

## PART III

### Chapter 10

# Building Institutions to Enhance Local Knowledge and Strengthen Action

*Looking ahead, new or reformed institutions are needed to enable national governments to facilitate capacity building and decision-making on climate change at the local level. Chapter 10 reviews key institutional priorities for greater engagement of local decision makers, the private sector and civil society stakeholders in developing local knowledge to address climate change. City authorities are in a unique position to effectively engage local stakeholders and to design and implement locally tailored responses to climate change. Key institutional shifts could include the development of a number of tools to support local decision-making. These could include standardised greenhouse gas emission inventory and reporting protocols to allow cities to monitor progress in reducing emissions in a way that is harmonised and comparable with other cities and national approaches. This is an important first step to enable cities to better access and participate in international carbon markets and to raise the visibility and credibility of urban mitigation efforts at national and international levels. In addition, regional science and policy networks can be strengthened to allow for expert climate information and local knowledge to combine to better understand how climate change will affect local areas as well as local opportunities for mitigation. Finally, strengthening urban climate policy networks may be a means to provide a forum for information exchange among city practitioners and other stakeholders, and to establish a common understanding about targets, implementation strategies and monitoring.*

### Key points

#### **National governments can contribute a sound institutional foundation and knowledge base to help local decision makers engage stakeholders, and identify and carry out cost-effective actions**

- Local and regional governments should be in a position to address the problems that are within their jurisdictional powers by introducing solutions they are legally and financially capable of supporting. Yet, often local governments are not provided with sufficient support from regional or national levels of government to exploit their potential as important decision makers and as enablers of local action.
- Working with sub-national and national governments, as well as with the international community on the development of a number of tools could assist cities to be more effective, such as:
  - ❖ *Harmonised greenhouse gas emission inventory and reporting protocols for cities.*
  - ❖ *Regional impact science and other policy relevant research programmes to build analytic-deliberative capacity and support the interface between expert information and local knowledge.*
  - ❖ *Urban climate policy networks, building on regular channels of communication among national planners and regional and local government officials as well as among local stakeholders and decision-makers about targets, goals, strategies, and measures.*

#### **A robust, quantitative, evidence base is required to inform sound public policy development and implementation**

- As climate change becomes an increasingly important policy driver for regional and urban economic development policies, there is a need for tools that allow inter-jurisdictional comparison, common indicators and metrics to measure progress.
- An evidence base is also needed to enhance the ability to identify and diffuse best practices, not only at local scale but also in terms of how national and local government partners and stakeholders can better work together.
- Strengthening empirical evidence – including through improved local inventories of greenhouse gas emissions and nationally funded local or regional science-policy networks – will advance understanding about where and how climate change is likely to affect regional and urban development, what practices may perform well in the face of climate change, and how national policy frameworks enable or constrain better performance at sub-national scales.

As highlighted in the introduction, a multi-level governance framework can help to accomplish an essential task to bring democracy and deliberation to the issue of how to address climate change. This includes openly acknowledging that government or other public authorities are not the only relevant actors and that it is valuable to take into account a wide range of non-state actors at different stages and scales of decision making. Building multi-level governance institutions (whether they are formal or informal) can help to bridge

different perspectives amongst a variety of actors, to enhance local knowledge and understanding, and to contribute to the climate policy formulation and implementation climate change.

This is consistent with insights from social research on the need to consider the contribution of institutions as they shape individual and collective behaviour and in particular the need to create opportunities and outcomes for collective decision making (North, 1990; Ostrom, 1990). The model that emerges places some emphasis on local action to create “deliberative spaces” can raise stakeholder awareness, build trust and understanding and ultimately facilitate collective decision making and collaboration to protect common environmental resources (Ostrom, 1990; Ostrom, 2000; Ostrom *et al.*, 2002), in this case the global atmosphere.<sup>1</sup> In particular, the scientific complexity and uncertainty surrounding predictions of climate change at local scale requires special attention. This strengthens the argument for a more reflexive approach to climate policy decision making, one where risk management is at the centre and one that relies on multi-stakeholders at the different stages of the policy process.

### Analytic-deliberative capacity and policy networks

One model of analytic-deliberative capacity that can be used to apply this concept of multi-level governance and to understand and facilitate interactions between different actors is the following:<sup>2</sup>

- A “**core area**” of public decision making with institutions that have formal governmental decision-making powers, *e.g.* governmental administrations, judicial system, and parliamentary bodies.
- An “**inner periphery**” operates close to the core and includes a range of institutions that have a degree of autonomy and self-governance functions. These institutions are equipped with rights and self-governance delegated by the state (*i.e.* universities, public insurance systems, professional agencies and associations, charitable organisations and foundations).
- An “**outer periphery**” of policy action, which encompasses a wider variety of “suppliers” of information and ideas for policy decisions and “customers” who are the target audience of decisions. This includes experts, businesses, and consumers as well as the media; it is the civil-social infrastructure of the public sphere.

To be legitimate, binding decisions “must be steered by communication flows that start at the periphery and pass through sluices of democratic and constitutional procedures...” (Habermas, 1998). This model of decision making emphasises the social integration function of public discourse and decisions, where the true outer periphery is part of the civil-social infrastructure of the public sphere, and where communication and local understanding is facilitated by the mass media.

In the case of multi-level governance of climate change, this model can assist the achievement of two main objectives: i) to support an **analytic-deliberative exchange** between experts, governmental partners and stakeholder to facilitated understanding of risks of and opportunities of climate change in regional and local contexts (Corfee-Morlot *et al.* in OECD, 2008; Stern and Fineberg, 1996); and ii) to facilitate formation of **policy networks** at the urban scale.

- i) Regarding **analytic-deliberative exchange**, this provides a means to “understand” climate change; as with any environmental issue, understanding is inevitably linked to scientific knowledge. However, the case of climate change may be somewhat different than many

environmental problems in that it presents large scale, systemic risks that unfold over long time frames and asymmetries across geographic scales that challenge conventional decision models. Thus how climate change is framed and addressed in the public sphere will depend upon the interaction between science, the media and other socio-political processes (e.g. Corfee-Morlot *et al.*, 2007; Liverman and O'Brien, 2001). In this light, understanding the risks of climate change at city-scale can help cities to better work in tandem with the national government to manage national risks more efficiently, to achieve both adaptation and mitigation outcomes. Beyond the scientific issues are a range of technical issues such as understanding the sources of emissions, their magnitude and linkages to human economic activity, and thus opportunities for cost-effectively managing these emissions. Local governments have a particular role to play to build on local knowledge and create a "policy space" for a deliberative-analytical exchange to help create a climate-friendly vision of the future (Stern and Fineberg, 1996; Grindle and Thomas, 1991; Corfee-Morlot *et al.*, in OECD, 2008).

The interaction with national governments is particularly relevant in this context as they have a key role to play to enable the analytic-deliberative process on climate change at local scale. This may include ensuring that policy-relevant scientific information (e.g. on climate change impacts) is available and that there are regular exchanges between local decision makers and scientists. It may also include making available of standardised tools for accounting for and assessing cost-effective management of emissions.

- ii) Regarding policy networks, this follows the definition of Borzel (1998) to include "a set of relatively stable relationships which are of non-hierarchical and interdependent nature linking a variety of actors, who share common interest with regard to a policy and who exchange resources to pursue these shared interests acknowledging that co-operation is the best way to achieve common goals". Applied to urban policies and politics, the concept of policy networks highlights the importance of trust, legitimacy and accountability of local institutions that goes beyond the principle of local democracy embedded in individual municipalities but rather depends on different forms of public support and participation modes of non-governmental actors at the different stages of the decision making process (OECD, 2006).

This is particularly relevant and crucial in the field of climate change for which, as mentioned in the previous chapter, public awareness and mobilisation of local "voices" constitutes a prerequisite for the adoption of actions and policies. Indeed, local government authorities cannot effectively address the massive challenges posed by climate change without widespread grassroots involvement of a wide variety of actors in civil society, such as citizens' groups, neighbourhood associations and the business sector. These non-governmental stakeholders can play key roles in both contributing to the development of sound government policies, and in ensuring that such policies are effectively implemented. They can also play the role of messengers and catalysts for community action and they can be engaged and participate in policy design and delivery. If excluded from the decision making process, they can also represent powerful obstacle for the adoption of climate change action plans and/or implementation, or limit their effectiveness.

