities on the globe are increasingly connected to each other in large networks. The emergence of networks is the result of globalization processes. This perspective differs from the policy and governance networks literature discussed above, because the focus is less on the actors that create networks and more on the networks that link up actors and places. It discusses issues such as connectivity and the emergence of new spaces of governance and shows how "'actor-oriented' perspectives on social change are rendered obsolete by the latest waves of globalization resulting in complex cause-effect relations" (Mol and Spaargaren 2006: 50). These conceptualizations can be found in political geography and sociology of contemporary practices that extend beyond the state (e.g. Amin 2002; Castells; Massey 2005; Urry 2003). However, the network definitions in this strand of literature are sometimes vague and, for example, "neither Castells nor Urry provides a systematic overview of their formal concepts in relation to the existing sociologies" (Mol and Spaargaren 2006: 46).

Some of these scholars (e.g. Castells and Urry) combine insights from complexity theory with sociology and Mol and Spaargaren argue that complexity sciences can indeed be of great

value for examining globalization processes, because they analyze the issues that characterize these processes: chaos and equilibrium, flows, changed meaning of time, etc. (Mol and Spaargaren 2006: 51). Complexity theory points to the transformation in thinking in biology in order to argue for a transformation in thinking about society in general. This means a "shift of emphasis from the structure of genetic sequences to the organization of metabolic networks. It is a shift from reductionist to systemic thinking" (Capra 2007: 5). And because "the network is a pattern that is common to all life. Wherever we see life, we see networks" (Capra 2007: 6). Thus, for complexity theory the study of networks is essential. Within the framework of this paper, it is therefore interesting to look at its understanding of networks. Capra identifies four key characteristics of biological life: "a living system is materially and energetically open […] operates far from equilibrium […] is organizationally closed and is self-generating" (Capra 2007: 7). Applying this view to the analysis of governance networks is rather difficult. However, Parellada's investigation of social organizations as complex dynamic systems can be of help here, as he points to characteristics that social organizations "have in common with other complex systems belonging to other types of motion" (Parellada 2007: 159). These features can be summarized as follows:

> "Social organizations are open systems. This means that their relationships with the environment are essential to the existence of the system as such. These systems, situated far from thermodynamic equilibrium, constitute or form dissipative structures. This is evidenced by their possession of a certain "metabolism": energy, information, meaning and substances flow through them, and are transformed or metabolized by the system. […] Being dissipative structures they confer a strongly irreversible character on those processes developed in social organizations. Social organizations evolve, adapting themselves to the changes that take place in their environment. […] At the same time such systems are always feedback in terms of reaching the intended goals. This feedback can be stabilizing or enhancing." (Parellada 2007: 159-160).

However, social organizations also distinguish themselves from other complex systems, since the human being is their main element or basic cell. Consequently, Parellada also identified their particular features:

> "they always fulfill a certain function or seek to reach certain goals", there is an "exchange or flow of ideas, feelings, and ethical, esthetic, moral and cultural values" which have an important influence on the dynamics of the social organizations. Furthermore, "human beings […] have their own objectives. These can coincide or not with those of the social organization of which they are components" which can influence the "evolutionary dynamics of a social organization". Finally, "adaptation in social organizations can be actively creative. It means these systems can react very

> quickly, in real time, and in unexpected ways to environmental changes" (Parellada 2007: 160-161).

Stalder's attempt to discover the meaning implicit in Castells' abstract definition of a network – "a network is a set of interconnected nodes" (Stalder 2006: 169) – also integrates network definitions from natural sciences and complexity theory with those from sociological theory and organization theory. Again the relation with the external environment is stressed:

> "a network is an enduring pattern of interaction among heterogeneous actors that define one another (identity). They coordinate themselves on the basis of common protocols, values, and goals (process). A network reacts non-deterministically to self-selected external influences, thus not simply representing the environment but actively creating it (interdependence). Key properties of a network are emergent from these processes unfolding over time, rather than determined by any of its elements (emergence)" (Stalder 2006: 180).

In other words, the following network characteristics are derived from insights from complexity theory:

- relationship between the network and its environment
- exchange is taking place in the network (flows of energy, information, meaning and substances)
- possibility of (creative) adaptation to changing environments
- networks have intended goals
- tension between objectives of actors and goals of network

This section on the network concept intended to do two things. First, it wanted to clarify how to solve the problem of distinguishing between hierarchies, markets and networks. As empirical results of the broader research project showed that networks can be organized in a centralized or decentralized way, the author opted to conceptualize networks as organization forms (structure) of which the way of functioning can be more hierarchic or more market based (horizontal), a perspective offered by complexity theory and SNA. Second, several network definitions were brought together in order to identify network features. The two literature strands share their attention for exchange, interdependence and common purposes and goals within networks. Publications on policy and governance networks also focus on the characteristics of the actors, the relationships between the actors and stress the horizontal character of interaction as opposed to centralized decision-making. Scholars that investigate the network as a spatial metaphor point to the possibility of (creative) adaptation and attribute significance to the relationships between

the network and its environment. These features will be key to the development of the analytical framework.

