

## An international review of local governance for climate change

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## **An international review of local governance for climate change: Implications for Hong Kong**

### **Abstract**

Cities have increasingly become the focal point for climate change initiatives. However, how cities respond to climate change challenges and through what mechanisms have remained largely unexplored. This paper develops a framework for local governance to examine and explain climate change initiatives in cities.

Based on the analysis of 20 climate change initiatives in major cities and a detailed case study of Hong Kong, this paper has two main findings. First, local governments at the city level have an important role to play in climate change policies by embracing some key strategies (such as deliberation and partnership) and values (such as equity and legitimacy) of good governance. Second, by comparing and contrasting the experience in other cities, our case study of Hong Kong provides insights about the barriers that may limit a city's ability to adapt to new forms of governance that would enable it to better respond to climate change. The paper concludes by exploring the potential role of local governance as a model to strengthen climate change initiatives at the city level.

Key words: local governance, city climate initiatives, Hong Kong

## **INTRODUCTION**

For the past two decades, particularly following the signing of the Kyoto Protocol in 1997, governments in developed and developing economies have been increasingly active in formulating policy initiatives on climate change. A recent trend in these policy initiatives is the downward shifting of policy attention from the international and national levels to cities. Cities in developed countries and developing economies have introduced many initiatives to reduce carbon emissions (such as the use of more renewable energy) and adaptation strategies (such as heatwave warning programmes) (see for example Bulkeley *et al.*, 2009; BMA, 2007; City of Cape Town, 2006).

Cities, which includes all urban areas, from “mega-cities” to smaller-scale urban settlements (IEA, 2008), have increasingly become the focal point for climate change policies for a number of reasons. They are the main contributors to and victims of global climate change. Cities currently use over two-thirds of the world’s energy and account for more than 70 per cent of global CO<sub>2</sub> emissions (IEA, 2008). Due to their high population densities, their often coastal location and their

dependence on imports, cities are generally vulnerable to climate change impacts such as heatwaves and flooding (Bulkeley *et al.*, 2009).

Cities can also contribute to climate action through implementing national policies as well as initiating bottom-up activities (Kern and Alber, 2008). Cities appear to be the place where many innovative solutions for global climate change have emerged.

Worldwide, cities have collaborated, formed partnerships or have used innovative financing mechanisms to achieve low-carbon development goals (Bulkeley *et al.*, 2009). Some initiatives such as the London Climate Change Partnership and New York's NYC°Cool Roofs programme (City of New York, 2010; LCCP, 2010) are good examples of how cities deploy new ways to engage with a broader range of stakeholders rather than relying on conventional command-and-control measures.

Since the early 1990s, local climate change policies have grown in importance in academic research and as a public policy (Kern and Alber, 2008). The nature and extent of city climate initiatives have been extensively documented in the literature (See for example Bulkeley *et al.*, 2009; Jollands, 2008). However, how cities respond to climate change challenges and through what mechanisms have remained largely unexplored. The literature on local climate governance has shed important

light on complementary dimensions, such as the modes (Bulkeley and Kern, 2006) and motivations (Sippel and Jenssen, 2009) of these bottom-up initiatives. While these aspects are useful, they refer to relative structural elements of local climate governance. What is lacking is a framework that can explain how and why these governing mechanisms work, or do not work. In addition, most of these studies have focused on the experiences of western, industrialised economies. Work in the Asian context is emerging but is still relatively limited (see for example Ng, 2011).

The objective of this paper is to tackle these knowledge gaps from the perspective of local governance for climate change, with particular reference to the city level. We develop a framework for local governance to examine and explain the governing processes of city climate initiatives. Based on the analysis of 20 climate change initiatives in major cities and a detailed case study of Hong Kong, this paper aims to provide a better understanding of the opportunities and constraints associated with local initiatives on climate change.

The paper is organised into five sections. Following the introduction is a section that outlines the analytical framework and methodology. The applicability of the framework will be illustrated by a review of 20 climate change initiatives in major

cities. This is followed by a detailed case study of Hong Kong. This paper concludes by identifying some possible policy pathways for the Hong Kong government.