Following this model which is based on the dual concepts of analytical deliberative capacity and policy networks formation, this chapter will first discuss different tools that national governments can develop to support local decision making. Two examples are explored: GHG inventories; and sub-national science-policy exchange. Second, the chapter turns to the role of non-state and non-governmental actors in the different stages of the

policy decision-making process, from formulation to implementation and dissemination. The aim is to assess to what extent the different mechanisms can help to the formation of policy networks as an essential part of the multi-level governance process for climate change. Within this is the sphere of interaction that contributes to and promotes analytical deliberation through national and transnational networks of cities and regions. These networks are essential in identifying and disseminating relevant knowledge and best practices among sub-national governments.

### Developing the toolbox to harness city-scale decision making

As noted, there are two core activities that national governments could support to help cities become more effective in the design and delivery of locally tailored policy solutions to climate change. First is the development of city-scale GHG inventories such that mitigation performance can be monitored, supported and compared across urban jurisdictions. Here both national and international attention to the challenge will be required to advance the development of the necessary tools. Second is the need for regional science-policy capacity to support timely and cost-effective adaptation at local scale; a similar need could be highlighted for regional capacity to assess the economics or costs of mitigation or adaptation policies. Progress in both of these areas could build crucial capacity at local scale to address climate change and require support from national governments.

#### **Monitoring progress: Cities, mitigation and GHG inventories**

Cities have been active in efforts to reduce greenhouse emissions for at least a decade and the level of ambition and scale of statements of intent to mitigate have grown with time.<sup>3</sup> However, there is a need for cities to bring rigour and structure into their efforts to measure progress in achieving their mitigation goals. While recent steps were taken by the UN and The World Bank in developing an international protocol (launched in March of 2010), we still lack harmonised, internationally accepted and widely used methods and inventory data to assess progress within and across cities.

Establishing a common set of metrics for comparison of progress across cities could raise the profile and increase the potential for urban policy to stimulate cost-effective mitigation actions. Agreement on metrics, methods and reporting frameworks for cities can establish a common language for cities to speak to each other, to measure progress and assess performance (both *ex ante* and *ex post* policy implementation), to identify and share understanding of best practices in urban-scale mitigation activities. In addition, emerging carbon markets could provide cities a starting point to leverage their otherwise limited resources. The necessity of rigour in local-scale GHG accounting is virtually incontestable given that almost any form of access to carbon-finance will require harmonised inventory methods, reporting and data sets.

There are several reasons to harmonise urban GHG inventory methods. First, a common framework will allow cities to assess progress over time as well as across locations. In turn this will allow them to compare results and cost-effectiveness of emissions reductions at the sector level – for example in the waste sector, in the transport sector or residential/commercial building energy end-use sector.<sup>4</sup> Furthermore, such a tool can indicate how they stack up, for example in comparison to other cities of similar wealth, population, or geographic/climate characteristics, and to understand how and why major changes in emissions occur over time. In this way, it will open new possibilities for cost-effective mitigation, as well as for collaboration and learning across location.

Second, harmonised urban inventory methods and reporting is essential to enable performance assessment and comparison across urban locations within a nation, for example, to assist national decision makers to better understand the potential for, and overall mitigation progress made, at urban scale. Harmonised urban inventory methods can also provide inputs for preparation of national inventories and emissions targets, and an information base to allow national policy makers to reward or incentivise urban-level emissions reductions.

Third and finally, with standardised local measurement approaches in place at the international level, city scale policies could lead to measurable and verifiable emission reductions that are eligible for certification and sale through existing mechanisms under the Kyoto Protocol (*e.g.* joint implementation or the clean development mechanism) or similar mechanisms that are expected for a post-2012 agreement. Although there is some progress in making national and international carbon finance available at urban scale (Bodiguel *et al.*, 2008; Roberts, 2008), much more could be done. This could open the way for new sources of funding to city-scale mitigation efforts, helping cities to exploit least cost options for reducing emissions in the coming decades.

### ***The urban inventory challenge***

The adoption of the “Global Greenhouse Gas Standard” at the World Urban Forum in March of 2010 is an initial step towards establishing an internationally-accepted local scale standard for measuring GHG-emission. However, it is useful to understand what has historically stood in the way of inventory harmonisation at urban scale. As was the case for national government, cities require solid technical input and international support to connect their inventory approaches or protocols to existing IPCC guidance and UNFCCC national reporting systems. Without these critical links to the institutional framework that has emerged to support international GHG monitoring, review and verification under the Convention, it will be difficult, if not impossible, to integrate urban-level mitigation action into emerging regulatory frameworks and markets for emission reductions.

Parties under the UN Framework Convention on Climate Change (UNFCCC) have adopted the IPCC methods as a standard framework for preparation of national inventories. National GHG inventories provide solid, comparable and verifiable emissions data at the national level to support peer-review and transparent assessment of mitigation performance under the UN Framework Convention on Climate Change and the Kyoto Protocol over time.<sup>5</sup> Importantly this system, when combined with other tools to ensure the quality of information and the ability to accurately track compliance and transactions, has enabled the creation of an international carbon market. That market has grown significantly in recent years, reaching a total value transacted of about USD 126 billion (EUR 86 billion) at the end of the year, double its 2007 value (Capoor and Ambrosi, 2009).

Assuming that comparability across entities is desirable, the IPCC guidance for national inventory preparation is a necessary starting point (UNFCCC, 2002). For example, in response to the need for harmonised approaches for “entity-level” reporting, the World Resources Institute and the World Business Council for Sustainable Development (WBCSD) collaborated to develop “The Greenhouse Gas Protocol”, primarily for corporate use to track emissions (WRI/WBCSD). It builds on the IPCC guidance, but adapts it for use at a different level or scale of activity.<sup>6</sup> In recognition of the importance of the public sector and to better address their needs, the WRI/WBCSD is currently developing a *Public Sector Protocol* in

co-operation with the US Logistics Management Institute (LMI), the US Environmental Protection Agency (EPA) and the US Department of Energy (DOE) (in final draft form as of July 2010). However, the approach remains constrained to tracking “entity-level” emissions.

Historically, no single protocol or set of guidelines has been adopted to harmonise compilation of data, estimation of emissions or reporting of comprehensive urban inventories including both operations-related<sup>7</sup> and territory-wide emissions. With neither a unilaterally accepted protocol nor the economic or financial incentives to further a harmonised approach, cities have taken different approaches to defining what sectors to include, in establishing the geographic boundaries of the area included, as well as in aggregating data. Currently, any comparison across existing city-scale inventories is hampered by the diversity of approaches, some of which are outlined briefly here.

At the local/regional level, the California Climate Action Registry (CCAR) is the first state registry to have developed a standard inventory protocol and set of methods for inventory preparation by cities building directly on the WRI/WBCSD work (CCAR, 2006). In 2006, San Francisco became the first city in the United States to submit an inventory validated with the CCAR protocol, which focuses on city operations. More recently, a number of US states have formed “The Climate Registry” which is intended to establish a harmonised system for entity level reporting across participating states and could expand the influence of the CCAR city-scale protocol.