CITY NETWORKS

It is now often stated that cities play an important role in tackling global issues. These centers of production and consumption are home to more than half of the world's population (United Nations 2008) and influence dynamics far beyond their own territories (e.g. Wall and van de Knaap 2006). Consequently, they are said to be of decisive importance for our future (UN-HABITAT 2006). Increasingly, cities are studied from a relational perspective (e.g. Davis 2005 for a brief overview). When evaluating their role in global governance, it is not the city as a closed entity that researchers are interested in, but it is networked constellations of urban areas that receive attention. Two groups of studies can be distinguished, each focusing on one particular kind of city networks (Bouteligier 2008): authors who focus on inter-city cooperation via governance networks, thus approaching *cities as actors* and scholars who describe city networks as emerging transnational spaces in which globalization processes materialize and who conceptualize *cities as places* that are linked up to global networks.

Cities as actors

A first group of scholars examines city networks that are established with the aim to deal more efficiently with common urban challenges. Within these networks, cities cooperate with each other as *actors* in order to exchange knowledge, best practices and experiences on shared problems. In most cases, other actors from both the private and the public sector are involved in these networks as well. They can help the cities to reach their goals by assisting them technically or financially. This type of networks has been established on various issues, ranging from combating slum formation (e.g. Cities Alliance) to tackling climate change (e.g. C40 Climate Leadership Group). Cities participate in these networks through membership. Studies of this kind are mostly executed on a case basis (a particular city network or a group of city networks) (e.g. Friedmann 1997; Keiner and Kim 2007; Memon, Pearson, and Imura 2005) and few generalizable analytical frameworks have been put forward so far.

The added value of these city networks for (global) governance is at the core of attention. Therefore, evaluations often focus on performance. The question is how effective these arrangements of exchange and cooperation are and what guarantees their maintenance. Many city networks were created in the 1980s and 1990s and new ones keep appearing regularly. Some

continue existing today, others, however, have disappeared. It thus would be interesting to examine which factors contribute to a network's success. Two contributions are particularly useful in this respect. Borja and Castells listed up critical factors for network operation. After mapping the then existing major city networks, they identified characteristics that contributed to the performance of networks: leadership, profitability, a common project, an objective and a clear product/service, specificity, dimension, control systems, evaluation, political presence, the rules of the international game, guaranteeing the transfer process (Borja and Castells 1997: 213-214). Betsill and Bulkeley put forward an evaluation scheme of network formation, network maintenance and policy learning. They identified the following issues as key to a network's performance: exchanges within the network, openness of connections, leadership and continuity of involved actors, ability to capitalize on resources and the success of building local capacity (Betsill and Bulkeley 2004).

When linking this to the two strands of literature on networks that were mentioned above, this group is closely related to the study of policy and governance networks as it also starts from the perspective that actors create networks in order to reach common goals.

Cities as places

A second group of scholars focuses on city networks that emerge as a result of location strategies. Cities then fulfill the role of *places*: they are the urban settings where actors interact. The (agency of the) local government is of no importance here. Brussels, for example, is the city that hosts the highest number of NGO secretariats in the world (Anheier, Glasius, and Kaldor 2004:303). These NGOs are not there because of the government of the city of Brussels or the government of Brussels-Capital Region, but they are there because Brussels hosts the EU institutions and other international governmental organizations and as a consequence attracts all kinds of headquarters (Papadopoulos 2006: 254; Taylor 2004a: 266). Brussels thus functions as an important place, an urban setting, where various actors interact with each other. Cities become important when other actors choose them as operational bases, as places from which to organize their (global) activities. Cities then are interconnected through flows of information, money, ideas etc. In other words, cities are conceptualized as nodes in networks, as places where flows intersect. Consequently, they do not exist by themselves, but receive their meaning and function from the network. Therefore, just like the literature that sees networks as a spatial metaphor, this kind of research focuses on how networks connect actors and places.

The work of Saskia Sassen on transnational urban networks in the global economy (Sassen 2001) is of particular importance in this regard and many empirical investigations are

now undertaken to test her theoretical considerations (e.g. the publications of the Globalization and World Cities Research Network[1]). What interest scholars are the flows that link up cities and the resulting network structures. The relative connectivity of urban areas is at the basis of city rankings that come out of these studies (e.g. Taylor 2005). Furthermore, the declining importance of states is discussed (e.g. Brenner 1998; Swyngedouw 2004) and the claim that globalization processes need places where they materialize is further strengthened (e.g. Sassen 2002b). Evaluations of this kind of city networks focus more on new power constellations and the emergence of new spaces for global governance (transnational urban networks).