## **LITERATURE REVIEW AND METHODOLOGY**

### **Climate change: local governance as an analytical framework**

This paper adopts a local climate governance perspective to analyse climate change initiatives in cities. This perspective has its roots in the governance literature. Governance is a purposive guiding process in which a social system coordinates, steers and manages itself (Paquet, 1999). Governance is a complex concept because of its multi-actor and multi-level perspectives (Jordan, 2008; Weiss, 2000). Central to the governance perspective is the limited ability of government to govern (Pierre and Peter, 2000). It suggests that governments need to move outwards, and involve the market, society and other state actors at various governing levels that may extend from global to national, regional and to local (Kooiman, 1993). Governance is also a multi-faceted concept that embraces various modes (such as participatory and market modes) (Peters, 1996), values (such as equity and transparency) (OECD, 2012), structures (such as collective decision-making systems) (Painter, 2002), processes (such as judicial processes) (Painter, 2002) and governing capacities (such as institutional capacity and civic capacity) (Li, 2006; Stone, 2001). It is a complex

concept also because many of these terms such as government and governance, and partnership and participation are closely related and are sometimes used interchangeably (Ahmed and Ali, 2006; Dellas, 2011; Weiss, 2000). The concept of governance has been a major research focus in recent decades but many knowledge gaps remain because of its dynamic nature (Runhaar *et al.*, 2006; Weiss, 2000).

In the context of climate policies, local climate governance is an approach that emphasises the need for local governments to move away from the traditional implementation of national or international policies for climate change. This may involve business, civil society and other levels of governments (Sippel and Jensen, 2009; Keirstead and Schulz, 2010). It is important to note that local governance involves a complex way of governing that is distinguished by the emergence of a variety of modes and strategies of governing (Bulkeley and Kern, 2006).

Bulkeley and Kern (2006) have identified four modes of local governance for climate change. These are self-governing, governing by authority, governing by provision and governing through enabling. These local governance approaches would strengthen a city's governing capacity to effectively address climate change problems through enhancing its inducement, consensus-building, institutional and enabling capacities

(Bulkeley and Kern, 2006). In contrast to the conventional top-down approach to governing, these new governing modes tend to adopt more innovative strategies such as participation, deliberation, partnership and policy integration. Public participation may include information provision, involvement or other processes that encourage greater breadth in decision-making (Petts, 2001). Deliberation, on the other hand, is a participatory decision-making process that involves careful and serious debates around competing views, and the weighing up of reasons in favour of or against some proposition (Abelson *et al.*, 2003). Deliberation is expected to enhance policy legitimacy, restore trust, foster learning and subsequently improve policy quality (Bloomfield *et al.*, 2001). Partnership is a process in which public, private and societal stakeholders come together, offer individual inputs and resolve societal issues collectively (Koontz *et al.*, 2004). Policy integration is a process that provides an aggregate analysis from different perspectives so that a policy is comprehensive in terms of time, space, actors and issues (Underdal, 1980).

Local governance as a more bottom-up approach has certain strengths. When compared with national governments, sub-national regions have the strength of being closer to concrete problems, possessing better local knowledge and trust which are the basis for effectively managing sustainability problems (Schienstock,

2005). The literature also suggests that local governance offers benefits in terms of policy diversity, flexibility and accountability (Ansell and Gash, 2008).

Local climate governance however also has its drawbacks. Benefits such as uniformity that may be offered at the national level may be compromised (Keirstead and Schulz, 2010). Furthermore, localities often do not possess all the required resources and capabilities such as human resources and market demand for the diffusion of sustainable technology (Schienstock, 2005). Institutional and policy barriers such as a lack of a national mandate and regulatory framework, problems of policy integration, and the limits of local governments in controlling utilities also present some major challenges for effective local climate governance (Clark, 2006; Hooghe and Marks, 2003; Sippel and Jenssen, 2009).

The literature on local governance for climate change has been instructive in providing different but complementary frameworks for explaining modes, potential benefits and major barriers of local governance. These perspectives however are rather static. While they can enrich our understanding of the structure of dimensions and driving factors of local climate governance, they do not explain fully the dynamics and the mechanisms of how this governing model works.