As a transnational network, the ICLEI Cities for Climate Protection programme<sup>8</sup> has been active worldwide over the last decade to support mitigation action at the local level (see also below). Each of its more than 700 member local governments has committed to produce an emissions inventory using the protocols, guidelines and accompanying software developed based on the work of the WRI/WBCSD.<sup>9</sup> Embedded in the protocols and software are a number of inventory methods and a simple reporting structure as well as the possibility of tailoring to different national contexts. However, cities have wide choice in how they conduct inventories (geographic scope, sectors, etc.) and the ICLEI guidance points out that it is a tool explicitly developed to enable city management of emissions over time rather than to permit cross-city comparisons.<sup>10</sup>

There are some specific nationally led examples, such as in France the *Agence de l'Environnement et de la Maîtrise de l'Énergie* (ADEME), an inter-ministerial body working on environmental issues, has created the Bilan Carbone, an emissions accounting system developed for both corporate as well as municipal users. The tool looks at both city operations as well as emissions occurring within the geographic boundaries of cities, focusing on 10 primary emissions areas: energy generation, industrial processes, the service sector, residential, agriculture and fisheries, freight, passenger transport, construction, and waste disposal. The Bilan goes beyond direct and indirect to include the emissions associated with products consumed (e.g. emissions embedded in the production of cement used in city infrastructure) as well as the tourism-related air travel for destination cities. The ADEME has also established a structure both to train evaluators and to partially finance local-level inventories through grants. Developed in part by the national government, many French cities have used the Bilan Carbon to evaluate their emission levels. However, as with the ICLEI inventory tool, cities have choices in what they include in their inventory. As a result, application of Bilan Carbon leads to incommensurable results across applications.

A review of selected city inventories provides an overview of the range of technical issues embedded in the task of inventory preparation that influence comparability (see Table 10.1). Beyond differing reporting formats or inventory construction protocols, these features include:

- Different definitions of the urban area (i.e. is it defined by the larger metropolitan region or the city limits, or by something else).
- Choice of inventory years presented.
- Scope or boundaries of the inventory, i.e. whether or not more than city-owned operations are reported, and whether indirect emissions are included or not: e.g. treatment of electricity emissions.
- Methodological issues.

Table 10.1. **Selected city-scale GHG inventory reports: Comparison of key features**

Basic Information				Inventory				
City	Region	Population	Metro	ICLEI CCP	Data year(s)	Indirect	City Operations Breakout	Protocol
Seattle	WA	573 911	City limits	Yes	1990, 2005	Yes	Yes	GHG Protocol; IPCC National Guidelines
Vancouver	BC	2 600 000	Lower Fraser Valley	Yes	2005	No	n.a.	IPCC National Guidelines
New York	NY	18 815 988	NYC Metropolitan Region	Yes	1995, 2000, 2005	Yes	Yes	CCAP ICLEI
San Diego	CA	1 291 700	City Limits	Yes	1990, 2004	Yes	Yes	n.a.
Toronto	ON	2 503 281	City limits	Yes	2004	Yes	Yes	CCAP ICLEI
San Francisco	CA	7 264 667	County	Yes	2005	Yes	Only	CCAR
Columbia	MO	99 174	City limits	Yes	2000, 2005	n.a.	No	CCAP ICLEI
Northampton	MA	28 978	City limits	Yes	2000	Yes	Yes	CCAP ICLEI
Palo Alto	CA	61 200	City limits	No	2005	Yes	Only	CCAR
Sacramento	CA	475 743	City limits	Yes	2004	Yes	Only	CCAR
Santa Barbara	CA	90 400	City limits	No	2005	Yes	Only	CCAR
Somerville	MA	77 478	City limits	Yes	1997, 1999	Yes	Yes	CCAR

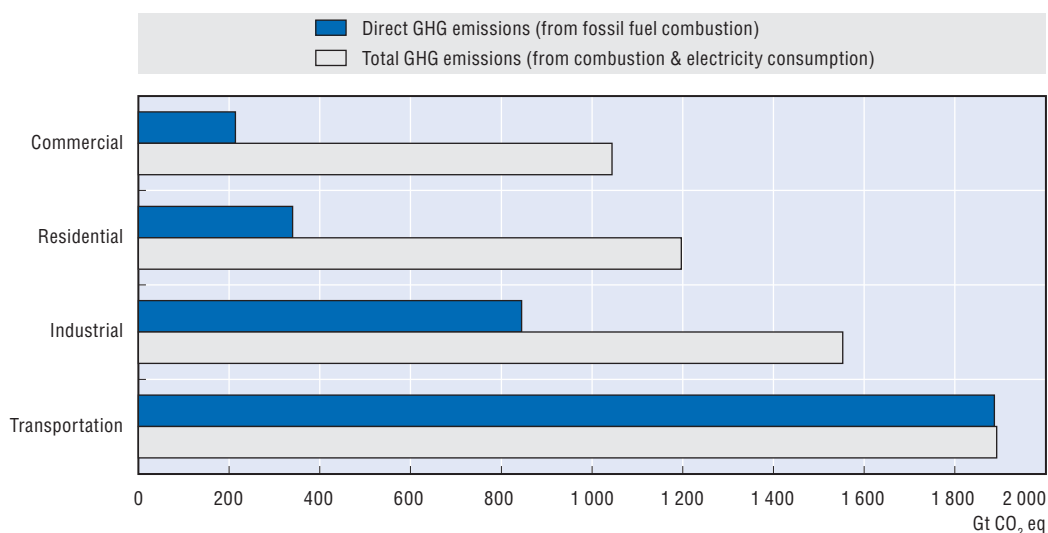
Sources: 2005 Inventory of Seattle Greenhouse Gas Emissions: Community and Corporate; 2005 Lower Fraser Valley Air Emissions Inventory and Forecast and Backcast; Inventory of New York City Greenhouse Gas Emissions; City of San Diego Greenhouse Gas Emission Inventory; *Greenhouse Gases and Air Pollutants in the City of Toronto: Toward a Harmonized Strategy for Reducing Emissions*; Annual Emission Report: City of San Francisco; City of Columbia Emissions Inventory; Executive Summary Greenhouse Gas Emissions Inventory Summer Internship (2001), Cities for Climate Protection Campaign City of Northampton; Annual Emissions Report: City of Palo Alto; Annual Emissions Report: City of Sacramento; Annual Emissions Report: City of Santa Barbara; Greenhouse Gas Emissions Inventory Report: Including Recommendations for the Emissions Reduction Plan.

A review of each of these issues in turn provides insights to the complexity of developing comparable inventories. A key issue is the geographical boundaries as well as the technical boundaries for inventories. As Diane Wittenberg, then president of California Climate Action Registry (CCAR) commented in 2006: *“The hardest part is boundaries, what’s in and what’s out... some of them are reporting (individual) buildings in the city, and others are skipping things like the airport. And you’ve got everything in between. ... so we’re looking forward to tightening up the way that cities are reporting”* (as cited in Corfee-Morlot, 2009). Table 10.1 considers a selected number of US and Canadian cities indicating the range of choices. Some urban areas limited their study to administrative boundaries (e.g. Seattle, Toronto, New York City), while others chose to include the entire metropolitan zone and/or the surrounding region (e.g. Vancouver, including the Lower Fraser Valley). The choice of inventory years also appears to vary widely across cities. On the scope of GHG covered, the majority of the inventories outlined in Table 10.1 take both direct and indirect emissions




into consideration. Direct emissions are those produced by operations occurring within local boundaries by local activities, such as transport, commercial and residential fuel combustion, industrial production or processes as well as the treatment of waste. Indirect emissions are those resulting from energy use or imports but where the emissions occur outside local boundaries (e.g. electricity or steam production). Central to the question of direct or indirect emissions accounting is how to deal with the electricity sector, as most often electricity is generated outside city boundaries but largely consumed within them, e.g. by residential and commercial customers (Figure 10.1).

Figure 10.1. **Boundaries for GHG emissions accounting:  
Direct and indirect emissions (US, by sector, 2007)**



Source: Data from US EPA (2008), Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2007.

StatLink  <http://dx.doi.org/10.1787/888932342620>

Beyond the challenge of addressing electricity emissions for urban energy use is that of how to address emissions embedded in products purchased and used in cities. These more extended analyses represent the “carbon footprint” of urban consumption activities, but go beyond the accounting of emissions within administrative geo-political boundaries, which has been adopted by the IPCC national GHG inventory guidelines (UNFCCC, 2002). Accounting for city-scale carbon footprints could be an important tool and source of information to support policies that target consumer behavioural change to limit emissions, but for consistency of reporting purposes, these emissions must be separable.

Another important boundary question is how emissions from the transport sector are accounted for. There is no harmonised approach or broad agreement on how best to allocate a share of national or regional transport activities to urban areas. A variety of different models and assumptions are possible, each with different outcomes.