The study of city networks is still very much in development and scholars mostly study only one kind of city network and a common analytical framework has not yet been proposed. Castells, for example, in his work with Borja, discusses both kinds of city networks separately (Borja and Castells 1997). In his trilogy on the network society, he does not pay much attention to city networks set up by cities (Castells 2000b). Thus, two distinct sets of literature have emerged. However, as these scholars have a common interest in the role of cities in global governance, it would be useful to combine both approaches. The analytical framework formulated in this paper, for example, shows how both the focus on performance by scholars of the first group and the attention for power constellations of the second group are important when analyzing the deeper logic of a (city) network's functioning.

STUDYING (CITY) NETWORKS OF GLOBAL ENVIRONMENTAL GOVERNANCE: BRINGING TOGETHER TWO STRANDS OF LITERATURE

Common and diverging perspectives on (city) network characteristics

Within the framework of the author's broader research project on city networks of global environmental governance, it soon became clear that combining insights from the above mentioned strands of network literature was necessary to come up with an operationalizable analytical framework. Table 1 summarizes the key features of networks that were brought forward by the various strands. Of course, for the sake of clarity, this is a highly simplified reflection, which does wrong to numerous existing nuances. The table also mentions only two authors per strand (which were dealt with in the previous sections) as it solely aims at helping the reader to have a good understanding of the core message. As the table shows, the various strands

[1] http://www.lboro.ac.uk/gawc

attribute common features to networks (exchange, interdependency, shared normative framework, flexibility). However, their views differ on the issues of performance, power and the relations between the network and its environment. Performance is conceptualized as a goal *per se* within literature on policy and governance networks and literature on city networks in which cities are actors. In literature that conceptualizes networks as a spatial metaphor and cities as places in networks, performance (efficiency) is a result of the flexibility of networked constellations. This last group of scholars also pays attention to power relations that are a result of network interactions. This is an issue largely absent in the first group because it focuses on the horizontal interactions taking place in networks as contrasted to centralized decision-making. Horizontal relations are then interpreted as equal relations. Only recently, questions about power entered the research agenda (e.g. Bulkeley 2006). Highlighting the issue of relations between the network and its external environment is an important contribution of complexity theory. It will help to strengthen the analytical framework, as networks of global (environmental) governance do not exist in isolation.

Table 1 Strands of literature on networks and city networks

	Networks		**City Networks**	
	Network as policy network / governance network	*Network as spatial metaphor*	*Cities as actors*	*Cities as places*
	(Börzel, Sørensen & Torfing)	(Castells, Parellada)	(Borja & Castells, Betsill & Bulkeley)	(Sassen, GaWC)
Flows	Relations-Cooperation Exchange Interdependency	Relations-Connectivity Exchange Interdependency	Relations-Cooperation Exchange Interdependency	Relations-Connectivity Exchange Interdependency
Normative framework	Common goals & framework	Goals of network Common values/ideas etc.	Shared problems & common goals	Defined by the network
Adaptation/flexibility	Variety of actors	(Creative) adaptation	Variety of actors	Changing connectivity
Performance	Goal of network = ↑ performance	More efficient because of adaptability	Cooperation to ↑ performance	° new spaces of global governance
Power		Tension network vs. individual		° new spaces of global governance
External environment		Relation network – environment		
Network vs. actors	Actors create network	Network defines actors	Actors create network	Network defines actors

Analyzing global environmental governance from a (city) network perspective

Today, environmental "issues are created, constructed, regulated and contested between, across and among scales, and through hybrid governing arrangements which operate in network terms" (Bulkeley 2005: 876). Mol and Spaargaren argue that traditional sociological analytical frameworks need to be reconsidered as they fail to explain current developments (Mol and Spaargaren 2006). They interpret environmental issues in terms of global flows, both as "flows of products and environmental goods" (Spaargaren, Mol, and Bruyninckx 2006: 6) and as "social relations and networks that give rise to, or accompany, the environmental flows" (Spaargaren, Mol, and Bruyninckx 2006: 7). Governing these flows, requires a different kind of management than traditional state based approaches (at both the national and the international level). Therefore, *hybrid arrangements,* i.e. "transnational arrangements that crosscut formerly distinct divisions of tasks among state market, and civil society actors" (Spaargaren, Mol, and Bruyninckx 2006: 7) emerge. They can be understood as networked forms of governance as they link up various actors who share a common understanding of a problem and aim at finding solutions through cooperation. The focus on networked governance necessitates a relational approach, which analyzes governance in terms of dynamic relations rather than in terms of isolated and static actors (Emirbayer 1997: 286-291). This kind of approach characterizes the discussed network literature. Attention for dynamic relations and connections between a variety of actors and places on the basis of a common normative framework, yet with power relations at play and a possibility to adapt in a flexible way to changing environments is guaranteed when combining the insights from the various strands.

Because cities are held responsible for causing a major part of the environmental stress, they are crucial for addressing global environmental issues. Their capacity to contribute to global environmental governance might be changing because of globalization processes. By acting on their own, they cannot make a difference. Being embedded in global networks, however, might enable them to do so. Therefore, the author's broader research project studies some city networks in order to find out whether and how cities can matter as actors and as places in networks of global environmental governance. It does so on the basis of the analytical framework that will be discussed below.