## **Towards a refined framework**

In order to conceptualise the mechanisms of local climate governance, we develop a framework based on Painter's (2002) conceptualisation of the "building blocks of good governance". Painter argues that good governance requires three kinds of capacities: state capacity, policy capacity and administrative capacity, and that these require essential "building blocks". Painter's "building blocks" comprise three components. These are *values* – what standards of performance we apply to evaluate governing capacity, *indicators* – what we look for to identify an aspect of governance capacity, and *support systems* – what structures and processes underlie the creation and sustenance of each kind of capacity. Collective decision-making processes, planning and coordination, implementation structures and territorial organisation and delegation are some of the key support systems (Painter, 2002).

There are however some limitations to Painter's framework. Firstly, it is relatively static. While it instructively provides a more systemic perspective on the values and support systems for good governance, it has limits in capturing the dynamics of governing processes. How important governing strategies such as partnerships and deliberation actually work and through what mechanisms, for example, have not

been adequately explained in his framework. Second, since Painter's framework is applicable generically to all policy areas, it may have limitations in explaining the mechanisms for climate governance which involve issues that are characterised by urgency, complexity and enormity (Underdal, 2010).

This paper therefore aims to develop a refined framework that is more robust in explaining the dynamics and mechanisms of good governance in the context of local climate initiatives. Our refined framework differs from Painter's in certain ways. Firstly, our framework specifies some key governing strategies commonly adopted in climate change initiatives. Secondly, it integrates some important insights from Painter's work, the literature on local climate change initiatives as well as the wider literature on governance (*Table 1*). As such, it consists of four interrelated building blocks: governing strategies, values of good governance, indicators and governing outcomes. It suggests that local governments are key players in local climate governance. Local governments may engage in relatively new forms of governance through the deployment of four governing strategies: participation, deliberation, partnership and policy integration. This framework suggests that such strategies would be underpinned by values of good governance which are perceived as the normative performance of effective governance (Painter, 2002). Equity,

transparency, legitimacy, coherence, accountability, decisiveness, consent and efficiency are some of the key values of governance identified in the literature (Painter, 2002). Our framework suggests that such mechanisms of good local governance would strengthen a city's performance in terms of inducement, consensus-building, institutional and enabling capacities (Bulkeley and Kern, 2006). These capacities would make effective climate change initiatives more likely.

## **Methodology**

This is a qualitative study based on a review of published works from academic sources, government documents, reports, and newspapers. When compared with other research methods such as quantitative surveys, the case-study approach adopted for this study has the strength of generating rich qualitative data. Such data are useful for explaining the complex mechanisms of local climate governance (Miles and Huberman, 1994).

We develop a refined framework that serves two purposes. First, it aims to conceptualise these local initiatives on climate change. We use a review of a selection of 20 climate change initiatives in major cities to illustrate and test the applicability of our framework. These initiatives are selected to cover cities from both Annex 1 (developed) and Non-Annex 1 (developing) countries under the Kyoto

Protocol. They also represent a variety of policy initiatives on reducing carbon emissions and adapting to climate change impacts.

Secondly, our framework is used to guide our detailed case study of Hong Kong. By comparing and contrasting the experience of Hong Kong and other cities, our Hong Kong case study critically examines the factors that may constrain this city from moving towards new forms of governance which would be more conducive to the development of effective climate change policies.

Hong Kong is atypical in that it differs from many other major cities in some important ways. Hong Kong is a major international financial centre and has one of the highest GDP per capita figures globally (Oxfam, 2010). The lack of indigenous energy resources and the close linkages it enjoys with neighbouring Guangdong Province in Mainland China in terms of energy trade also sets Hong Kong apart from many cities elsewhere (CLP, 2013). It is however important to note that Hong Kong merits scholarly attention in the broader context of China – a country that has a central role to play in global climate change impacts and responses. China is the largest GHG emitter but it is also where many potential climate solutions such as low-carbon cities and green technologies may be applied (Liu *et al.*, 2011). Hong

Kong and neighbouring Guangdong Province have been given a role by the central government to pioneer the development of a low-carbon economy (ISD, 2012c). In the light of Hong Kong's important role in the Chinese context, its experience can be instructive to enhance understanding of the role of cities in responding to climate change challenge in China. In the section that follows, we will use our framework to guide the analysis on local climate initiatives in major cities.