Finally, there are other methodological differences associated with individual emission source categories. These include, for example, how to estimate the emission factor for electricity when emissions will vary by type of primary energy used to generate electricity? Beyond limiting the ability to compare emissions between cities, the level of

aggregation and choice of methods to estimate and report emissions may alter the usefulness of the inventory for policy development. These differences suggest the urgent need for a harmonised set of methods and reporting protocols.

### *Towards harmonised reporting, comparable data*

Groups such as ICLEI have made an excellent start on developing rigorous protocols and guidelines in co-operation with the World Resources Institute and the CCAR. In 2008, an emissions reporting protocol was developed in the United States/North America for use at the local-level in co-operation between WRI/WBCSD, the California Climate Action Registry (CCAR), the California Air Resources Board (CARB), ICLEI-US and The Climate Registry. The resulting *Local Governments Operations (LGO) Protocol* is a programme-neutral document containing general guidance on the specificities of calculating emissions from local government operations. Each of the participating entities have equally developed separate, programme-dependent supplements to be used in conjunction with the LGO Protocol.<sup>11</sup> Further, the above-mentioned WRI/WBCSD *Public Sector Protocol* recommends that local governments using their standard consult the *LGO Protocol*. While the protocols remains focused on operations-related emissions, a territorial-based approach is currently in discussion.

As with the challenge of developing firm-level reporting guidance – which was led by WRI/WBCSD – the tools that cities use to monitor progress will need to be linked up or nested in the IPCC national GHG inventory guidance to avoid double-counting with other local authorities or even across sectors as national governments establish nationwide policy frameworks. It will require support and resources from both national governments and the international community, including from experts engaged in the review and monitoring taking place under the Convention. While it would take time and resources to get such a system up and running, it would be a step in the right direction to empower cities in their efforts to achieve cost-effective GHG emission reductions.

As mentioned above, the most recent development in the quest towards a global local-scale inventory standard has been taken by the UN Environment Programme, UN-Habitat and The World Bank with the launch of the “Global Greenhouse Gas Standard” at the World Urban Forum in March of 2010. The launch of this programme has taken the first steps towards an internationally-accepted standard, based on both the existing WRI and ICLEI programmes. Taking a territorial approach to account for emissions from a city’s energy sources, industrial production, transportation, farming, forestry and waste, among other sectors, this standard includes all six IPCC-recognised greenhouse gases. Further, it attempts to deal with a certain portion of indirect GHG emissions, including the importation of heat and electricity. However, while a key step forward, much work remains to ensure its international adoption. For example, in France where the recently voted (June 2010) Grenelle II legislation requires that local authorities in urban areas greater than 50 000 people conduct mandatory GHG inventories, no reference has been made to the Global Greenhouse Gas Standard. Thus efforts to ensure its widespread adoption will be key in ensuring international diffusion and comparability of data across regions and localities. Much may still depend on the development of incentives, such as mitigation action financing, tied to an international standard to further and ensure its widespread adoption by both national and local authorities.

### **Assessing regional and local impacts through sub-national science-policy exchange**

A second priority for national-local collaboration is on science-policy capacity building and information. The aim of any such effort should be to establish a capacity to improve understanding about how climate change will affect cities. More detailed regional impact or risk assessments, in turn, could be expected to influence the politics of climate change from the global to the local scale (Harris, 2001; Shackley and Deanwood, 2002). Importantly, the assessment of climate impacts, vulnerability and risk at regional scale facilitates reflection about both adaptation and mitigation. That is, it supports dialogue and discussion about what types of risks are of greatest concern to affected populations and what adaptations might be most appropriate in local contexts, and it facilitates communication about what climate change is and why we need to do something about it to mitigate emissions (Corfee-Morlot et al., in OECD, 2008).

Some amount of climate change is unavoidable no matter how much we mitigate. To understand and properly assess adaptation options, cities require information from scientific impact assessments to consider how climate change may play out in local contexts to impact people, urban settlements and infrastructure. What will the temperatures of the 2020s or 2030s be? How will flood risk change in the coming five years or more? And how will these climate changes interface with urban environments?

Climate science over the last decade or so has focused on large, global models that integrated different types of physical models to predict how the atmosphere will interact with oceans to change climate over time (IPCC, 2007). There is little regional information coming out of these science assessments so working at local or sub-national levels requires another layer of effort and a special set of tools to scale down or relate global change predictions to local or regional conditions (Hallegatte et al., 2008). This can be done in a variety of different ways, but it takes time, expertise and money. It is research-oriented rather than policy-oriented work and organising funding and institutional capacity to make it happen in a timely manner can be difficult.

Establishing capacity to generate and use impact or risk assessment information at local or sub-national scale is a science policy exercise that presents a range of technical and procedural or institutional challenges.

On the technical issues, a recent OECD working paper proposes a framework to guide local scale impact assessment, including how global modelling results can be translated to a city scale as well as various issues in assessing climate impacts through use of a range of metrics (physical and monetary) and costs of responses under different conditions (Hallegatte et al., 2010). In particular, it lays a conceptual approach to assess the avoided-impact benefits and the co-benefits of local adaptation and global mitigation (under different adaptation scenarios). Moreover, two city case studies – Copenhagen (Hallegatte et al., 2010) and Mumbai (Ranger et al., 2010) – have been conducted to test and refine this framework.<sup>12</sup> Beyond providing original and detailed assessments of climate change impacts in these locations in the 2070s/80s timeframes, these studies have also proven to be vehicles for engagement across key stakeholders in these locations. In particular, they are serving to stimulate dialogue among affected stakeholders across difficult questions such as what priorities to establish for adaptation investments given the range of possible outcomes surrounding uncertain climate projections (Hallegatte et al., 2008). This highlights that

procedural issues are also important, i.e. it is insufficient to have good scientific or technical analysis. To make good decisions requires active reflection and dialogue between expert and stakeholder communities.

On the procedural or institutional side, there is a need for active interaction between customers for information – policy makers and other decision makers – and the information suppliers, notably scientists and other experts (Stern and Fineberg, 1996). There are examples featuring state-of-the-art deliberative processes to engage stakeholders from the start to shape the framings and findings of assessments. In Canada, for example, there is now some experience with regional (sub national) participatory integrated assessment to support watershed management and climate change adaptation decision making (Cohen *et al.*, 2004; Vescovi *et al.*, 2007; Yin and Cohen, 1994). An example of multi-lateral collaboration using deliberative methods exists in the recent assessment of the Arctic region. The Arctic Climate Impact Assessment was published in 2004 and, importantly, sponsored by the Arctic Council, which represents eight member-state governments (Canada, Denmark, Finland, Iceland, Norway, Russian Federation, Sweden and the United States) and six permanent participants including two indigenous peoples' non-governmental organisations (ACIA, 2004).<sup>13</sup> This study was unique as it was both deliberative, employing a number of different methods to engage affected stakeholders, as well as an international process to facilitate deliberation among state actors with an interest in the region. More recently, the City of Los Angeles convened academic and environmental organisations to develop an outreach and public participation strategy for the City's Climate Program, which is based on over 150 stakeholder interviews with representatives of environmental organisations, financial institutions, business interests, media and movie industries, and youth groups (City of Los Angeles in OECD, 2009).

Policy-driven scientific efforts to predict regional climate changes are also found at local and regional scales, for example, in the United Kingdom (McKenzie *et al.*, 2006; West and Gawith, 2005) and in the United States (Hayhoe *et al.*, 2004; Moser, 2005; Parson *et al.*, 2003). UKCIP works on a contract basis with different sub-national regions or local communities. Its main source of funding comes from the *Department for Environment, Food and Rural Affairs* as well as from other contributors including the Environmental Change Institute (Oxford University) and the Government's Knowledge Transfer Partnership scheme (UKCIP, 2005). Some of the results from the UKCIP suggest that cities provide a useful spatial scale for the stakeholder engagement in decision making. In the United States, initial climate impact assessment was conducted through an extensive nationwide effort (USNAIST, 2000). This national process featured a broad-based consultative process to engage local stakeholders across different regions of the United States in the preparation and vetting of these reports (Moser, 2005; Parson *et al.*, 2003). Although the national process in the United States after 2000, with the change in administration under President George W. Bush, the regional networks of people who worked on these studies have continued to support regional impact assessments in state and/or non-governmental venues (e.g. in the case of California, see Corfee-Morlot, 2009).