ANALYTICAL FRAMEWORK: NETWORK STRUCTURE AND NETWORK LOGIC

As mentioned, sound analytical frameworks which link theoretical considerations on globalization and networked governance to empirical reality, operationalize key concepts (e.g. network, flow) and are a tool to analyze underlying dynamics in a network's functioning (e.g. power relations) remain scarce.

This section wants to formulate such a framework using insights from the network literature discussed above. Key to the framework is that it wants to analyze both the network structure and the network logic. The former refers to what constitutes the network, the networking itself: the relation between the actors in terms of cohesion, structural equivalence, spatial representation, etc. The latter can be understood as the meaning of the interlinkages and the deeper functioning of the networks. Approaches that mainly focus on network structure often fail in "explaining *why* the patterns observed are such that they are" (Thompson 2003: 64-65). Consequently, "potential complexity of social coordination and the modality of different forms of governance mechanisms are lost" (Thompson 2003: 64-65). In other words, an approach that also focuses on the content of the interactions (Börzel 1998: 255) and "uncover[s] the way in which processes operate" (Taylor 2004a: 273) is needed. Furthermore, as suggested by complexity theory, not only the internal dynamics, but also the relations with the external environment will be taken into account.

Table 1 summarized the key characteristics of networks as identified by the various strands. It is these features that will make up the analytical framework (Table 2). *Flows* (information flows, financial flows, ideational flows and material flows) circulate and interact within networks (Castells 2004a: 36) and our society is constructed around them (Castells 2000b: 442). Furthermore, uncovering these flows leads to the identification of nodes and hubs in global networks (Taylor 2004b). A node is "a point where the curve intersects itself" (Castells 2000a: 15). It is a place that is "connected by electronically powered communication networks through which circulate and interact flows of information that ensure the time sharing of practices processed in such a space" (Castells 2004a: 36). More concretely, nodes are places where vital knowledge, infrastructure and services are concentrated. Hubs are "exchangers, communication hubs playing a role of coordination for the smooth interaction of all the elements integrated into the network" (Castells 2000b: 443). A *normative framework* (common protocols, values, interests, …) emerges out of a network's ideational flows. It is crucial because it binds the actors in the network (Sørenson and Torfing 2005: 203; Stalder 2006: 180). *Flexibility/adaptability* is

often seen as the major advantage of networks in comparison to other forms of organization (Börzel 1998: 262-263; Castells 2000a: 15-16).

Revealing the network structure is about identifying and mapping these flows, normative frameworks and flexibility/adaptability mechanisms. Examining the network logic means linking these three aspects to the issues of *performance* and *power relations,* as the main purpose is to deepen the understanding of how networks function. Examining the network logic should reveal whether the network form of organization indeed lives up to the promise of being more efficient (Börzel 1998: 262-263; Castells 2000a: 16). Furthermore, by focusing on the horizontal character, it is often suggested that networks will ensure more equal relationships, however this is not always the case. Thus, the view of Edwards et al. that "alliances among equals, genuine partnerships, and synergistic networks that come together and then break apart can replace the asymmetries of power and voice that have characterized North-South relationships for so many years" and that "information technologies help this process along by enabling less hierarchical modes of organization and communication" (Edwards, Hulme, and Wallace 1999: 131) is contested. Networks aren't necessarily egalitarian structures, but are characterized by subtle and dynamic power relations as well (Keck and Sikkink 1998: 207).

Table 2 schematizes how to examine the network structure and the network logic. As an illustration of how this framework can be operationalized, the paper briefly discusses two city networks of global environmental governance. The first one is a city network in which cities fulfill the role of *actors*: the C40 Cities Climate Leadership Group. The second one is an example of a network in which cities fulfill the role of *places*: office networks of global environmental NGOs (ENGOs).

Table 2 Framework for analyzing (city) networks

	Network structure		**Network logic**	
	Internal	*External*	*Internal*	*External*
Flows	What? Who (senders/receivers)? How are flows distributed?	What ? Who (senders/receivers)? How are flows distributed?	Performance: Organizational performance of global network Power: Meaning of hubs, connectivity, relative importance of nodes	Performance: Importance of place? Power: Competition, leverage
Normative framework	What? Who creates it? How is it distributed? When does it change?	Converging or diverging?	Performance: ⇑ coherence, ⇑ performance? Power: Who is defining normative framework & power?	Performance: ⇑ coherence, ⇑ performance? Power: ⇑ coherence, ⇑ performance, ⇑ relative power?
Flexibility/ adaptability	What? How is decided by whom? When is decided to adapt?	Which partnerships? With whom? How? When?	Performance: ⇑ flexibility, ⇑ performance? Power: Inclusion, exclusion	Performance: Shifting offices Power: Leverage