## **EMPIRICAL EVIDENCE OF LOCAL GOVERNANCE FOR CLIMATE CHANGE: A REVIEW OF 20 CITY INITIATIVES**

This section of our paper reviews a selection of 20 local climate change initiatives introduced by city governments in developed and developing economies. The review is summarised in *Table 2*. This review leads us to make two observations.

Firstly, we found that new forms of local governance have emerged in which participation, deliberation, partnership and policy integration are commonly deployed. Such emerging forms of local governance tend to place more emphasis on horizontal relationships between governments, business and civil society.

Secondly, these initiatives are underpinned by the key values and elements of good governance such as equity, legitimacy, coherence and transparency. These trends are reflected in:

- City governments appear to be able to achieve policy integration under decisive leadership. Mayors in New York, Los Angeles and Tokyo (CI No. 1, 2 and 15) for example have shown leadership in formulating visions, plans and strategies to achieve their policy objectives relating to climate change. New York's PlaNYC, Los Angeles' Green LA and Cape Town's

Energy and Climate Change Strategy (CI No. 1, 2 and 17) are good examples that illustrate how a city government can deploy an overarching policy framework for facilitating policy integration across interdependent issues (Underdal, 1980). Some city governments appear to be particularly competent in deploying a portfolio of policy instruments rather than relying on the traditional command-and-control measures to achieve policy objectives. Their competence in introducing more radical policy changes such as congestion fees and legislation appears to be a key to rectify market failures and facilitate policy implementation (CI No. 13, 15, 16);

▪Some cities appear to give much attention to partnerships as a means of achieving policy objectives more effectively and efficiently. The NYC°Cool Roofs programme and London Climate Change Partnership (CI No. 8 and 9) are good examples illustrating how city governments can effectively mobilise resources from local communities and business through partnerships. The Energy Saving Project in Guangzhou (CI No. 19) provides an example of another form of government-business partnership which is characterised by the presence of strong government intervention through public spending;

▪City governments enhance equity and legitimacy among stakeholders through participatory decision-making processes. The New York City Panel on Climate Change, London Climate Change Partnership and Bangkok Metropolitan Administration's Action Plan on Global Warming Mitigation (CI No.7, 8 and 20) are good examples of this. Equity and trust seem to be enhanced in these initiatives in which the local community, experts, governments and other stakeholders are regarded as equal partners in decision-making processes. These deliberative processes are also critical to facilitate evidence-based decision-making that pays attention not only to scientific inputs but also public inputs and concerns. Such processes also promote reasoned debate.

▪Information availability and transparency in emissions data and potential risks and impacts of climate change are a core element in some of these climate initiatives. Newcastle in Australia (CI No. 11) for example has established ClimateCam – an on-line system to provide hourly electricity consumption and GHG emissions data. The greenhouse gas inventory of Johannesburg (CI No. 18) illustrates how data transparency is a good policy tool to mobilise public participation. The Heatwave Preparedness Plan in

Philadelphia (CI No. 12) is an example illustrating how emergency preparedness plans can save lives from climate change impacts through effective information dissemination and communication.

Another important dimension of our framework is the outcome dimension. While measuring the outcomes in terms of governing capacities of these 20 city initiatives is certainly important, a detailed evaluation would warrant another study and is not provided in this paper. However, some observations can be made. Firstly, while the achieved reduction of emissions of some of these initiatives is not accessible to this study, it is evident that a number of these initiatives have contributed to meeting emissions reduction goals (Table 2). The PlaNYC initiatives in New York (CI No. 1), for instance, contributed to the reduction of 16 per cent greenhouse gas emissions between 2005 and 2010 (City of New York, 2013). Secondly, our study has found that there is evidence suggesting that some governing capacities as suggested by our framework are being built up in some of these initiatives. For example, the New York City Panel on Climate Change (CI No. 7) is a good example of enhanced institutional capacity. The NYC°Cool Roofs programme and London Climate Change Partnership (CI No. 8 and 9) are good examples of enhancing enabling

capacity through partnerships. However, a comprehensive account of how these capacities are or can be developed falls outside the scope of this paper. .