Funding for such work can and often does come at least partly from national governments, or relevant sub-national authorities, as it provides a public good that can facilitate adaptation across urban regions in an entire nation or region. Often the work can be carried out in local research centres or universities and joined up through "boundary organisations" to policy or other decision makers. Again the lead time is long, often requiring nearly a decade to build significant expertise and competence in this area, hence the need to start today.

Table 10.2 highlights a number of different institutional models that have grown up in different places around the world to provide science policy support for impact analysis and adaptation policy decision making. In looking across the organisations studied, there is broad variation in their geographic scope and proximity to “local” clients, levels and sources of funding and key roles or functions of the organisation. However, there are also a number of common features. All of them focus on the same audience, aiming to engage business stakeholders, local governmental decision makers and other local citizens. Further, the organisations have various ways of interacting with the scientific community, acting either as consumers or as suppliers (by funding) of new scientific information. But they all target the same goal, which is to facilitate stakeholder and policy decision makers’ access to and understanding of scientific information. Finally, all the institutions also target use of the local scientific community to contribute relevant information, working through local, regional and national universities, and other nationally or regionally supported research institutions.

### Urban policy networks and climate change

As mentioned before, local authorities cannot effectively address the massive challenges posed by climate change without the involvement of a wide range of non-public actors, including citizen’s group, local NGOs and the business sector. In this respect, they contribute to policy networks formation that underlines the concept of multi-level governance at the horizontal scale. As Bestill and Bulkeley (2004) found, transnational networks of cities have also been essential in promoting policy learning and change among local actors and epitomize the multi-level nature of climate change governance contributing to global environmental governance.

#### **The role of non-public actors in climate change**

Civil society actors can broaden public participation in democratic structures and provide a voice for those who otherwise might not have a means to express their views. Civil society actors also tend to work on issues where there is a perceived gap in the work of governments. Conversely, they can also enhance and complement the work of governments. Although there is no formal role for non-state actors in international climate policy negotiations, transnational NGOs have played a role in filling in some of the adaptation gaps, both playing an important role in both assisting climate-affected communities now, while also working at the international level to promote adaptation policies and generate sources of funding for adaptation activities. In particular, civil society actors have been deepening their work with cities, by providing information clearinghouses, networking opportunities, model policies, and acting generally as co-ordinators of climate activities world-wide. Therefore, civil society actors have already carved out a role for themselves and an expansion of this work can be envisioned for the future, particularly efforts centred on adaptation. An early sign of this reconfiguration occurred in 1992 during the United Nations Conference on Environment and Development in Rio de Janeiro when 1 400 civil society representatives participated in the formal conference proceedings and another 17 000 people attended a parallel NGO Forum (McGann and Johnstone, 2005).

The strong turnout of civil society organisations in the recent UNFCCC COP14 conference in Poznan illustrates the increasing participation of non-governmental organisations in climate change conferences, albeit much of it in side events. Indeed,

Table 10.2. Institutional models for climate change information development and exchange

Organisation	Geographic scope and key role	Clients/audience	Interaction with scientific community	Source of expertise	Lead organisation	Core funding
IRI – International Research Institute for Climate and Society	<b>Africa/Asia Pacific/Latin America</b> <ul style="list-style-type: none"> <li>● Understanding local decision process.</li> <li>● Sharing climate information to meet the needs of the decision makers.</li> <li>● Linking institutions and build capacities to improve climate risks management.</li> <li>● Develop climate information generating tools that meet local decision makers' needs.</li> </ul>	<ul style="list-style-type: none"> <li>● Developing countries' national and multi-national decision makers.</li> <li>● Developing countries' public/private sector.</li> <li>● Developing countries' citizen.</li> </ul>	Suppliers.	<ul style="list-style-type: none"> <li>● Columbia University depending on the region.</li> <li>● National/local Institutions.</li> <li>● NGOs.</li> <li>● Research centers.</li> </ul>	Host Institution: <ul style="list-style-type: none"> <li>● University of Columbia and private sectors.</li> <li>● NOAA Office of Global Problems.</li> <li>● Several organisations involved in project funding.</li> </ul>	Public/private USD 9 million/year.
Ouranos	<b>North America/Canada/Québec</b> <ul style="list-style-type: none"> <li>● Develop knowledge.</li> <li>● Co-ordinate multi-disciplinary initiatives.</li> <li>● Help decision makers to integrated adaptation to climate change into their decision processes.</li> </ul>	<ul style="list-style-type: none"> <li>● Public and private sector decision makers.</li> <li>● Local stakeholders.</li> <li>● Researchers.</li> </ul>	Suppliers.	<ul style="list-style-type: none"> <li>● Federal agencies.</li> <li>● Local and national universities.</li> <li>● National research centers.</li> <li>● Ouranos.</li> </ul>	Funders: Public and private sectors. <ul style="list-style-type: none"> <li>● Government of Quebec.</li> <li>● Valorisation-Recherche Quebec.</li> <li>● Hydro-Québec.</li> </ul>	Public/private USD 12 million/year.
PIER-EA – Public Interest Energy Research, Environmental Area	<b>California/United States</b> <ul style="list-style-type: none"> <li>● Conduct and fund research in the public interest.</li> <li>● Research the environmental effects of different energy technologies used in California.</li> <li>● Attract collaborators to share data and work conjointly to develop mitigation strategies.</li> <li>● Develop California's capability to make informed decisions on climate change mitigation.</li> </ul>	<ul style="list-style-type: none"> <li>● Californian decision makers.</li> <li>● Private sector.</li> <li>● Researchers.</li> </ul>	Suppliers.	<ul style="list-style-type: none"> <li>● Federal agencies.</li> <li>● California State Agencies.</li> <li>● Nonprofit groups and academic.</li> <li>● Private laboratories.</li> </ul>	Host institution: <ul style="list-style-type: none"> <li>● California Energy Commission Funders: Public.</li> <li>● Charge on retail electricity sales.</li> </ul>	Public USD 6 million/year.
UKCIP – United Kingdom Climate Impact Programme	<b>United Kingdom localities</b> <ul style="list-style-type: none"> <li>● Communicate information on climate change impacts to stakeholders.</li> <li>● Provide policy-making tools to decision makers.</li> <li>● Establish relationships between researchers and decision makers.</li> </ul>	<ul style="list-style-type: none"> <li>● Local authorities, business, central government, voluntary organisations.</li> <li>● Local stakeholders.</li> <li>● Researchers.</li> </ul>	Consumers.	<ul style="list-style-type: none"> <li>● Oxford University Centre for the Environment.</li> <li>● Tyndall Centre.</li> <li>● Research groups within universities across the UK.</li> <li>● Private laboratories.</li> </ul>	Host institution: <ul style="list-style-type: none"> <li>● Oxford University and local resources.</li> <li>● UK Department for Environment, Food and Rural Affairs.</li> <li>● UK's Knowledge Transfer Partnership scheme.</li> </ul>	Public/private USD 1.25 million/year.
Club ViTeCC – Villes, Territoires et Changement Climatique	<b>France</b> <ul style="list-style-type: none"> <li>● Provide information to stakeholders, institutions and private sector on their roles in climate change adaptation.</li> <li>● Rethink the infrastructure-related decision-making process.</li> <li>● Make scientific and technical information understandable to local decision makers and developing the proper decision tools.</li> </ul>	<ul style="list-style-type: none"> <li>● Local and regional authorities, business sector.</li> <li>● Private and public sector stakeholders.</li> </ul>	Consumers.	<ul style="list-style-type: none"> <li>● Private/public services.</li> <li>● National meteorological center.</li> <li>● National and international Universities.</li> <li>● Known local and international experts.</li> </ul>	Host institution: <ul style="list-style-type: none"> <li>● Caisse des Dépôts.</li> <li>● Météo France.</li> <li>● ONERC Funders: Private/public.</li> <li>● Contributions from clients.</li> </ul>	Public/private n.a.

