Preparing Cities for Climate Change:

An International Comparative Assessment of Urban Adaptation Planning

A Research Agenda

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Project Summary
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Cities are on the frontlines when it comes to coping with the impacts of climate change. As temperatures and precipitation patterns change, it is expected that urban areas will need to navigate a host of challenges, including increases in the intensity of storms and incidence of natural disasters. Conditions such as these not only will stress existing infrastructure, but emergency services, social services, and urban management systems. Although there is a critical need for cities to protect their built, natural, and human environments from the impacts of climate change, there is notable variability in the approaches they are taking. At one extreme, some cities are developing dedicated and integrated climate adaptation plans. At the other extreme, there are cities that have not established any plans or initiated any adaptation measures whatsoever.

In this research, I will conduct a comparative international assessment of: 1) the types of climate adaptation plans being adopted in cities; 2) factors that explain the different approaches municipalities are taking in their climate adaptation planning; and 3) the ways that NGO and community-based efforts support, replace, or circumvent government adaptation initiatives. As a means for explaining variations in climate adaptation planning, I will draw on theories of diffusion and capacity. According to diffusion theory, incentives place pressure on cities that create imperatives for action while the movement of ideas forms a basis for change by promoting awareness of critical issues and practices. At the same time, the ability of a city to respond to incentives and enact ideas is facilitated by the availability of resources, including the contributions of local, national, and transnational nongovernmental (NGOs) and community-based organizations (CBOs).

To understand how diffusion and capacity shape urban climate adaptation planning, I will combine case study and survey research. Case studies, based on semi-structured interviews, will be conducted in the capital cities of six countries. The cases will focus on the adaptation planning process, including the roles played by different stakeholders and the impact that incentives, ideas, and resources had on the types of plans being adopted. The findings from the cases will provide a basis for the second phase of research, a large scale survey of cities. A survey questionnaire will be distributed to select city representatives participating in the World Congress and three regional assemblies hosted by the United Cites and Local Governments (UCLG) network. The survey not only will establish the extent to which the findings from the cases can be generalized, it will provide a foundation for developing new theoretical frameworks about planning for urban climate adaptation.

Intellectual Merit. The results from this inquiry will transform our understanding of the ways in which international, transnational, and domestic incentives, ideas, and resources shape urban decisions and actions. They also will deepen our knowledge of how NGOs and CBOs affect the capacity of local governments as well as generate new insights into urban planning in diverse national contexts. Disaster risk reduction increasingly is viewed as a critical component of climate adaptation planning. Therefore, as a consequence of studying adaptation, this research will enhance our understanding of the social and political dimensions of planning for natural disasters.

Broader Impacts. Education, training, and dissemination activities will take place throughout the grant period. Graduate students will have opportunities to gain research experience in domestic and international contexts as they assist with case study interviews, survey development and implementation, and data analysis. The results not only will be disseminated to the scholarly community through conference presentations and journal publications, but will be used to enhance the course I teach on urban climate adaptation and support work on a web tool I have been developing to assist cities in their adaptation initiatives. The survey will contain policy oriented questions and these results will be summarized in a report and disseminated to UCLG members as well as other climate and local government networks and NGOs.

Project Description

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Urban areas are inherently vulnerable to the impact of climate change – the density of people and assets means that there is automatically more at stake – Boris Johnson, Mayor of London

Whether they are situated in coastal or mountainous areas, in the global north or south, cities throughout the world are experiencing chronic problems and extreme events that are being attributed climate change (IPCC, 2007). These range from water shortages, to sea level rise, to storm surges. As temperatures and precipitation patterns change, many scientists argue that global climate change will lead to more natural disasters, particularly flooding. In addition, climate change is expected to stress urban infrastructure, decrease the habitability of many buildings, tax services, and, in the process, create housing, health and livelihood hardships for those who are most vulnerable (Clean Air Partnership, 2007; Satterthwaite, et al, 2007; Dodman & Satterthwaite, 2008; World Bank, 2008).

Minimizing the impacts that climate change will have on cities and their inhabitants requires that urban municipalities make concerted efforts to protect natural systems, the built environment, and human populations. Mitigation refers to the development of policies that have the potential to reduce greenhouse gas emissions. In contrast, adaptation involves activities that decrease vulnerability and limit the effects of climate change (IPCC, 2007). Although the need for adaptation is pressing, there is notable variability emerging in the approaches that cities are taking to prepare for the impacts of climate change. Despite growing recognition of the need to understand preconditions for adaptation, and the importance of looking at preparedness in urban contexts, scholars have not investigated the forces and factors associated with variations in climate adaptation planning in cities. Therefore, this comparative international research will address following questions:

1) What types of plans for climate adaptation are being adopted in cities?
2) What explains differences in the approaches municipalities are taking toward climate adaptation planning?
3) In what ways are the efforts of nongovernmental (NGOs) and community-based organizations (CBOs) complementing, circumventing, and replacing government adaptation initiatives?

Intellectual Significance of Research

Adaptation is of critical importance since cities need to prepare for disasters and other impacts of climate change that are already taking place and expected to intensify well into the future (IPCC, 2007; Satterthwaite, et al, 2007; Stern, 2007). Although diverse forms of adaptation planning are emerging, research is not keeping pace with practices taking root in cities around the world (Betsill & Bulkeley, 2007). Some scholars have begun to integrate issues related to climate adaptation into their research agendas. However, the emphasis has been on the range of adaptation options that are viable to pursue, particularly in rural and agricultural contexts, the costs and benefits of implementing different measures, and the needs of vulnerable countries and populations (i.e., Smit, et al., 2000; Tol, et al., 2004; Adger, et al., 2006; Roberts & Parks, 2007). While some reports and articles addressing issues related to urban adaptation have been produced, these tend to be descriptive cases, background reports, and literature reviews, rather than studies based on social or political theory or on rigorously collected and analyzed empirical data (e.g., Lim et al., 2005; CSES, 2007; Mukheibir & Ziervogel, 2007; Satterthwaite, et al, 2007; Roberts, 2008).

The proposed research will contribute to our knowledge of urban climate adaptation and, at the same time, advance social science theory on urban planning in three ways. First, by drawing on and linking theories of diffusion and capacity to urban planning, this research has the potential to transform our understanding of the ways in which international, transnational, and domestic factors shape planning

decisions and actions. Second, the findings will enhance our knowledge of how NGOs and CBOs affect the capacity and capabilities of local governments. Third, since this research will compare initiatives in different countries, it will advance our understanding of the ways in which local and national differences affect planning processes. This research also will directly contribute to scholarship on planning for natural disasters. Disaster risk reduction is an integral aspect of urban climate adaptation planning (Huq, et al., 2007; World Bank, et al., 2007). Therefore, in the process of explaining variations in adaptation planning, this research will extend our knowledge of factors associated with disaster preparedness and mitigation in cities.