C40 Cities Climate Leadership Group[2]

The C40 Cities Climate Leadership Group was created in 2005 on the initiative of the then mayor of London, Ken Livingstone. Today, the network has 40 member cities[3] and fifteen affiliated cities[4]. The C40 focuses on the improvement of energy efficiency by cutting the greenhouse gas emissions of cities, in order to combat climate change. The main goal is to catalyze concrete action. Therefore, the network does not aim at expanding membership endlessly, but wants to remain a workable group of large cities that takes the lead. Nine cities[5] make up the Steering Committee that sets the agenda and discusses membership. From 2005 until 2008, London chaired the C40. After the non-reelection of Ken Livingstone, the chair was passed to Toronto and it will rotate among members in the future. The secretariat remains based in London. In order to create networking possibilities and exchange information and knowledge, summits, conferences and workshops are organized[6] regularly. The C40 cooperates with a variety of external actors. Since August 2006, the Clinton Climate Initiative (CCI) functions as its executive arm, which facilitates a rather fast implementation of projects[7]. Private actors and NGOs are of importance for the realizations of meetings and for the implementation of projects. The first Climate Summit, for example, was supported by BP, EDF Energy and Thames Water RWE Group. ICLEI, The Climate Group and BT (a communications company) were the associated partners. In the framework of the Energy Efficiency Building Retrofit Program (EEBRP), four of the world's largest energy service companies and five of the world's largest banks are a partner (Website EEBRP). The companies provide products and services at a favorable price, so that cities are capable of making existing buildings more energy efficient. In exchange, the companies get a market of (at least) 40 large cities. The banks provide the necessary loans, which will be paid back with the energy savings. The initiatives of the CCI are and will be open to non-C40 cities as well. The CCI signed, for example, an agreement with the US Conference of Mayors that

[2] http://www.c40cities.org

[3] Addis Ababa, Athens, Bangkok, Beijing, Berlin, Bogotá, Buenos Aires, Cairo, Caracas, Chicago, Delhi, Dhaka, Hanoi, Houston, Hong Kong, Istanbul, Jakarta, Johannesburg, Karachi, Lagos, Lima, London, Los Angeles, Madrid, Melbourne, Mexico City, Moscow, Mumbai, New York, Paris, Philadelphia, Rio de Janeiro, Rome, São Paulo, Seoul, Shanghai, Sydney, Tokyo, Toronto, Warsaw.

[4] Amsterdam, Austin, Barcelona, Changwon, Copenhagen, Curitiba, Heidelberg, New Orleans, Portland, Rotterdam, Salt Lake City, San Francisco, Seattle, Stockholm, Yokohama.

[5] London, New York, Toronto, Los Angeles, São Paolo, Johannesburg, Berlin, Tokyo and Seoul.

[6] London Summit 2005 – New York Summit 2007 – Seoul Summit 2009. Workshop on Transport and Congestion, London December 2007 - Workshop on Airports and Climate Protection, Los Angeles April 2008. World Ports Conference, Rotterdam July 2008 – Conference on Climate Change, adaptation and mitigation, Tokyo 2008 – Conference on the launch of the "Carbon Finance Capacity Building Programme in Emerging Mega Cities of the South", Basel February 2009.

[7] The Clinton Climate Initiative was launched in August 2006. In May 2007 the first program that CCI is organizing with partner cities in the C40 Large Cities Climate Leadership Group was launched. (Website EEBRP).

made it possible for all 1100 member cities to benefit from the EEBRP (Website US Conference of Mayors-EEBRP). The C40 also has a lobby role to the extent that it presented communiqués at the COP11 and MOP1 in Montreal (December 2005), the G8 Summit in Heiligendamm (June 2007) and the UN Climate Change Conference in Bali (December 2007) to urge national governments for action, ask their recognition of the responsibility of cities and announce actions major cities will undertake to tackle climate change (Website Communiqué from large world cities (C20), Website C40 Summit Communiqué).

Network structure

Examining the network structure of the C40 leads to the following mapping exercise and questions. First of all, it is necessary to identify the informational and ideational *flows* between member cities. Some cities in the network are known for their successful environmental policies and they share their knowledge on meetings. Others hope to learn and want to adapt existing best practices to their own urban environment. Exchange and learning within the C40 takes place in various forms (through meetings, informal contacts, new media, etc.). Consequently, revealing this structure of flows is a necessary first step for further analysis. Some cities can be conceptualized as hubs and major nodes because they fulfill a special role within the C40 network, think for example about London (home of the C40 secretariat and thus a coordination hub), the Steering Committee members or the cities that host the summits, conferences and workshops. At the same time, informational, ideational, financial and material flows also circulate between the network and external actors. The EEBRP, for example, was developed on the basis of a best practice of one C40 city (Berlin) (informational flow), CCI framed the project in the same way as other initiatives of the Clinton Foundation (ideational flow: belief in market-based solutions) and external actors (banks and environmental service companies) are engaged in order to facilitate the implementation (financial flow and material flow).