Source: Websites: <http://portal.iri.columbia.edu/portal/server.pt>, [www.ouranos.ca/](http://www.ouranos.ca/), [www.climatechange.ca.gov/research/climate.html](http://www.climatechange.ca.gov/research/climate.html), [www.ukcip.org.uk/](http://www.ukcip.org.uk/); [www.caissedesdepots.fr/spip.php?article647](http://www.caissedesdepots.fr/spip.php?article647).

Article 7, paragraph 6, of the United Nations Framework Convention on Climate Change allows for the admission of non-governmental organisations to sessions of the Convention bodies as observers.

Although many for-profit entities have now addressed climate change through corporate social responsibility activities and/or sustainability efforts, businesses have only just begun to take an active role to establish partnerships with local governments in the climate planning process. Firms have long been widely involved in the implementation process but not so much in the early stages of policy making at the local and regional scales. The reason for this may be, in part, because although many cities around the world have established climate action plans that project the types of activities that will be needed in order to reduce GHG emissions and plan for adaptation, the implementation of these plans is still in the beginning stages.

### ***Role of non-governmental actors in the local policy process stage framework***

The involvement of the different local stakeholders is particularly important in the phases of agenda setting, policy formulation, implementation and dissemination of knowledge of the policy process stage framework.

### ***Agenda setting***

Support from the business sector and general public provides an important driver and motivation in the agenda setting for climate change action plans and policies at the sub-national level. This support may take the form of a positive climate of public opinion or a lack of overt opposition from key interest groups.

Citizens' participation in local agenda-setting has taken different forms. At the global scale, the 1992 United Nations Conference on Environment and Development gave rise to Agenda 21 (LA21), which was an initiative that not only put "sustainability" front and centre, but also provides a strong basis for understanding local democratic participation and a, "community's right (whether the community be defined as indigenous, rural, local, or other) to participate in decision making processes at the local level is promoted through themes of inclusion, local knowledge, and, tentatively, empowerment and capacity building" (Summerville, 2008). Local authorities are the lead players charged with implementing the sustainability objectives of LA21, and have used a variety of models engaging public participation. These have ranged from individual projects to larger involvement, such as the European Commission Water Framework Directive, which requires active stakeholder involvement.

In elaborating their agenda, sub-national authorities have developed different participative methodologies to guarantee that climate policies are developed with input from different types local stakeholders. The formation of policy networks and research groups has been critical to launching a climate agenda in many cities. The City of Paris for instance established thematic working groups that were given the mandate to prepare policy recommendations which were synthesised in a white book presented in January 2007 to the Council of Paris that led to an Action Plan adopted the same year.

Aside from integrating input into climate change action plans, citizens may spur action through climate litigation. This strategy has the potential to produce immediate action, while also laying the groundwork for future policy action on climate change. Using climate litigation as a tool can have one or more of the following results: clarify existing

laws, challenge corporate behaviour, assign responsibility, provide opportunities for seeking damage for climate-related injuries, stimulate and inform public debate and climate advocacy (Moser, 2007). For example in *Dieter Janecek v Friestaat Bayern (C-237/07)* European Court of Justice 14 May 2007), Dieter Janecek, a German Green Party member living near Munich's central ring road, complained to the local authorities that particulate levels had exceeded legal limits for more than the 35 days permitted under European standards. When his request to the local authorities to draw up a local action plan to address the problem was turned down, he took his case to the ECJ. In July 2008 the ECJ ruled that European citizens are entitled to demand air quality plans from local authorities in cases where EU limits may be exceeded. While no such case has been tried in relation to climate change, it is conceivable that in the future, citizens could try to hold cities responsible for implementing climate policies and programmes. Climate change litigation, originally inspired by class action environmental law suits, has inspired some governments and/or stakeholders to use courts to facilitate environmental improvements at local scale.<sup>14</sup>

### **Policy formulation**

As noted in the previous chapter, the formation of policy networks involving expert groups and commission, often organised on a sectoral-based, has been essential in the policy formulation stage.

The Climate Change Action Plan for the Northwest region of England for instance focused on the ability of regional organisations to “enable, encourage, and engage individuals, groups communities, partnerships and businesses in the move towards a low-carbon and well adapted region, recognising that regional organisations must exemplify good practice and catalyse action.” It was developed with input from an advisory group consisting of experts and regional partner organisations. The consultation exercise included over 25 workshops and presentations and elicited over 130 responses from groups and stakeholders. Each action was tied to a lead organisation responsible for defining detailed steps required to deliver the action. To ensure long-term political support and focus, Guelph, Ontario, relied on working groups led by current and former mayors and council members with *ex officio* roles to co-ordinate the planning of the town's community energy plan.

A wide number of climate change planning efforts are underway to involve the private sector in climate change action planning. For example, in 2008, the Mayor of New York City announced the formation of a Climate Change Adaptation Task Force for the City, which is advised by the New York City Panel on Climate Change. This is comprised of leading experts from regional academic institutions and the legal, engineering, and insurance industries. The task force is one of the world's first municipal efforts to address climate change adaptation that includes participation of businesses alongside government, as can be seen below.

In most cases, the adoption of climate change action plan would not have been possible without the mobilisation of representatives of the business and community organisations. In Los Angeles, the plan adopted in 2007 received support from the coalition Green LA consisting of over 60 environmental and community-based organisations focussing on climate change (Bulkeley and Schroeder, 2008). It has also been supported by a large segment of the business community which were engaged in promoting green business solutions.



### **Implementation**

Implementation cannot simply happen with the involvement of non-public actors. London's approach has been explicitly based on partnerships with the private sector, e.g. the London Climate Change Partnership, the London Hydrogen Partnership, and the London Energy Partnership. In the United States, more than 50 private firms are taking part in the ClimateWise Program, in which cities offer free assessment of a firm's energy, water, solid waste, transport, and recycling, and then offer guidance on becoming more efficient. The City of Chicago allocates grants for rooftop gardens and Seattle launched a programme in which businesses assess and cut their GHG (City of Chicago, 2005).

### **Dissemination of ideas and best practices**

Many of the best policy ideas are disseminated and replicated elsewhere and might even inform a change in the original policy itself. However, many other useful policies live and die within a city's borders, although they may present useful solutions for other local governments. Although this stage is not a central component of the policy process, and may arise unexpectedly, it can be an important outcome of the local policy process, as it can inform future agenda setting and actions beyond the city or local boundaries. Civil society organisations, including industry associations, may play a key role in collecting and sharing information on climate change policy design and implementation.

A wide number of professional associations have issued guidebooks and designed training seminars to prepare urban managers to design more climate-sensitive cities. For example, the American Planning Association now includes climate change materials alongside other policy initiatives highlighted on its website, with the adoption of a new Policy Guide on Planning and Climate Change (27 April 2008). Recently (January 2009), APA released a memo that provides an overview of the ways in which energy and climate can be integrated into planning, and appears to be a document to that will launch some future work of this nature. Currently, the APA's website does now serve as a repository for information about state and local climate change initiatives, and a climate change reader for members is also available. Likewise, the US Green Building Council, a non-profit membership organisation, has provided technical education to its membership organisations. It currently has a comprehensive family of LEED® green building certification systems, educational programming, and a network of 78 chapters, affiliates, and organising groups. A wide number of initiatives in professional engineering, waste management, accounting, and public administration associations follow such initiatives.