## **THE CHALLENGES OF LOCAL GOVERNANCE FOR CLIMATE CHANGE: A CASE STUDY OF HONG KONG**

Hong Kong is located on the southeast coast of China, adjoining Guangdong Province. It has a population of 7 million (2011) and a geographical area of 1,104 square kilometers (ISD, 2012b). At present, the electricity system is fossil-fuel based. About 54 per cent of electricity generated in Hong Kong is from coal, about 23 per cent from natural gas, and about 23 per cent from nuclear power imported from Guangdong Province in China (2009) (Environment Bureau, 2010). Hong Kong emitted about 41.5 million tonnes of GHG emissions in 2010. GHG emissions in Hong Kong increased by 18 per cent from 35.3 millions tonnes in 1990 to 41.5 million tonnes in 2010 (EPD, 2013).

### ***(a) Some observations of local climate governance in Hong Kong***

Climate change has been elevated on to the policy agenda in Hong Kong in recent years amidst growing public concern about on this global issue and its potential impacts (Tsang, 2011). A growing number of studies have found that Hong Kong is

vulnerable to climate impacts such as drought, flooding, heat waves as well as global and regional fluctuations in food supplies (Ginn *et al.*, 2010), and the costs would be too considerable for policy-makers to ignore (Fung, 2004). For instance, a government study has estimated that electricity consumption by Hong Kong households would increase by about 9 per cent if there were to be a 1°C increase in average temperatures, and the increase in electricity consumption would incur economic costs amounting to HK\$1.7 billion (Fung, 2004).

Although Hong Kong has yet to formulate a climate change policy, a number of energy initiatives introduced over the years have the potential to reduce GHG emissions. A comprehensive review of these initiatives which cover a broad range of areas from energy efficiency to the use of more natural gas and education is available elsewhere (see for example EPD, 2008).

However, to some local environmental NGOs and academics, Hong Kong has failed to develop an effective approach to addressing climate change problems (Civic Exchange, 2010; Francesch-Huidobro, 2012; Ng, 2010b). It has not formulated an explicit climate change policy. It was only in September 2010 that Hong Kong released its consultation paper on the city's first climate change strategy

(Environment Bureau, 2010). The government proposes to reduce carbon intensity by 50-60 per cent below the 2005 level by 2020 – a target that is in line with but slightly more ambitious than the Chinese central government’s target, which is set at 45 per cent (Environment Bureau, 2010). However, the government’s proposal to increase the use of nuclear power from the present 23 per cent to 50 per cent by 2020 as a key element in the strategy to meet the target has drawn considerable criticism from local green groups (Environment Bureau, 2010; Greenpeace , 2010; Ng, 2010a). Nuclear opposition appeared to intensify in Hong Kong following the Fukushima nuclear accident in March 2011 (Mah *et al.*, 2012b). Local green groups have lobbied for more aggressive policies on the demand side, i.e. energy saving and energy efficiency, as an alternative (Greenpeace, 2010).

These observations pose a number of important questions: In what ways are there constraints that limit Hong Kong’s capacity to introduce more effective climate change initiatives? What are the barriers? To partly answer these questions, this paper adopts our refined framework for analysis. We found that climate governance in Hong Kong has not really evolved and that its approach constrains the deployment of the major governing strategies that include policy integration, partnership, participation, and deliberation.

In terms of policy integration, a good example to illustrate poor coordination is the introduction of government electricity bill subsidies in 2008. The government first offered a HK\$3,600 per annum electricity subsidy in the third quarter in 2008 for each domestic electricity user account (HK Govt, 2008). Although the subsidy may have been well intended as an attempt to ease inflation-induced burdens on household budgets, local environmental groups argued that the subsidy is counter-productive to initiatives promoting energy saving because the subsidies in effect can be a financial incentive to do the reverse and actually promote electricity consumption. More recently, the Council for Sustainable Development has been attempting to promote energy saving in the household sector but the electricity subsidy remains in place in the 2012-13 financial budget (KI, 2012).