This brings us to the second step, revealing the *normative framework* – and its origin – that binds the actors within the C40 and the converging or diverging normative frameworks of external actors which enable cooperation between the C40 and these actors or urge the C40 to take up a lobby role in order to defend and spread their own norms, values and purposes.

Finally, an examination of the present *flexibility mechanisms* learns how the C40 makes this hybrid form of governance work and how it adapts to changing environments. The C40 opted for different kinds of membership, which facilitates to bring in the best practices of smaller cities (affiliate cities) without becoming a huge organization. When it comes to external relations, the C40 has a solid cooperation with the CCI, which encompasses several programs. Other actors are

engaged for shorter terms or for a particular project (e.g. partnership with ICLEI and Microsoft to develop an emissions measurement tool).

Network logic

It is to be expected that *flows* are directed in such a way that they increase the *performance* of a network both in terms of internal and external relations. For a network like the C40, performance can be guaranteed by directing, for example, information flows from cities with successful environmental policies to cities that are searching for good solutions. In order to have some political leverage and be able to easily connect to external actors, being present in major global cities seems to be important as well. The CCI 'city directors' function as the interlocutors between C40/CCI and the various actors based in the C40 cities (local governments, private companies, even national governments when they are based in a C40 city). In their contacts with these actors, the city directors can identify opportunities for reducing greenhouse gas emissions in that particular C40 city and they can bring in the necessary experts or connect those actors that could cooperate in a project. Internal *power relations* can be revealed after identifying the nodes and hubs in the network: those that coordinate flows and those who are the main senders of flows have relative power over others. Linking up particular places to the network could also enable the network to counterbalance the power of other actors. The work of the city directors described above illustrates how the C40/CCI become one of many players in the member cities, which can be seen as places "of engagement in plural politics and multiple spatialities of involvement" (Amin 2002: 397)

A common *normative framework* is crucial for the performance of networks, as it strengthens internal coherence, which enables action and makes networks stronger vis-à-vis other actors. The C40 represents a group of large cities that has engaged itself to strive for massive CO2 reductions. By speaking with one voice, the C40 hopes to become a recognized player in climate politics and attract external actors to help to reach its goals. Internal coherence strengthens its position towards the outside world, but can also cause internal asymmetries. As clearly argued by Bulkeley (Bulkeley 2006), the formulation of a normative framework (for example by defining targets, identifying best practices that need to be shared, …) implies the emergence of subtle power relations: those that create the common normative framework, have the power. Although the C40 cities share a normative framework, they also have different opinions about what needs to be done to reach these common goals. This is not surprising, because the member cities do differ significantly in terms of size, capacity, geography, problems, etc. One particular example illustrates this issue very well. During one of the workshops, a

smaller European city gave a presentation about its successful transport policy, of which one part focused on stimulating citizens to travel by bike instead of car. However, an official of one of the African mega-cities, pointed to the fact that this kind of policy was very hard to implement in his city, because of geographical reasons, but also because for the citizens driving a car has now become a status symbol and cycling is linked to poverty. In other words, the kind of policy developed in some of the smaller European cities could not be transferred to the larger African cities. So, when discussing the exchange of 'best practices' in global (city) networks, attention should be paid to who gets the opportunity to present a best practice, and what is the normative framework behind these best practices. Normative frameworks are also important for understanding how a network attracts some external actors while at the same time opposing to others. The C40 and CCI clearly found each other on the basis of common views and values and they also share purposes with some multinational companies. But, the C40 has also presented several communiqués at major meetings in order to give the member cities a voice in the international arena, thus challenging other actors (e.g. national governments).

The issue of *flexibility/adaptability* mechanisms is most clearly linked to the issue of performance. Having a limited core group of member cities, while at the same time developing mechanisms to stimulate action in other cities, should enable the C40 to catalyze delivery. A flexible approach towards partnerships with the private sector and financial institutions (for each program the best partners are engaged) should also increase the network's performance and leverage. Of course, decisions on inclusion and exclusion of members and partners in the network mean that power relations are at play.

Office networks of global ENGOs

The literature that analyses city networks in which cities fulfill the role of strategic places, claims that globalization processes materialize in cities, because these places concentrate vital knowledge, services and infrastructure (Sassen 2001; Taylor 2005). Consequently, major actors decide to organize their global activities from these places, which are interconnected through flows of information, money, material, etc. If we want to apply this perspective to the area of global environmental governance, one of the key actors we should be looking at are global ENGOs, i.e. ENGOs that have offices in at least three continents, covering both the 'global North' and the 'global South'[8]. The importance of ENGOs has grown significantly over the past