### **Trans-border regional co-operation and international networks of cities**

Transnational networks of local governments have formed to share strategies for combating climate change and building climate resilience in cities and regions. These networks are comprised of actors and/or institutions operating across multiple scales that involve, "regular interaction across national boundaries what at least one actor is a non-state agent or does not operate on behalf of national government or intergovernmental organisation" (Risse-Kappen, 1995). Many regions have co-operated on the transnational level to exchange policy approaches and metrics. In 1999, the Northern Virginia Regional Commission and the Verband Region Stuttgart initiated an international partnership and exchange. Numerous planning practices have diffused from Germany to Virginia through the partnership, including solar energy, storm water, transportation and open space planning policies (Medearis and Swett, 2003). In 2008, the partnership expanded its focus to include

over 80 other European and North American regional councils, co-ordinated under the umbrella of the European Network of Metropolitan Regions and Areas. The partnership is unique in its problem-focused and goal-oriented efforts to identify, review, and apply innovative climate mitigation and adaptation policies among regions in Europe and the United States.<sup>15</sup>

The sustainability movement of the 1990s prompted the development of many large transnational networks of cities working for sustainability. From 1982 to 2004, there was a spike in the number of sustainability-related city networks, rising from 8 to 49 (Keiner and Kim, 2006). Box 10.1 profiles the climate change activities of some of the most important city networks.<sup>16</sup> National and transnational networks have been crucial in sharing experience, strengthening capacity-building, developing standardised methodologies and integrating cities' opinions at national and international levels. International networks of cities play a crucial role in enhancing a learning process that has resulted in the dissemination of best-practice methodologies and tools that can assist local governments to develop GHG-reduction strategies. This co-operation has produced a rich exchange of information on urban design, zoning, street patterns and public transportation that has been mirrored at the transnational level.

Beyond dissemination and best practice sharing, the transnational networks of cities have been increasingly active in the global agenda for climate change. Sub-national governments have mobilised internationally to develop/influence numerous bilateral and multi-lateral arrangements, which culminated in December 2007 with the launching of the World Mayors and Local Governments Climate Protection Agreement at the United Nations Climate Change Conference in Bali and the Local Government Climate Roadmap. Organisations participating in the Climate Roadmap process include the following partners: ICLEI, UCLG (United Cities and Local Governments), Metropolis, WMCCC (World Mayors Council on Climate Change), and C40 (Climate Leadership group). The Local Government Climate Roadmap process shadows the meetings and timetable of the UN process, and local governments have been capitalising on the momentum leading to Copenhagen to deliver their messages about local climate action. Overall, the association of local governments' networks calls for greater recognition of the cities in the next UN Framework Convention on Climate Change (UNFCCC) framework. One desired outcome of this process is to politically influence climate negotiations during the United Nations negotiation process leading to a post-2012 climate agreement (ICLEI, 2010b).<sup>17</sup>

Though transnational networks seem to capitalise on the theory that higher membership rates correspond to increased bargaining power, the political benefits of these networks remain unclear. There appears to be much overlap in the types of activities that many networks are involved in, with many of the same municipal players (cities) involved in multiple initiatives. Although many key networks have come together through the Roadmap process, it is unclear to what extent these organisations are otherwise co-ordinated. Some observers have even argued that local governments have been compelled to join the CCP not only for the access to information that membership provides, but also because of the financial and political resources it affords (Betsill and Bulkely, 2004).

## Summary points

Understanding climate change in a local context can highlight opportunities to maximise local benefits of mitigation and adaptation action. This will also make the issue of climate change more tractable politically. As a key tool for decision making at local

### Box 10.1. Transnational networks of cities addressing climate change

- **ICLEI or Local Governments for Sustainability** is an international coalition of local governments committed to advancing climate protection and sustainable development. Originally named the International Council for Local Environmental Initiatives, ICLEI was founded in 1990 and now boasts membership of close to 1 200 cities worldwide, more than half of which are located in the United States. To help members achieve tangible reductions in greenhouse gas emissions and environmental impacts, ICLEI provides: tools, technical expertise, software training, policy assistance and national and international peer networks. ICLEI promotes a climate change planning process based on five milestones: calculating emissions, adopting targets, developing policies, implementing measures, and monitoring results. The organisation works through the Cities for Climate Protection (CCP) programme, which emerged as a network of local governments engaged in the international climate dialogue. When it was first founded in 1993, CCP was focused on developing energy and emissions inventory, and has evolved to include establishing and implementing GHG emission reduction targets for cities (ICLEI, 2010a; Lindseth, 2003).
- **Clinton Climate Initiative (CCI) and the Large Cities Climate Leadership Group (C40).** The Clinton Climate Initiative was launched in August 2006, and is currently working with 40 of the world's largest cities to reduce their GHG emissions (Clinton Foundation, 2009). CCI works closely with the C40 Large Cities Climate Leadership Group, serving as the exclusive implementing body of C40 works. Pledged to reduce carbon emissions and increase energy efficiency in large cities across the world, the C40 forum brings together four of the world's largest energy service companies, some of the world's largest banks, and at least 15 of the world's largest cities, to reduce energy consumption in existing buildings.\* This means that CCI works with partner cities to, "develop and implement large scale projects to improve energy efficiency and directly reduce greenhouse gas emissions in buildings, waste management, transportation, outdoor lighting, ports, and other areas" (Clinton Foundation, 2009). From Seoul to Johannesburg it helps the largest cities in the world retrofit their municipal buildings, public housing and commercial buildings.
- **UCLG (United Cities and Local Governments).** UCLG is a transnational network comprised of individual cities and national associations of local governments which in total represent over half of the world's total population. Subsequently, more than 1 000 cities in 95 countries are direct members of UCLG, along with 112 Local Government Associations (LGAs). UCLG aims to be "the united voice and world advocate of democratic local self-government, promoting its values, objectives and interests, through co-operation between local governments, and within the wider international community" (UCLG, 2009). To that end, this network has taken an active role in climate change, having recently adopted the World Mayors and Local Governments Climate Protection agreement.
- **The EUROCITIES network** was founded in 1986, and now includes the local governments of more than 130 large cities in over 30 European countries. The network is poised to provide a voice for cities in EU governance structures through engagement in dialogues with the European institutions on all aspects of EU legislation, policies and programmes that affect cities. It is designed, according to one former EUROCITIES official, so that cities should "overcome their overt competitiveness" and make efforts to speak with "one voice" in order to put "more pressure on national and European institutions" (quoted in Heinz, 2005). In June of 2008, the mayors and leaders of EUROCITIES released a "Declaration on Climate Change". This document reflects the organisation's commitment to fighting climate change, and provides a framework for cities to adopt climate action plans, which are part of the suggested three-prong strategy. Guidelines for these climate action plans range from planning to reduce sprawl and increase green spaces to investing in the development of renewable energy production. Another piece of the EUROCITIES approach, as outlined in the declaration, includes integrating the concepts of the prevailing global objectives, based on input from the scientific and international policy negotiation communities, into their climate work. The third piece of the EUROCITIES approach involves measuring and reporting on GHG reductions to assess the success of the climate action plans.

\* C40 was founded when a group of 18 international cities met in London in 2005 to discuss collaborating to tackle climate change. The outcome of this meeting including a more formalised pledge that recognised the role and responsibility cities have in addressing climate change.

Source: Clinton Foundation (2009), "Clinton Climate Initiative", [www.clintonfoundation.org/what-we-do/](http://www.clintonfoundation.org/what-we-do/), accessed 22 January; Heinz, W. (2005), "Europe and German Cities", German Institute of Urban Affairs, Vol. 44, No. 2; ICLEI (ICLEI Local Governments for Sustainability) (2010a), "ICLEI Members", ICLEI, [www.iclei.org/index.php?id=global-members](http://www.iclei.org/index.php?id=global-members), accessed 1 September, 2010; UCLG (2009), Local Government and Action on Climate Change in Poland, [www.cities-localgovernments.org/uclg](http://www.cities-localgovernments.org/uclg), accessed 11 February 2009.

scales is an exchange that allows for an interface between experts and local stakeholders, including local government, to build understanding about how climate change may affect local development choices and how those choices will affect the future climate. This is referred to here as an analytic-deliberative exchange.