In terms of partnerships and participation, it is important to note three trends in Hong Kong, namely the active involvement of environmental NGOs (Ng, 2011), growing partnerships between business and other sectors (Chan, 2008; Close and Chau, 2010), and the growing intensity of central-local relationships (Ma and Tao, 2010), have contributed to the climate stakeholder landscape that has become increasingly dynamic. It is in this stakeholder context that there is an emerging trend

of bottom-up initiatives on climate change by environmental groups and the private sector in Hong Kong. Major NGOs such as Oxfam (Hong Kong), Greenpeace China and WWF (HK) have been active in shaping the climate change policy agenda. The Combat Climate Change Coalition formed by 15 local environmental and community groups in 2009 is one example (Oxfam, 2010). The private sector has also played an important role in addressing climate change impacts. Businesses have been engaged through not only donations and adopting green practices but also policy advocacy. The Climate Change Business Forum is one example of such an initiative (Close and Chau, 2010).

However, partnerships for climate initiatives in Hong Kong are limited. Although the government has made some progress in empowering civil society through providing funding opportunities such as the Environment and Conservation Fund, these funding opportunities are rather limited in scale and impact. The Environment and Conservation Fund, for example, has provided funding support for a wide range of activities including environmental education, community demonstration projects and research projects (EB & EPD, 2013). But this support has tended to be project-based, and is not conducive to developing long-term or networks of partnerships in

communities and across stakeholder groups. These are however regarded as important for social mobilisation in the governance literature (Weiss, 2000).

Similarly, the participatory element is limited. A recent survey conducted by Oxfam (Hong Kong) found that about 80 per cent of Hong Kong people were not aware the government was conducting a consultancy study on climate change policies in which stakeholder engagement was intended to be a key component of the consultation process (Oxfam, 2010). The Oxfam survey indicates that the consultancy study was a missed opportunity to engage the public and develop stakeholder support for the city's climate change strategy.

In terms of deliberation, the establishment of the Council for Sustainable Development is one of the major government-led initiatives to facilitate public engagement relating to sustainability policy-making including energy efficiency initiatives (KI, 2012). In recent years, the council has adopted a proactive approach to reaching out stakeholders to collect and consolidate public views and local knowledge with the aim of improving policy-making (KI, 2012). **The recent consultation relating to energy saving in buildings conducted in 2011 is a good**

example of the Council's proactive approach (KI, 2012). Alongside with the Council for Sustainable Development, a number of other major environment/energy related advisory bodies, such as the Advisory Council on the Environment and the Energy Advisory Committee, have served as important institutions for channeling public inputs in policy-making systems through broad representations from various stakeholder groups (Environment Bureau, 2014; EPD, 2014). However, concerns have been raised by some NGOs that some of these advisory bodies are dominated by strong vested interests (Ming Pao, 2011). There is also a lack of mechanisms for ensuring public inputs can be used effectively to improve policy decisions. The Council for Sustainable Development, for example, has been found to have limited impacts in ensuring public inputs can influence final policy decisions (CCSG, 2007).

***(b) Barriers to effective local climate governance in Hong Kong***

These observations lead us to pose one important question: what are the barriers that limit the city's ability to adapt to new forms of governance that would better respond to climate change challenges? Our analysis suggests that there are four barriers. These are the tension in central and local relations, the incompatibility of a traditional policy style and new forms of governance, a lack of institutional capacity and a lack of enabling capacity.

### *The tensions between central and local relations*

The development of climate change initiatives worldwide indicate that there exist complex national-local dynamics. Cities vary in their relations with their national governments. While some city governments have shown local leadership which places them in the forefront of national efforts to respond to climate change, some are followers. London, for example, has set greenhouse gas (GHG) emission reduction targets that are more ambitious than those set by the national government (Mayor of London, 2010). Other cities such as New York, Tokyo, Los Angeles, San Francisco, and Melbourne have also declared their commitment to leading the nation in addressing climate change problems (Lawson *et al.*, 2010).

In contrast, Hong Kong appears to be a passive follower of the Chinese central government's climate change initiatives. Hong Kong's target of a 50-60 per cent reduction in carbon intensity by 2020 has aroused criticism from environmental groups (ISD, 2010). Critics argue that although China is a developing country, Hong Kong is a *developed* city which should commit to a more ambitious target than the

national one. Critics contend that Hong Kong should have committed to an absolute emission reduction target, rather than the current carbon intensity target (which is an efficiency target), because the former is more difficult to achieve and is therefore more effective in benchmarking the city's performance (Civic Exchange, 2010; Oxfam, 2010).