Theoretical Background:
Urban Climate Adaptation Planning and Governance

In 2008, for the first time in history, more than half of the global population was living in urban areas. Over the next twenty years, this number is expected to increase from 3.3 to approximately five billion people (UN, 2008). Already, cities are major contributors to greenhouse gas emissions. Anthropogenic sources of urban emissions come from fossil fuels used in transportation as well as in the generation of energy to heat and cool buildings and power industrial facilities. Just as cities are sources of greenhouse gas emissions, they are a site where many climate impacts are being felt. These impacts range from heat island effects to coastal erosion to sea-level rise. Climate change also is regarded as the catalyst for the increasing number of severe storms and floods that have affected cities in recent years (Huq, et al., 2007; Satterthwaite, et al, 2007).

To retain their vitality and viability, countries and cities must be prepared for the impacts of climate change. It is with this goal in mind that initiatives at different scales are emerging. For instance, the Conference of Parties to the United National Framework Convention on Climate Change (UNFCCC) required that all counties seeking support from the Least Developed Countries Fund prepare a National Adaptation Plan of Action (NAPA). While this ensured that participating countries identified the most pressing problems and prioritized their adaptation options, national-level approaches of this sort are unable to account for the types of risks and vulnerabilities faced by cities. They also are unable to address many of the measures necessary to secure the human, built, and natural environments in urban areas. Since international protocols have not been advanced for adaptation planning at the local level for developing or developed countries, and most national governments are not working to address potential problems at this scale, some cities are taking independent action to initiate adaptation (Granberg & Elander, 2007; Schreurs, 2008)

Local climate adaptation efforts tend to emphasize one of three goals: accommodating, protecting, or retreating. For instance, managing the impacts of sea level rise include accommodation strategies such as beach nourishment, the installation of protective structures such as groins and seawalls, and retreat measures that restrict development and other human activity, including provisions to relocate current residents (Kirshen, Knee, & Ruth, 2008). While the adaptation measures of cities are aligned with one or more of these approaches, the extent to which they are being integrated into citywide planning efforts tends to vary. At one extreme, cities like London, Cape Town and Quito are developing dedicated and integrated plans for adaptation. However, they are the exception rather than the rule. The more common approaches are for sector-based municipal agencies to identify key adaptation measures they need to pursue, for adaptation to be introduced in a cursory way into climate action, disaster mitigation, or comprehensive plans, or for cities to not be engaged in any form of adaptation planning whatsoever.

Urban Climate Institutions, Actors, and Governance

What explains differences in the preparations cities are making to cope with projected impacts of climate change? City plans and planning processes are guided by the beliefs and goals that local public officials, representatives, and communities seek to advance. They also are shaped by the local institutional landscape (Healey, 1999; Lowndes, 2001). Institutions are explicit rules and tacit behavioral norms established through the course of normal interactions among urban stakeholders (DiMaggio & Powell, 1983; North, 1990; Scott, 1995). In cities, these rules and norms come to be accepted as the

appropriate way to behave and therefore, condition decisions and actions (Healey, 1999; Lowndes, 2001). Needless to say, some urban activities are directed by national regulations and policies. However, even these are subject to the interpretations of local actors and the forces of local political, social, and cultural institutions (Pressman & Wildavsky, 1971; Lipsky, 1973).

Institutions generally are inclined toward inertia. However, as transitions in city goals and management suggest, this does not mean they can not or do not change. Traditionally, public officials advanced the goals of the welfare state. From this perspective, planners and other government representatives ostensibly worked to address the needs and concerns of the broader population (Saunders, 1979; Castells, 2000). As economic development came to dominate local agendas, policies were reoriented to support growth and city governments shifted from a managerial to an entrepreneurial orientation (Logan & Molotch, 1988; Harvey, 1989). Most cities remain dedicated to economic development. However, some have been integrating ideals about sustainability and resilience into their planning and development initiatives. The movement toward sustainable cities has been growing since the mid-1990s when concerns about environmental quality and equity in urban areas were joined with emerging ideas about localism. The fundamental principles gaining traction at the time were that people are most concerned about, and therefore most likely to improve, the environmental and social conditions that most directly affect their lives (Selman, 1996; Portney, 2003). Cities that are pursuing sustainability maintain that they can be economically vital and environmentally sound while promoting equity.

The transitions that have taken place in urban planning goals have been accompanied by changes in power dynamics. In both developed and developing countries, power has been devolving from central governments to municipalities. Decentralization is rooted in the principle that decisions will be most effective and services most appropriate when they are rooted in and performed by agencies, departments, and individuals that are closest to the level of implementation (McCarney, Halfami, & Rodriquez, 1995). For instance, as the welfare state declined, the goal no longer was for government to provide dwellings and benefits to the poor, but to empower people so that they could take greater control of their lives and become productive citizens. A further extension of this view has taken place within many municipalities in recent years. Known as governance, this process involves a reallocation of power so that NGOs, CBOs, and citizens are partners in planning and policy implementation (Kooiman, 1993; Turner & Hulme, 1997; Stoker, 1998). As the emphasis on sustainability and localism has grown, participatory and collaborative approaches to governance increasingly have been viewed as ways to generate equitable and innovative solutions to problems as well as means to foster commitment to the outcomes of decisions (Burby, 2003; Healey, 2006).

The reorientation from development to sustainability, and changing relations between governments and NGOs, CBOs, and residents, not only are reflected in shifting rules and norms, but in an expansion of the institutional field of action. Fields are comprised of the array of actors that collectively come to constitute an arena of institutional life (DiMaggio & Powell, 1983). Most theories of policy choice emphasize how decisions are shaped by domestic forces, particularly local governments. The rise of governance suggests that civil society actors such as NGOs and community groups will be integral actors in the domain of climate planning and implementation. At the same time, globalization has led to the networking of localities beyond their borders (Castelles, 2000). The result of these trends and forces is that local action is affected by actors at multiple scales and therefore, is just as likely to be influenced by the national and sub-national contexts as by the international arena. In other words, urban climate adaptation planning will be shaped by national and local governments, community organizations, and residents as well as by international governments, bilateral and multilateral funders, and transnational NGOs (Bulkey & Betsill, 2005).

Incentives, Ideas, and Capacity for Adaptation Planning

For most cities, a commitment to adaptation planning requires a shift in the values and goals guiding city management as well as adjustments in the institutional frameworks related to decisions and actions. What fosters this type of change as well as accounts for an institutional field comprised of domestic, international, and transnational actors? The sociology of diffusion offers a means to address

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both of these issues. Studies in this genre focus on factors that foster the spread and adoption of innovation. Diffusion studies initially were rooted in domestic contexts, but in recent years the field has been expanded to account for influences from and connections to the international arena. Scholars, particularly those drawing on neoinstitutional frameworks, suggest that there are two general sets of forces that can promote adaptation and change in the policy and planning arenas: incentives and ideas (Dobbin, Simmons, & Garttre, 2007).