This chapter calls for national governments to work with local authorities to develop tools and opportunities to use an analytic-deliberative process for decision making on climate change. A first step towards enhanced multi-level governance could include the development of better urban GHG inventory tools and capacity for local science-policy assessments. On the first suggestion, better tools for comparable emission reporting and performance assessment could expand opportunities to assess progress and learn from urban scale action, to share experience and lessons from city mitigation efforts. Making city GHG inventories comparable will require higher level agreement (i.e. ideally at international level) on a common format for reporting as well as on key methodological issues. Consensus will be needed on how to treat key issues such as those outlined above in a consistent manner. Even if cities are given the flexibility to construct inventories with different boundaries (e.g. in terms of reporting direct and indirect GHG emissions), at a minimum it will be necessary to report these in a modular manner such that comparable estimates could be constructed. Due to the high costs associated with increasing the quality of data necessary to produce strong, comparable emission inventories, it will most likely be necessary to find a middle ground, with enough detail to remain useful, but not so onerous as to make its production burdensome or financially unfeasible for local budgets. Ultimately a stronger urban inventories tool will allow cities better access to international carbon markets as a possible source of financing for local action.

A second multi-level governance priority is for national government support to local decision making through development of analytic-deliberative capacity at local scale to generate and use scale-relevant scientific information on impacts of climate change, and other policy-relevant research (i.e. on the technical options to adapt or mitigate and their costs). This will necessarily be part of an iterative process engaging researchers and stakeholders (including city authorities) in an ongoing exchange. Beyond engaging relevant participants, a first task is to establish a discursive process that allows ongoing exchange so that core research questions are framed with input from decision makers and decisions are made in local contexts based on the best available information from the scientific and research community. Up-to-date information on climate change impacts provides a foundation for communication about climate change with stakeholders and a means to generate understanding and concern about the issue as well as support for policy reform and behavioural change to respond. It is a means to bring the abstract and distant problem of climate change into a local context and help people – investors and consumers alike – to relate it to their daily lives so that they can think about how to address it. It provides at once a motivation for mitigation and a powerful source of information for decisions on adaptation.

A third priority is for national governments is to encourage better development of urban policy networks, and in particular the engagement of regional and local non-governmental stakeholders at various stages of the policy process to deepen knowledge, formulate and implement strategies for mitigation and adaptation that resonate from the bottom up. This will help local authorities to shape social norms through reflection about different possible urban forms and their interface with climate change. In particular, it provides a vehicle to more carefully adjust and align local frameworks to move in the right direction so that they identify where perverse incentives exist and suggest how they might

be reformed. The aim is to allow for more systemic changes in urban planning and development and incentivise technology as well as behavioural change to build climate resilient, low-carbon economic growth. Strengthening inter-regional/urban and transnational policy networks might also be encouraged as another means to assist with identification and dissemination of good practice.

## Notes

1. This perspective reinforces the importance of dialogic processes – of dialogue and of the notion of trust – by offering opportunities for meaningful exchange among affected stakeholders, including experts, and in so doing to build human and social capital that contributes to problem solving over time (Bohman, 1996; Dietz, 2003; Healy, 1997 and Rydin, 2003).
2. This is based on Corfee-Morlot (2009) where this is referred to as a “Habermasian model of circuits of power” (Habermas, 1998, p. 354).
3. For example, following an initiative of city of Seattle’s Mayor Greg Nickels, to date more than 900 US cities have announced plans to achieve Kyoto-like emission reductions. These ambitious goals imply bringing city emissions to below 1990 levels by 2012 ([www.seattle.gov/Mayor/Climate/](http://www.seattle.gov/Mayor/Climate/)).
4. Industry emissions may vary widely from location to location or even over time within a single location, e.g. as industries increasingly move outside of city boundaries this may dramatically change urban emission levels. Decisions of city governments may also have little influence over industry emissions relative to large influence of local policy over residential and transport emissions. Thus special attention to this source of emissions may be warranted in the assessment and comparison of urban emission performance across cities.
5. For access to latest inventory reports and data see [www.unfccc.int](http://www.unfccc.int) (last accessed 8 December 2008).
6. It is important to note that a number of different registries and protocols exist in the United States to serve different purposes, some of which are mentioned here. Because there is no single top-down mandatory federal system requiring entity or state-level reporting, a patchwork of state systems, some of which are mandatory, combine with voluntary reporting. For a review see Rich (2008).
7. Operations-related emissions are those that stem from the functioning of the municipality as an organisational entity. Territory-wide emissions refer to all the emissions related to the economic and social activities found on the geographic territory over which the local government exerts control.
8. ICLEI is the International Council for Local Environmental Initiatives, which now also operates a Cities for Climate Protection Campaign. See [www.iclei.org/index.php?id=800](http://www.iclei.org/index.php?id=800) (last accessed 12 November 2007).
9. ICLEI released in 2008 its International GHG Emissions Analysis Protocol, reviewed by UNEP, WRI, the IEA, CCAR and a number of other organisations. To facilitate the production of emission inventories, ICLEI has developed two software emission calculators, the Clean Air and Climate Protection software and the recent online Harmonized Emissions Analysis Tool (HEAT).
10. See [www.icleiusa.org/cacp](http://www.icleiusa.org/cacp) (last accessed 12 December 2008).
11. See [www.theclimateregistry.org/resources/protocols/local-government-operations-protocol/](http://www.theclimateregistry.org/resources/protocols/local-government-operations-protocol/).
12. For more information on OECD work on cities and climate change, including links to this initiative from the Governance Directorate, please visit the website [www.oecd.org/env/cc/cities](http://www.oecd.org/env/cc/cities).
13. See also [www.amap.no/acia](http://www.amap.no/acia). It is interesting to note that the report stopped short of having powerful policy recommendations in part because of reluctant state actors.
14. For example, the City of New York is part of a climate challenge against the federal government, specifically targeting the National Highway Traffic Safety Administration (NHTSA). This challenge criticises the NHTSA’s treatment and reclassification of CAFÉ (Corporate Auto Fuel Efficiency Standards), which incentivise the production of larger vehicles with lower fuel efficiency. Likewise, New York City has joined Connecticut and other states in a public nuisance challenge against five of the country’s highest carbon-emitting power plants. This action is part of an effort to require these plants to gradually reduce their emissions, even in the absence of federally mandated standards.
15. See the Network of European Metropolitan Regions and Areas (METREX) website for more information ([www.eurometrex.org](http://www.eurometrex.org)).

16. Other organisations include the Climate Group ([www.theclimategroup.org](http://www.theclimategroup.org)), World Mayors Council on Climate Change ([www.iclei.org/index.php?id=7225](http://www.iclei.org/index.php?id=7225)), the World Mayors and Local Governments Climate Protection Agreement ([www.globalclimateagreement.org/index.php?id=7462](http://www.globalclimateagreement.org/index.php?id=7462)), Covenant of Mayors ([www.eumayors.eu/covenant\\_cities/towns\\_cities\\_en.htm](http://www.eumayors.eu/covenant_cities/towns_cities_en.htm)), Mayors Climate Protection Center ([www.usmayors.org/climateprotection/list.asp](http://www.usmayors.org/climateprotection/list.asp)), Sustainable Cities: Partners in Long Term Urban Sustainability (PLUS) Network ([www.sustainablecities.net/](http://www.sustainablecities.net/)), Cities Development Initiative for Asia ([www.cdia.asia/about](http://www.cdia.asia/about)), Asian Cities Climate Change Resilience Network ([www.rockfound.org/initiatives/climate/acccrn.shtml#4](http://www.rockfound.org/initiatives/climate/acccrn.shtml#4)), Oslo-Denver-Initiative ([www.ceunet.de/oslo\\_denver\\_initiative.html](http://www.ceunet.de/oslo_denver_initiative.html)), and Global Legislators Organization for a Better Environment ([www.globeinternational.org](http://www.globeinternational.org)).
17. During the recent United Nations Climate Change Conference in Poznan, Poland (COP 14), local government representatives from ICLEI presented the Local Government Climate Roadmap to United Nations officials, which included a draft text of a COP Decision on Cities, Local Authorities and Climate Change was presented by local governments to the signatories to the Kyoto Protocol.

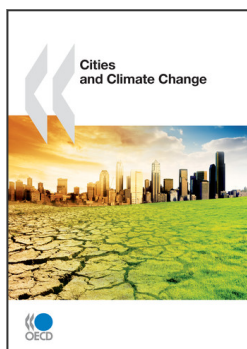
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