[8] The author presented another paper at this ISA conference which solely focuses on the office networks of 3 major global ENGOs (WWF, Greenpeace, Friends of the Earth) and in which she discusses the issues mentioned here in more detail: Bouteligier, Sofie. 2009. Global cities and networks of global environmental NGOs: emerging transnational urban networks? Paper presented at the 50th annual Convention of the

decades. These organizations increased in numbers and strengthened their position[9] (Anheier, Glasius, and Kaldor 2004; Union of International Associations 2006). ENGOs play a significant role in various ways. They concentrate expertise and disseminate information, they influence state behavior (Jasanoff 1997; Madon 1999) and "directly shape the activities of other institutions, collectivities, and individuals" (Wapner 1996: 152-153). They help to "define an issue area, convince policymakers and publics that the problems thus defined are soluble, prescribe solutions, and monitor their implementation" (Keck and Sikkink 1998: 201). Thus, ENGOs are in the capacity to "shape widespread practices" (Wapner 1996: 160). Ever more, they do this in partnership with other actors (Gunter 2004: 145-146) and on a global scale. Some scholars point to a parallel between the global reach of some environmental issues, a spreading environmental consciousness and the development of a global presence of the environmental movement (Rohrschneider and Dalton 2002: 512).

The increased internationalization and importance of international networks amongst NGOs and the involvement of local and national groups in global practices are at the origin of the "very complex local-global links and networks" that characterize today's NGO world (Arts 2004: 502). "The sharing of information, the discussion of common problems, and the search for allies beyond national borders are important to the potential policy success of the green movement" (Rohrschneider and Dalton 2002: 528). Office networks of ENGOs constitute the material bases (space of places) through which the links (space of flows) are organized. These material bases are important for the management of both internal and external relations. Internally, the headquarters or international bodies function as coordination hubs, in order to make sure that the various national groups work in line with common values, goals and campaigns. At the same time, the worldwide dispersed offices each deliver their own task (e.g. fundraising, lobbying, fieldwork) and by doing this, they strengthen the global network. With regard to external relations, "cities and the networks that bind them function as an anchor and an enabler of cross-border struggles" (Sassen 2002a: 217). Being present in particular places may enable ENGOs to influence public and private actors and facilitate partnerships. After all, in the network society, face to face contact remains crucial and this allows a particular role for cities (Offner 2000: 169).

International Studies Association, February 2009, New York City, USA.

[9] Finding up-to-date numbers on NGOs in general and ENGOs in particular is a challenging task, not the least because of conceptual problems (i.e. a clear definition of what an (E)NGO is). Therefore, data that indicate the growth of these organizations and their increased recognition by international actors are used to support this statement. However, it is not possible to give the exact number of ENGOs being existent today.

Network structure

Several scholars have pointed to the vitality of information *flows* for both internal and external relations of (E)NGOs (e.g. Jasanoff 1997-591; Keck and Sikkink 1998: 18-22). From their very inception, ENGOs have used available communication technologies and media to enforce their claims and messages. Today, the internet offers the possibility to spread information instantaneously. Castells explains the success of the environmental movement by their adaptation "to the conditions of communication and mobilization in the new technological paradigm" (Castells 2004b: 186). New communication technologies are used as "organizing and mobilizing tools" (Castells 2004b: 187), with the Internet being crucial for coordinating and linking up grassroots groups to the global level (Castells 2004b: 187-188). Besides information flows, financial flows also run through ENGO networks. Global ENGOs such as Greenpeace and WWF have internal redistributive financial arrangements in order to guarantee the implementation of campaigns in the targeted areas. Furthermore, financial flows coming from outside the ENGO networks are significant as well. Some offices fulfill the role of important nodes (e.g. offices that direct major financial contributions for the functioning of the global network) or hubs (e.g. the international offices, the offices based in Brussels (EU) and Washington D.C. (financial institutions)).

As said, the *normative framework* (common protocols, norms, values and interests) emerges out of a network's ideational flows and it binds the actors in the network. However, as Doherty has pointed out, "among the least understood are the processes by which actors from different countries develop collective identities capable of jointly defining injustice and mobilizing action across national borders" (Doherty 2006: 860). The first research results indicate that the normative framework of a global ENGO can develop both in a top-down (steered by the international secretariats) or a bottom-up way (as a result of horizontal consultation) (Bouteligier 2009). Converging and diverging normative frameworks are at the basis of cooperation with or opposition against external actors.

Flexibility is an important aspect for global ENGOs as well. With regard to internal relations, they can flesh out this flexibility by starting up, closing or merging offices or by including new or excluding national groups. Differences seem to exist in how global ENGOs decide about this. Greenpeace International, for example, has a strong hand in where new offices are established and others are closed, thus "socializing local people into the Greenpeace system" (Wapner 1996: 123). FoE, by contrast, "awaits interest by organized environmental groups throughout the world" (Wapner 1996: 123). When it comes to external relations, it is interesting to examine the setting up of changing partnerships with various actors.