Incentives for Adaptation Planning

Incentives refer to situations where cities obtain benefits, usually in return for compliance with stated requirements. One of the most powerful incentives is funding. According to what are generally regarded as conservative estimates, it will cost between US$10 and 40 billion each year to address the costs of adaptation in developing countries alone (World Bank, 2006). At the present time, bilateral development assistance is the primary source of support. However, there are four established multilateral adaptation funds, three under the UNFCC and one under the Kyoto Protocol. Technological fixes are central to adaptation, but an emerging trend is to find ways to link adaptation to development goals such as reducing poverty, improving health, education, and living conditions, and protecting vulnerable communities from disaster (Sperling, 2003; Huq and Ayers, 2008; O'Brien, et al, 2008). While the latter often is associated with large-scale investments, a balanced approach is emerging as large infrastructure projects are taking their place alongside NGO and community based initiatives. This latter approach is the case, for example, in Bangladesh where villagers are creating floating vegetable gardens to protect their livelihoods from flooding and in Viet Nam where communities are helping plant mangroves along the coast to diminish the impact of waves from tropical storms (Oxfam, 2007).

Funding from domestic and international sources can directly support adaptation, both in the context of development as well as directly for climate adaptation initiatives. Funding also can be an indirect force of change, particularly when a financial incentive contains adaptation-related provisions. For instance, cities may obtain infrastructure investments from their national governments, but support may be predicated on meeting other requirements, such as mitigation targets outlined in a national climate plan. Foreign aid, loans, and technical assistance also can be a source of coercive pressure. Development loans and aid from international organizations like the World Bank and IMF, as well as those from bilateral and multilateral aid agencies and private foundations, support a variety of projects in cities. These funds often are accompanied by requirements that range from conducting environmental impact assessments to, more recently, climate risk assessments (Gutner, 2002; Tellum, 2007; Hicks, et al., 2008). In most cases, funding recipients are required to adhere to the guidelines of their funders, including limiting their work to defined projects, completing required assessments, and submitting reports that detail their progress and achievements.

While the pressure stemming from the threat of sanctions can be a powerful incentive for cities, so too is competition. Cities have used a variety of methods, such as tax incentives and the provision of services, to lure business and residents. A related pattern may be taking root in the climate arena. By advancing principles of sustainability and resilience, cities will demonstrate that they are able to offer residents a better quality of life than other locales. While previous research has emphasized the market advantages that are associated with environmentally proactive regulations (Jänicke & Jacob, 2004), the logic can be extended to climate adaptation. Being able to offer residents a secure place to live and a firm a place to conduct business with reduced risk may be seen by some cities as a way to achieve a competitive advantage.

Ideas and Adaptation Planning

Ideas in this context refer to the ways in which knowledge alters behavior (Dobbin, Simmons, & Garttre, 2007). While incentives rely on the threat of sanctions to foster action, ideas foster change through the diffusion of knowledge from one actor to another (Strang & Meyer, 1993). The movement of ideas, such as best practices, standards, and conventional wisdom, influence behavior in cities by generating an awareness and understanding of activities that are most appropriate and likely to achieve a

desired outcome (DiMaggio & Powell, 1983; Scott, 1995). For instance, there is some evidence to suggest that the transnational diffusion of best practices about climate mitigation is shaping the behavior of local governments. According to Schreurs (2008), many ideas about the importance of climate action plans and the ways they should be constructed were initiated in Europe and then spread to cities in the US, Japan, and China.

Diffusion is facilitated when an idea or innovation is communicated within a social system (Rogers, 1983), such as among members of an institutional field. This can take place through professional networks and associations. In the climate arena, the International Council for Local Environmental Initiatives (ICLEI-Local Governments for Sustainability), United Cities and Local Governments (UCLG), C40 Cities, and Cities Alliance are among the many formal international networks and umbrella organizations that provide information about mitigation and adaptation to member cities through electronic media, publications, and the meetings they convene. The diffusion of technical expertise and managerial know-how also can occur when representatives from a city participate in governmental and intergovernmental initiatives such as domestic and international commissions and in events such as conferences and training programs. UCLG, for example, hosts congresses, regional assemblies, and training sessions for their members, all of which are intended to serve as forums for exchanging ideas and information. International gatherings are important, but local governments often attend conferences and meetings at the regional level where they exchange ideas and experiences as well as gather scientific information. Coercion is not the only tool used by international organizations to shape behavior. The UN, OECD, World Bank, and others also foster the transfer of norms and ideas through publications, workshops, meetings, training programs, and technical assistance (Stone, 2004).

NGOs can serve as important sources of knowledge for local governments. In the climate arena, environmental, development, and humanitarian aid organizations are among the ones that have the potential to be most influential. While some these organizations conduct their own research, others maintain their expertise in their respective policy domains by staying current in the relevant literature and attending conferences and training sessions. As they interact with local governments, be it through in person contact as they collaborate, advocate, and protest, or through policy papers and reports, NGOs can diffuse ideas about imperative of climate adaptation as well as approaches that will likely be effective (Clark, 1991; Edwards & Hulme, 1995; Jasanoff & Martello, 2005)

A further source of ideas and knowledge germane to climate adaptation is perceived and actual risk. In the climate arena, this means that natural scientists and engineers play important roles as they disseminate knowledge about the potential impact of climate stressors as well as the ability that a city has to withstand these impacts. In at least some instances, it appears that the recognition of risks is linked to climate-related action. For example, in an analysis Cities for Climate Protection (CCP) program sponsored by ICLEI, anticipated temperature change and proximity to the coast were associated with program participation (Zaharan, et al., 2008a, 2008b). In keeping with policy scholarship suggesting that natural disasters and sudden events often give issues gaining sufficient visibility to move them on to the policy agenda and ultimately to foster change (Kingdon 1995; Birkland, 1997, 2006) previous experience with an extreme weather event, and therefore the awareness of a city's vulnerability, has been associated with climate initiatives (Zaharan, et al., 2008a, 2008b). Although previous studies focus on mitigation, they suggest that awareness of a risk is linked to local action and therefore, may influence a city's decision to pursue adaptation efforts as well as shape the types of activities that are pursued.

Capacity for Climate Adaptation

Incentives and ideas establish a basis for change by creating imperatives as well as heightened awareness, both of which can serve to counter the persistence of institutions. However, in and of themselves, they are insufficient predictors of either the presence of urban adaptation planning or of the specific approach a city will take. In addition to these factors, it also is essential to account for local capacity since resources provide a basis for initiating and sustaining change (Clemens & Cook, 1999). Climate scholars have begun to refer to the resources available to reduce greenhouse gas emissions and address the risks posed by climate change as either adaptive or responsive capacity (e.g., Yohe & Tol,

2002; Tompkins & Adger, 2005; Burch & Robinson, 2007). At the level of the city, capacity often is considered in terms of the tangible and intangible resources that support and sustain government functions, including the human, organizational, and social resources associated with multi-level governance that contribute to community well-being and collective problem-solving (Grindle, 1997; Tendler, 1997; Chaskin, 2001).

Drawing on these perspectives, the term "urban adaptation capacity" will be used to refer to financial, technological, human, and social resources available to local government actors to protect the built, natural, and human environments from the impacts of climate change. From a practical standpoint, the financial stability and security of a city will affect its ability and willingness to tackle new projects and make new plans as some adaptation measures, such as infrastructure upgrades and residential resettlements, require major investments. Technology also will affect a city's adaptation planning. Those that have advanced capabilities are able to conduct spatial analyses of vulnerabilities and develop models and scenarios, all of which make is possible to assess a variety of options before making decisions and taking action.

Human resources extend beyond agency staffing to include the presence of leadership. Time and again, a change or new initiative has been attributed to the efforts of a local champion. Not surprisingly, this has been the case in cities that have been proactive with respect to climate action. Leadership in these instances has been demonstrated by public officials as well as by local residents, either working on their own or in collaboration with government representatives (Mukheibir & Ziervogel, 2007; Roberts, 2008; Schreurs, 2008). Leadership also refers to existing citywide initiatives. Programs that demonstrate a proactive stance toward environment and sustainability, such as those dedicated smart growth, green building, and open space conservation, all serve as resources since they create a foundation on which adaptation efforts can be built.

Local NGOs, CBOs, and residents also contribute to the human and social dimensions of urban adaptation capacity (Few, Brown, & Tompkins, 2007). In a recent study of mitigation planning, Zahran, et al (2008a, 2008b) found that organized environmental activities not only enhanced public sensitivity to issues related to climate change, but was related to a city engaging in climate action planning. In some places, particularly in cities in developing countries that are highly vulnerable, communities are participating in risk assessments (van Aalsta, Cannon, & Burton, 2008) as well as taking steps to improve their ability to respond to climate stressors and ensure that they are prepared for climate impacts (Jones & Rahman, 2007; Sabates-Wheller, Mitchell, & Ellis, 2008). While these are locally-initiated efforts being made by vulnerable communities to address issues they are facing, they contribute to urban capacity and enhance city-wide adaptation planning.

Transnational and national environmental, humanitarian aid, and international development NGOs are resources that promote urban adaptation. Many of these organizations have initatied programs and projects that advance preparedness for the impacts of climate change in cities. For instance, some environmental NGOs are working on projects ranging from preserving ecosystems as a means to minimze the impacts of natural disasters while others are making efforts to protect the natural resources on which many poor and vulnerable communities depend. A variety of international development NGOs are making efforts to ensure that poor communities have flood defenses and early warning systems in place. In addition, numerous humanitarian aid organizations are working in disaster prone cities to improve their reponse times and ensure that there are adequate stores of food, water, and other essential provisions available (Reeve, Anguelovski, & Carmin, 2008).

As with other actors linked to diffusion, the import of formal networks is not limited to the transfer of knowledge and information as they too serve as a resource. Networks provide ties to other cities as well to funders and experts. They also serve as a means for pooling efforts in order to advocate for policies. The roles of networks extends beyond establishing bridges to different parties that can support local aims to include to directly serving important local functions. Betsill and Bulkey (2004) found that some cities that joined the CCP network were motivated by the opportunity it afforded to gain legitimacy for an approach to climate protection that they sought to advance. In other words, network

participation also can be used to build capacity by legitimating the values, beliefs, and priorities of city representatives.

Climate Adaptation Planning Within and Across Countries

Figure 1 depicts the basic relationships between incentives, ideas, capacity, and urban adaptation planning. As the previous discussion suggests, incentives create imperatives, both by establishing operational and strategic targets designed to enhance competitiveness as well as through the sanctions and other forms of coercive pressure that not only can accompany national legislation, but financial and technical support. At the same time, ideas shape knowledge about potential climate impacts as well as about approaches to climate adaptation that will be most relevant, appropriate, efficient, and effective for the city to pursue. Collectively, incentives and ideas serve as catalysts that alter the institutional field by establishing room for new actors to emerge and for entrepreneurial efforts to influence existing rules and norms (Greenwood, Suddaby, & Hinings, 2002). As new ideas gain traction, the potential to initiate changes as well as maintain the status quo will be affected by financial, technological, human, and social resources (Clemens and Cook, 1999).

Figure 1: Basic View of Relationship of Incentives, Ideas, and Capacity to Planning
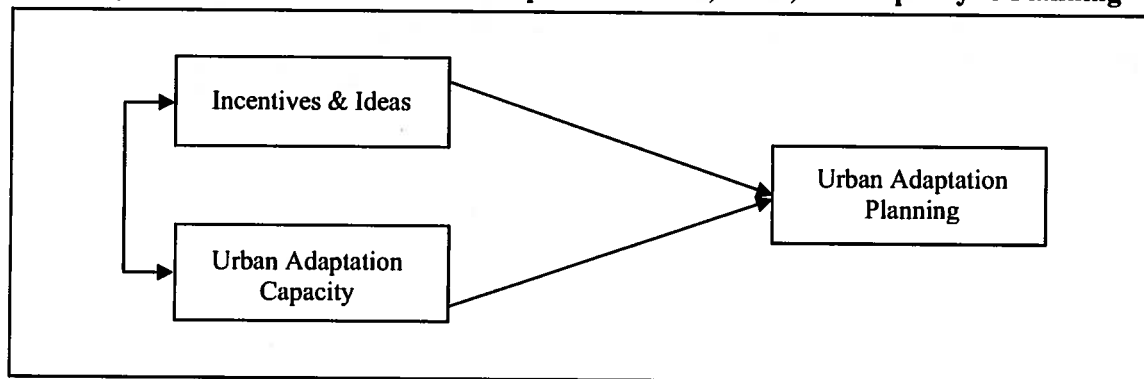
There are two notable problems with the ways in which these relationships are characterized with respect to local planning. The first is that they are oversimplified. While incentives, ideas, and capacity will be present in all cities, models do not account for how variations in their forms and levels affect planning initiatives. Further, while there is some suggestion that the explanatory factors interact with each other, their relationships have not been specified. A second problem is that existing diffusion models do not account for the ways in which contextual conditions affect local planning. At the national level, factors such as planning history and degree of decentralization will contribute to variations from one country to the next. Alternatively, at both the national and local levels, governments have different relationships with NGOs and CBOs. For instance, not only are financial resources scarce in many countries in the global south, but in many cases, so too are human resources. These limited levels of capacity have led many countries to be innovative in their planning initiatives and to rely on NGOs to initiate and implement a range of programs and projects. This stands in contrast to wealthy countries in the north that have established planning goals and processes with the expectation of access to adequate financial and technological resources and, more recently, with the view that NGOs and CBOs could support government-led initiatives.