Network logic

The office networks of global ENGOs should enhance the organizational performance of the global network, both internally and externally. *Flows* of information and resources should be distributed in such a way that campaigns can be implemented and ENGOs have to be present in those places where there is lobby potential and partnerships can be set up and where they can try to counterbalance other actors. Inequalities in information, financial and ideational flows result in subtle and dynamic internal and external power relations. Two examples illustrate this. Although global ENGOs try to maintain equal relationships between the various national groups, Greenpeace and WWF, for example, face a reality of a core group of Northern-based offices that provide a major part of the financial resources to the global network. This situation gives these offices relative internal power. When it comes to lobby activities, global ENGOs are present in those places where other major actors are present as well (e.g. Brussels, because of EU institutions). However, they have less human and financial resources at their disposal to carry out these tasks, which puts them in unequal position with, for example, industrial lobby groups.

When it comes to *normative frameworks*, again internal coherence enables to execute global campaigns, as the locally based offices are all engaged to reach global targets and ENGOs can prove to be strong in their relation to other actors. One of the important questions then is whether this common normative network is only defined by the international headquarters, or a core group of offices, or that it is the result of a consultation with all the offices/member groups.

The restructuring of Greenpeace's global office network most clearly illustrates how *flexible* global ENGO networks can be. In order to increase its performance, Greenpeace has organized 28 legal entities that make possible an operational presence in over 45 countries, while at the same time assuring internal coherence. Again, attention needs to be paid to subtle power dynamics that are behind this evolution. With regard to external relations, flexibility comes in the form of changing partnerships with external actors that should increase performance, but can also ensure leverage.

DOES NETWORKED GLOBALIZATION NEED NETWORKED GOVERNANCE?

Eventually, the analytical framework described above should be seen as a tool to answer the following question: whether and how do networks come to another solution or reach a solution in a different way than more traditional forms of governance? In other words, it is the "structural outcomes of the network relations" (Coe and Wai-Chung Yeung 2001: 374) that are at the core of our interest. Three subquestions are of relevance:

- To what extent is networked governance different from more traditional forms of governance?
- Which instruments does networked governance have at its disposal to tackle environmental challenges?
- Is there congruence between the metaphor of globally connected practices and global network governance mechanisms?

The research is in too early a stage to already formulate generalizable answers to these questions. However, with regard to city networks some first reflections can already be formulated. Regardless of the kind of city network we are talking about, these organizational and governance forms are created around three crucial goals: (1) promoting exchange between the nodes, either as a goal *per se* (e.g. exchange of best practices between cities) or as an instrument to serve other purposes (e.g. strengthen internal coherence), (2) setting up projects that should deal with targeted issues in an efficient way, (3) increase the network's actors' influence and leverage because of two reasons: global presence and the advantage of being a network instead of a single entity.

First research results show that these goals are not always reached. City networks indeed differ from more traditional forms of governance as they offer local/municipal/city governments the possibility to group themselves in order to force other actors to take them serious when discussing global issues. Thus city networks could empower cities and by doing this help them to contribute to global solutions for environmental problems instead of solely causing environmental stress. And city networks serve non-governmental and private actors to have operational bases that allow for action on a global scale. However, this does not guarantee that these actors are having a stronger voice in the international arena. The United Nations, for example, does acknowledge the importance of cities and local governments (e.g. the creation of UNACLA, the recognition of local authorities as a 'major group' for the UNCSD), but even city networks that already exist for decades face difficulties in transforming this recognition in political leverage.

When it comes to instruments, the new communication and information technologies are crucial for city networks to enable exchanges. However, this also means that all the targeted actors need to have (equal) access to these technologies and thus digital divides will have to be eliminated in order to fully use the advantages. Hybrid arrangements, i.e. partnerships with other public and private actors, allow for the creation of innovative and flexible projects. Actors that bring in, for example, the necessary financial resources and technical expertise are engaged in order to reach goals in an efficient way. However, this only solves a part of the capacity problems of cities to implement projects, as there can remain, for example, conflicts over competences.

Presence in particular places enables non-governmental and private actors to execute lobby activities, however does not assure success.

The broader research project behind this paper departed from the observation that in today's world of globally connected practices and environmental problems, global network governance mechanisms are created to come up with viable solutions. That cities also have a role in these governance mechanisms is interesting, as often is stated that our future depends on what happens in these places. Whether there actually is congruence between networked globalization and networked governance is the question that eventually needs to be answered. Investigating a limited amount of city networks – in which cities fulfill the role of actors and of places – on the basis of the proposed analytical framework should enable the author to identify what are the strengths and weaknesses of these networks and how they can improve their functioning in order to live up to the goal they have set themselves: contribute to global environmental governance.

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Website C40 Summit Communiqué
http://www.c40cities.org/docs/communique_2007.pdf

Website EEBRP
http://www.clintonfoundation.org/what-we-do/clinton-climate-initiative/our-approach/major-programs/making-buildings-green/

Website Globalization and World Cities Research Group
http://www.lboro.ac.uk/gawc

Website US Conference of Mayors-EEBRP
http://www.usmayors.org/climateprotection/climatesummit_clinton_110107.pdf