Studying Urban Climate Adaptation Planning

In this research, I will conduct comparative international case study and survey research to understand the ways in which diffusion and capacity influence urban climate adaptation planning. While previous research suggests that these factors are important, the specific ways in which they combine to influence or inhibit change in local planning have not been specified. The first phase of this research will consist of case studies of planning adaptation in major cities in six countries. The cases will make it

possible for me to gain in-depth understanding of both how and why adaptation has evolved in different ways in different locales. Since the case studies also provide a means to ensure that relationships and models are properly specified, generate contextually appropriate hypotheses, and operationalize variables, they provide a critical foundation for the survey research. The survey will be distributed at the World Congress and three regional assemblies of the UCLG. The results of the survey will determine the extent that the findings from the case studies can be generalized. They also establish a basis for drawing robust theoretical and policy conclusions about planning for urban climate adaptation in different countries.

Case Studies of Urban Climate Adaptation Planning

As summarized in Table 1, the cities selected for inclusion in the case study research are London, Dublin, Cape Town, Windhoek, Quito, and Bogota. These cities were selected because they all are capitals. While they differ in levels of economic development, as capitals, they have relatively comparable levels of national status. In addition, they all have experienced severe storms and flooding in recent years. Further, the cases were selected because they represent one of two different approaches to climate adaptation planning: the development of a citywide plan versus either a sector plan or detailed adaptation section within a mitigation plan.

Table 1: Case Selection

	Developed	Transition	Developing
Citywide Plan	London	Cape Town	Quito
Sector Plans or Element of Mitigation Plan	Dublin	Windhoek	Bogota

Selecting on the dependent variable is problematic in most quantitative research designs and, by association, has been challenged in case study designs. However, the growing trend has been to acknowledge that in some instances this is a desirable approach to employ. Selecting on the dependent variable – type of plan - and varying across level of development is appropriate for the case study portion of this research since it provides a basis for identifying which factors are related to these different outcomes and affords a means for delineating causal pathways (King, Keohane, & Verba, 1994; George & Bennett, 2005).

Interview Participants

In each city, I will conduct semi-structured interviews with the city manager, mayor or deputy mayor, and directors of municipal agencies. Although cities are host to numerous agencies, the focus will be on those engaged in urban planning, disaster planning, water, river, and coastal management, and social services since this corresponds to disaster preparedness and mitigation with respect to storms and floods as risks and stressors. When appropriate, I will interview additional agency representatives who are working on adaptation initiatives or who were influential in the creation and adoption of an adaptation strategy for the city. In addition, I will conduct interviews with representatives of humanitarian aid, development, and environment NGOs (e.g., CARE, Save the Children, Mercy-Corps, Oxfam, Friends of the Earth, Action Aid, and World Wide Fund for Nature), community-based organizations, and multilateral and bilateral organizations (e.g., UN, World Bank, DFID, SIDA, USAID). Because respondents often have difficulty recollecting past experiences (Bernard, Killworth, Kronenfeld, & Sailer, 1984), the interview will include a number of closed-ended questions that employ aided-recall techniques as a means for ensuring accurate responses about policy changes and interactions that have taken place. Triangulation can enhance the validity of qualitative data and compensate for individual biases (Yin, 2008). Therefore, interview responses will be verified through complementary interviews and a review of secondary materials such as agency and organization documents.

English is the native language in four of the cities where I am proposing to conduct interviews while Spanish is spoken in the two Latin American cities. As more fully described in the section below on graduate student training and education, since my Spanish language skills are limited, the interviews in Quito and Bogota will be conducted by an advanced doctoral student who is fluent in Spanish, has

extensive experience in the region, and will be working under my supervision. All of the interviews will be taped and the tapes will be transcribed in the language in which they were conducted. Interviews conducted in Spanish will be transcribed in Spanish and, after the transcription is verified, translated into English. I will review all of the English transcripts for accuracy and will ensure that additional steps are taken to compare the foreign language versions with the English so that information filtering, miscommunication, and inaccurate interpretations that can result from the translation process are minimized.

Qualitative Analysis and Verification

I will use the transcripts as a basis for the qualitative analysis. I anticipate using the methodology developed by Miles and Huberman (1994) for ordering and arraying data. Initially, I will develop time-ordered matrices to systematically map the chronology of events that took place in each city. These chronologies will then be used to facilitate cross case analysis of factors associated with the emergence of integrated versus sector-based planning. Process tracing includes two distinct approaches. Verification is used to test predicted relationships. However, since I am using the cases to specify relationships and build theory, I will rely on process induction, which involves the identification of causal mechanisms and an assessment of how they related to outcomes (George & Bennett, 2005). To understand the relationships between different stakeholders, the dynamics that took place within the city, and rationale advanced by individuals for the planning practices that are in place, I also will analyze the open-ended questions using open, axial, and selective coding techniques (see Corbin & Strauss, 1998; Glaser & Stauss, 1967). Through matrix development, process tracing, and grounded theory coding procedures, I will be able to identify patterns within each case study city as well as make comparisons across cities.

Case Narratives

Based on the data analysis, a narrative of adaptation planning in each city will be written. A narrative is a description that orders factual, contextual, and cultural information in a way that illustrates patterns and highlights analytic elements of a case (Geertz, 1973). Each narrative will describe the plan in place, how and why it was developed, and the ways in which incentives, ideas, and resources shaped this outcome. The narratives serve as a way to present the findings as well as offer a means for verifying case details. There are two ways to assess the quality of a completed case study. Narratives can be reviewed by scholarly experts in the field or read and evaluated by the people who are involved in the situation (Van Maanen, 1988; Yin, 2008). In this research, representatives from participating agencies will be asked to review the narratives and assess whether the descriptions and analyses accurately represent the facts and reflect their experience.

Survey of Urban Climate Adaptation Planning

The case studies will provide an in-depth understanding of climate adaptation planning in a limited number of cities. This approach will make it possible to identify critical factors shaping the planning process and the related dynamics of urban governance. In contrast, the survey will offer a cross-sectional view of adaptation planning. Surveying a large number of cities not only provides a means for determining the extent to which the case study findings can be generalized, but also offers a way to generate additional theoretical and policy-relevant insights.

The survey will be conducted at the World Congress of the UCLG, scheduled to be held in fall 2010 in Mexico City. In 2007 and 2008, approximately 2000 cities from around the world were represented at the World Congress by mayors, city managers, and other ranking individuals. The UCLG membership consists of local governments from democratic countries, as opposed to those that are committed to a particular climate program or set of environmental principles. Therefore, this not only is an excellent venue for efficiently obtaining a large number of responses, but one that will not be biased with respect to climate action. Since countries with more limited funds may be unable to travel to Mexico, I will also conduct the survey at three UCLG regional assemblies. While these locales will be determined after the UCLG meeting calendars for 2010 and 2011 are confirmed, I will make efforts to promote

regional diversity relative to the World Congress and therefore, focus on assemblies in Asia, Europe, and Africa.

Survey Content and Variables

I will draw on the case study findings to develop hypotheses and ensure that I have properly specified the quantitative model and operationalized all of the relevant variables. While final decisions about the quantitative model will follow from the qualitative research and from the exploratory interviews, at present, I anticipate that data will be collected for two dependent variables. The first will be a categorical variable that reflects the presence of a citywide plan, sector plan(s), element(s) of an action or comprehensive plan, or no plan. The second dependent variable also will be categorical and will measure whether NGOs and CBOs are working independently on adaptation initiatives, in cooperation with local governments, or fully integrated into adaptation planning and implementation. While it is possible all civil society adaptation activity will consolidated into one dependent variable, more than likely, it will be most appropriate to scale and evaluate the activities of NGOs and CBOs separately.

Table 2: Overview of Explanatory Variables

Incentives	National climate policy requirements National infrastructure and disaster mitigation requirements Domestic investments, direct foreign investments, official development assistance Funder requirements to pursue adaptation assessments or adaptation-related projects Competitive advantage/ distinctive features of city
Ideas	Membership in climate, environment, development, and aid networks and programs Participation in adaptation demonstration projects Participation in international climate, disaster, environment, and local government meetings, training programs, and conferences Anticipated and realized climate risks and stressors Previous disasters Damage and deaths from previous disasters Change in intensity or frequency of storms
Resources	Financial stability Dedicated climate funding, climate unit, climate staffing Level of activity of environment, development, and humanitarian NGOs NGO and CBO-initiated climate projects and programs History of government reliance on NGOs and CBOs Existing environmental initiatives and programs in city Participation in international associations for local governments Participation in domestic networks for local governments Governmental and nongovernmental climate leadership
Controls	Country City size Level of economic development Climatic conditions National climate policy Degree of city autonomy/state decentralization City economic development and sustainability goals

To explain the type of plan in place, I anticipate collecting data for four sets of independent variables. As summarized in Table 2, these correspond to the incentives, ideas, and resources elaborated in the literature review as well as introduce the presence of control variables. Once again, the variables and measures will be determined based on the findings of the case study research. At present, I envision that a subset of variables will be used to explain the level of NGO and CBO engagement in climate adaptation. This model will primarily consist of the resource and controls variables elaborated in the Table, with anticipated modification of those related to NGO and CBO activity.

The survey also will contain policy specific questions. Respondents will be asked about their familiarity with a range of climate adaptation issues and to rank the relative importance of climate adaptation to other issues in their city, including climate mitigation. In addition, the survey will examine sources of information they find useful, the types of information and technical assistance they need, successful efforts they have made to cope with climate impacts, and challenges they are facing in adaptation planning and implementation.

Pilot Testing and Survey Translation

The survey instrument will be developed in consultation with and reviewed by representatives of the UCLG Secretariat as well as some of their member cities. Once the questions are set, the instrument will be pilot tested with several local governments. I will revise the questions and structure of the instrument based on this input. Once the pilot testing and revisions are complete, I will translate the survey into French and Spanish. English is the primary language of the UCLG Congress so it is reasonable to assume that the majority of representatives will be fluent. However, since I want to ensure that the survey is readily accessible for non-native English speakers, I will have alternative language versions available. To ensure that the questions retain their meaning, I will follow standard protocols of having the surveys translated into the target language by native speakers and then having the translations reviewed by native English speakers. I have found that it is important for the translation work to be completed by individuals who are familiar with the content of the research. Therefore, I will hire students who are bilingual and who are familiar with the substantive issues being addressed.

Survey Administration and Management

The survey will be distributed to participants at UCLG meetings. Participants will receive an email letter in advance that informs them about the survey and alerts them to its importance. To promote participation and completion, I will work with UCLG to arrange an appropriate forum for distribution, such as during a keynote luncheon or other high visibility event. The basic plan is that I will make a brief presentation, during which time, students from MIT will be distributing the questionnaires. To keep participants engaged, the survey will be highly focused, professionally produced, and limited in length so that it takes no more than fifteen minutes to complete. Students will circulate throughout the room to answer questions and collect completed questionnaires.

I considered the range of options for implementing the survey and elected to distribute the questionnaire at the World Congress and regional assemblies since I will be able to obtain a high response rate from cities around the world in a cost-effective manner. In the early stages of planning this research, I spoke with representatives from cities in both the global north and south about what method of implementation would result in a high response rate. Without exception, the reaction I received is that it would be very difficult to reach and get responses to mail or internet surveys. The recommendation was that in person interviews and surveys would likely get the best result. Given the challenges of conducting surveys in multiple cities in one country, let alone multiple countries, the most effective means was to identify an appropriate venue where city representatives would be in one place.

Needless to say, surveying participants at events like the UCLG World Congress and regional assemblies poses a number of implementation challenges as well as has the potential to produce biased results. With respect to the former, a major challenge is to ensure that there is some control over who is answering the survey for a city. For instance, a mayor of a large city may have limited understanding of adaptation activities, while the mayor of a small city may double as the city manager and therefore, have a working knowledge of day to day issues. I will work closely with the UCLG in advance of the meetings to assess different distribution venues at the events and ways to target and monitor who completes the questionnaire. With respect to bias, as previously mentioned, selecting this organization over others has the noted advantage that it is not a climate organization like ICLEI and therefore, should result in a population with significant variation in the planning outcome variable. It also should minimize social desirability with respect to adaptation planning since there will be no imperative to demonstrate that any form of climate action is taking place. A further consideration is that attendance at the Mexico City

Congress may be biased toward North American, some Latin American, and wealthy cities. However, conducting the survey at subsequent regional meetings should help offset any biases that might arise from city location and fiscal status.

Quantitative Analysis

The data obtained from the surveys initially will be analyzed using descriptive statistics. In this phase, I will consider the specification of each variable as well as the relationships among variables. To ascertain whether response bias is present, I will review which countries are represented and how many cities from each participated to identify the presence of regional trends and biases. In addition, I will examine the characteristics of participating cities by country to determine whether those that participated are representative of their national population of cities. After this preliminary review, multivariate models will be tested. As previously discussed, I anticipate collecting data for two dependent variables. To ensure appropriate scaling, I will analyze the data for these variables using qualitative assessment and scale validation techniques. To assess the relationship of the independent variables to the approach cities are taking toward adaptation planning, separate multinomial logistic regression models will be estimated for each dependent variable. In both cases, the full model will be compared to nested models so that different clusters of independent variables can be assessed for their explanatory power. The descriptive analysis, particularly of the policy variables, will form the basis of the professional report that will be developed while the explanatory models will be the focus of academic journal articles.

International and UCLG Support for Research Activities

To ensure that the project has appropriate field support, I have been in contact with colleagues at universities and research institutes in each city where I will conduct case study research. The general availability of internet in hotels and cafes, and the ability to purchase local SIM cards, no longer necessitates having a formal university affiliation in order to gain access to appropriate technology. However, having connections to the local research community can prove helpful in making introductions. It also provides opportunities to test out ideas with colleagues and to ensure that results are disseminated back to the local scholarly community. Successfully implementing the survey requires the support and cooperation of UCLG. I have talked with representatives from the UCLG about implementing the survey at the World Congress and Regional Assemblies and they have reviewed this proposal. As indicated in the attached letter from Elisabeth Gateau, Secretary General of the UCLG, they are enthusiastic about the survey and our collaboration on this project.

Work Plan

As summarized in Table 3, I will begin making preparations for the case study research in fall 2009 as well as develop the project website. Since MIT does not hold classes in January, I will be able to conduct research for two case studies during that month. These cases will be in Africa and will form the basis of the training for the student who will be taking the lead on the interviews in Latin America. This student, working under my supervision, will conduct interviews for an additional two cases in the spring of 2010. A second student will work with me on the final two cases that summer. The transcriptions, translations, and reviews of transcripts will be initiated as soon as possible after interviews are finished. While only a preliminary qualitative analysis will be complete by mid-summer, this should be sufficient for initiating work on the survey questionnaire.

In the summer of Year 1, I will draft and pilot test the survey instrument. I expect that by late summer I will complete revisions on the questionnaire and that it will be ready for translation. In the fall of Year 2, I will implement the survey at the UCLG congress. The following spring, I will administer the survey at three UCLG regional assemblies (the locations of which are still being determined). The data entry and cleaning will take place throughout the year as will qualitative analysis. I expect that the initial report-back to UCLG will be completed in the summer and that preliminary academic writing also will be in process during that time.

Table 3: Research Timetable

YEAR 1	
Fall 2009	• Develop interview protocols • Make field preparations • Develop project website
January 2010	• Conduct interviews in Cape Town and Windhoek
Spring 2010	• Conduct interviews in Quito and Bogota • Transcribe, translate, and review transcripts • Preliminary qualitative analysis
Summer 2010	• Conduct interviews in London and Dublin • Transcribe and review transcripts • Develop and pilot test survey instrument • Revise and translate survey instrument
YEAR 2	
Fall 2010	• Initiate qualitative analysis • Implement survey at UCLG World Congress
January 2011	• Survey data entry and cleaning
Spring 2011	• Administer survey at UCLG regional assemblies • Initiate qualitative data analysis and writing
Summer 2011	• Survey data entry and cleaning • Initial survey data analysis • Report to UCLG and climate networks

Broader Impacts through Education and Dissemination

The results of this research will be disseminated to the scholarly community by means of conference papers and journal articles. The project will also contribute to the completion of at least one dissertation. Urban climate adaptation is starting to gain recognition as a critical policy issue. Therefore, the survey will include policy relevant questions and a report of these findings will be posted on the project website and sent to UCLG so that they can share it with their members. The UCLG and I also will both work to ensure that the results are sent to policy research institutes, climate networks, city and local government networks, and NGOs working on adaptation issues. Although all cities are at risk, the impacts of climate change are being felt most profoundly in countries that have the lowest material, financial, and social resources (Adger, et al, 2003; IPCC, 2007; Roberts & Park 2007; Saitterwaithe, et al, 2007). Since the networks and NGOs through which the findings will be distributed have a strong presence in the global south, the results of this research have a strong likelihood of reaching cities that are most in need of information about adaptation planning.

The findings from both the case study and survey research will support work I have been doing to create a web tool. Last spring, my students and I spent several weeks working with eThekwini Municipality (South Africa). The Head of the Environment Department asked my students if they could develop ideas for an online tool that would assist cities with climate adaptation. They developed a framework for the tool and conducted preliminary field research. In the course of their work, the students decided to name the tool "Climate-Ready." I am now collaborating with the engineering firm, CDM, to build the web platform for Climate-Ready and bring it to the demo stage. This open source tool will be freely available to municipalities so that they will have support for their adaptation initiatives. The findings from this research will enable me to ensure that the tool targets pressing issues, accounts for the needs of different stakeholders involved in adaptation planning, and is designed in a way that appropriately supports the types of decision processes that are taking place in municipalities.

This spring, I am teaching a new course on urban climate adaptation, primarily to students enrolled in our Master of City Planning program. I expect to continue teaching the course each year. The

findings from this research are directly applicable to the course content. In particular, students will benefit from being able to read the case narratives and policy report as both will help them better understand the challenges they will face as professional planners while heightening their sensitivity to cross-national variation in planning practice.

Graduate student training also will be an integral component of this grant. I will have two doctoral students work with me on the field research and qualitative analysis so that they can cultivate their skills in these areas. More specifically, one student will work with me in Africa and another in Europe. Initially, each will accompany me to several interviews where I will take the lead. Then, they will take the lead on several interviews conducted under my supervision. Finally, they will do several interviews on their own and we will debrief in the evening. This process will help students obtain intensive field research training. It also will ensure that one of the students is prepared to take the lead on interviews in Latin America. I also will supervise a doctoral student during the second year of the grant. This individual will work with me on developing and administering the survey, completing quantitative data analysis, and drafting a summary policy report that is based on the survey findings. Working on the survey will enable this person to gain firsthand experience with research design, data collection, and data management and analysis and to be involved in every phase of a project that will lead to a dissertation. In the past, I have made concerted efforts to engage women and underrepresented minorities in my research. I intend to continue this practice. Finally, this research also will reinforce my ties to foreign universities and research institutes and, in the process, build bridges that will enable faculty and students in my department to establish relationships and exchanges with their peers in other countries.

Results from NSF Grants in Last Five Years

I received an international collaborative grant (#0408882) for $64,773 in 2003 to support graduate student training and the development of an international collaborative partnership while completing a discrete research project. The empirical investigation used the Czech floods of 2002 to study policy change in response to extreme events. The research, based on qualitative assessments of six towns, generated new insights into the ways existing inter-agency relations and institutional structure shape policy assessment and response following a natural disaster. The results suggest that while agency personnel signal a desire to alter existing practices, post-disaster learning processes tend to be entrenched in both agency and occupational routines. Specifically, government agencies overtly supported assessment and implementation of procedural and policy changes needed to improve the timeliness of decisions, the quality of information, and the effectiveness of their activities during and following natural disasters. While agency personnel supported systemic changes, they only advocated for these in areas outside their scope of responsibility. Instead, when it came to policies, procedures and information systems within their own areas of expertise and authority, they preferred modest alterations and minimal "fine-tuning."

Just as policy responses were limited by pre-existing authority and specialization, so too were the ways that agency and organizational representatives understood and framed the causes of the flood. In general, technical experts and officials often attributed flooding or flood-related problems to each other's specialization or area of responsibility and therefore, attributed the impacts of events to situations outside their sphere of policy influence. The process of blaming others and the overall pattern of response to the floods resulted in a fundamental irony: perceived technical failures led to political efforts to implement technical solutions that were not supported by or advocated for by technical experts.

The project emphasized graduate student training in field research methods. Over the course of the grant, a total of five graduate students from US universities and four from Czech universities participated in seminars, training sessions, and supervised field research. A book of the findings was published in Czech, a series of policy papers and briefs were produced in English, and the results were presented at several academic conferences and meetings with government representatives.

I also received a Sociology Program Grant, with support from the Office of International Science and Engineering (#0516039) for $194,677 in 2005 to study continuity and change in the activities of domestic environmental NGOs in Central and Eastern Europe. The research combined case studies and a

survey. The findings from the qualitative phase of the research challenge conventional wisdom about the efficacy of environmental NGOs in democratic and state socialist systems. The prevailing view is that by having the freedom to take independent action in democratic systems of government, NGOs will be innovative, involved in a broad range of environmental decisions and activities, and better able to achieve their environmental goals. However, it appears that presence of opportunities to take action and engage directly in the policy process results in NGOs being more accepting of the institutional environment. Rather than employ creative means for challenging the status quo or locating alternative spaces for their activism, NGOs are more inclined to work within established arenas, limit actions to their defined niche, and align their practices with domestic and global norms. In other words, even though they were no longer prevented from engaging in open critique and opposition, or from pursuing innovative strategies and tactics, organizations have become more conformist and more predictable under the democratic system than they were in state socialist times.

As a complement to the case studies, a survey was conducted in eight countries in Central and Eastern Europe. Based on the responses of 837 environmental NGOs (62% response rate), the findings suggest that national affiliates of international organizations and those that primarily work in the international arena are the best networked and most professionalized. While the activities and agendas of many organizations remained stable, international affiliates were the ones most likely to shift their agendas in response to funder priorities and transnational pressures. In other words, it appears that the agendas of many of these organizations are influenced by transnational pressures and diffusion rather than by their values and mission. However, it is important to note that while many international affiliates engage in opportunistic behavior, they constitute only 5% of the population. The remaining 95% of the organizations have more stable agendas and consistently take action that reflects their values and mission. The grant period ended in August 2008. To date, the results have been presented at three international conferences and one refereed journal article has been published, one is forthcoming, and one is under review. In addition, a book manuscript is almost complete and the initial chapters presently are under review at a university press.

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Preparing Cities for Climate Change:
An International Comparative Assessment of Urban Climate Adaptation Planning

Professor JoAnn Carmin, Massachusetts Institute of Technology

Problem & Objectives

Rapid urbanization + Growing populations + Increasing numbers of urban poor + Greater intensity and frequency of natural hazards attributed to climate change

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Increasing risks to urban residents, infrastructure, and natural environment

The objectives of this research are to understand:
- The ways in which exogenous pressures versus endogenous goals and priorities shape urban planning decisions and actions in new policy domains.
- How variations in levels of economic development affect the ways cities are planning for climate impacts.
- How private sector and civil society actors shape the capacity, actions, and decisions of local governments.
- The links between urban climate change adaptation and disaster mitigation initiatives.

Theoretical Context

Urban scholars suggest that city agendas and actions will be driven by exogenous institutional pressures such as policies, best practices, and funding. However, in new policy domains, there are few, if any, established institutions to exert pressure. Most studies of new policy arenas assess macro-level patterns or draw on post-hoc accounts of early adopters. In contrast, this study engages local actors working on climate adaptation planning to examine their rationale for taking action and ways they navigate this emerging policy domain.

Research Questions (addressed to date)

I. What motivates cities to initiate climate adaptation planning?
II. What are the main characteristics of the approaches cities are taking to initiate and advance climate adaptation planning?
III. What explains the approach cities are taking to promote planning and facilitate mainstreaming and implementation?
IV. In what ways are stakeholders involved in adaptation planning and how are their activities affecting government adaptation initiatives?

Data Collection Methods

Case Studies
Cases studies, based on semi-structured interviews are being conducted in cities where adaptation planning is taking place. The countries are varied on level of income and, as illustrated in Table 1, the capital city and an economically important secondary city in each country are selected as case study sites.

Table 1: Case Study Selection

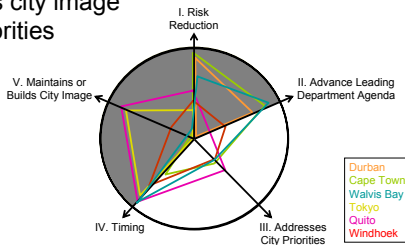|	Country	Capital City	Secondary City
High Income	Australia	Canberra	Melbourne
	Japan	Tokyo	Nagoya
Upper Middle Income	South Africa	Cape Town	Durban
	Namibia	Windhoek	Walvis Bay
Lower Middle Income	Ecuador	Quito	Esmeraldas
	India	Delhi	Surat

*Completed, **Anticipated**

Global Survey
A global survey will be initiated in spring 2011. It will be enumerated in person and through a web platform to the contact person in cities that are members of ICLEI – Local Governments for Sustainability.

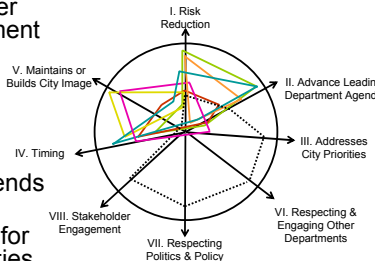## Preliminary Case Study Analysis

I. Motivations for Initiating Adaptation Planning
- Advances agenda of lead department
- Builds or maintains city image
- Addresses city priorities
- Risk reduction
- Timing

II. Characteristics of Approach to Planning
- All cities conduct assessments and focus on engaging departments
- Cities vary in the sequencing and degree of rigor in assessments, extent they involve stakeholders, creation of governing bodies, and types of plans they develop
- Cities often have little guidance and resources, so find innovative ways to advance adaptation

III. Explanation for Approach Cities Take
- Linking to existing city goals and priorities helps foster legitimacy and commitment
- Engagement of city departments generates buy-in and facilitates implementation
- Engaging designated stakeholder groups extends capacity
- Action requires respect for political and policy realities

IV. Stakeholder Involvement and Influence
- City governments develop partnerships with universities, research institutes, and business/ business associations
- Nongovernmental stakeholders generally respond to rather than push or lead government
- Cities tend to limit public participation, though many are testing community-based approaches to adaptation

Preliminary Conclusions

- Cities among the first to pursue climate adaptation are motivated by endogenous factors rather than exogenous pressures.
- To build commitment, leading cities focus on how adaptation can advance existing goals rather than the need for a new agenda or risks of climate impacts.
- Cities strategically engage researchers, business, and, in some instances, communities to extend capacity.
- In the absence of institutions, cities are experimenting and innovating

Student Training

Graduate and undergraduate students participated in fieldwork in South Africa, Namibia, Ecuador, and Japan. In the course of the research, they were trained in field interviewing and qualitative data analysis methods. In addition, they are working on survey development, participating in presentations and collaborating on writing academic journal articles.