Why then has Hong Kong adopted a “passive follower” position rather than a “green leader” for the country? While the absence of a national mandate and the lack of required resources may be plausible reasons (Clark, 2006; Hooghe and Marks, 2003; Sippel and Jenssen, 2009), we contend that a lack of government leadership in the city appears to be a major factor.

For Hong Kong, relations with the central government in Beijing are governed by the “one country, two systems” principle. This principle underpins all major policy developments (Conney, 1997), and climate change initiatives are no exception. Although Hong Kong can enjoy a relatively high degree of autonomy in executive, legislative, and judicial matters under the authority of the Beijing government (Conney, 1997), there has been growing public concern that the Hong Kong

government has been compromising its autonomy rather than optimising the flexibility provided by the “one country, two systems” framework. An illustrative example is the Government’s plan to launch a national education curriculum in September 2012 which raised major concerns from some student groups, educators, parent groups, and political parties that there is a political motivation and the new curriculum may be biased towards the central government (Cheng, 2012).

It is in this political context that the Hong Kong government has been seen by many as lacking leadership in addressing climate change problems (Oxfam, 2010; The Climate Group, 2010). Our review of initiatives in other cities suggests that leadership is a key to policy integration. Whilst mayors in New York, London, Los Angeles and Tokyo (CI No.1, 2, 7, 8, 9 and 15) have demonstrated their leadership in elevating climate change on to the policy agenda, formulating a set of well-coordinated and mutually supportive policies, and mobilising resources from civil society, the business sector as well as academics, there is little evidence to suggest that such leadership exists in Hong Kong.

*The incompatibility of a traditional policy style and a new form of governance*

Another barrier is the incompatibility of the policy tradition of “positive non-interventionism” in Hong Kong with the new forms of governance that we have identified in the 20 city initiatives (Lo, 2008) (*Table 2*). Our review shows that rather than relying on a single policy instrument, there have emerged new forms of governance that emphasise the intelligent use of a portfolio of policy instruments which range from command-and-control measures (such as setting emissions limits), to voluntary measures (such as education), to economic means (such as provision of subsidies and congestion fees), and to market-based instruments (such as emission trading). However, the “positive non-interventionism” principle that has underpinned the economy and policy-making system in Hong Kong (Lo, 2008) has constrained the government’s ability to broaden its policy instruments to the use of economic and market based instruments (MBIs) at least in the energy sector.

Positive non-interventionism is based on a philosophy of laissez-faire capitalism that relies on market-driven policies and leaves the economy to the private sector. Hong Kong’s economy is characterised by a low-tax system and relatively low levels of government intervention (ISD, 2012b). This approach has contributed to Hong Kong being rated as the freest economy in the world for the 18th consecutive year in 2012

(ISD, 2012b). This policy tradition however has important implications for Hong Kong's climate change policy.

A major weakness of the policy tradition is its failure to recognise the important role of government in rectifying market failures. The negative impacts of global climate change have been regarded as a consequence of one of the best examples of a market failure (Stern, 2008). In contrast to the laissez-faire approach, government intervention is often seen as essential to correct market failures, most notably the externalities associated with carbon emissions (Stern, 2008).

However, although economic measures and market-based instruments such as congestion charges (e.g. CI No. 13) and emission trading schemes have been proved effective elsewhere, they have often been regarded as excessive government intervention and tend to be less politically feasible in Hong Kong (Ison and Rye, 2005). The idea of introducing a congestion charging system has been debated in Hong Kong for more than two decades while a number of cities elsewhere have implemented similar programmes that have resulted in positive outcomes. A cross-border emission trading scheme between Guangdong and Hong Kong was set up in

2007 (Ma and Tao, 2010). However, in the absence of effective institutional arrangements to implement and enforce the scheme, power companies in both Guangdong and Hong Kong have little interest to participate and so far no transactions under the scheme have been recorded (Ma and Tao, 2010). As a result, the Hong Kong government's capacity to facilitate policy integration have been constrained as the choice of policy instruments are rather limited. The current approach to addressing climate change in Hong Kong tends to be limited to conventional command-and-control measures (such as emission standards) and voluntary measures to manage climate risks (EPD, 2008).

#### *The lack of institutional capacity*

In other cities institutional capacity appears to be a key to facilitating deliberation and partnership. The establishment of the New York City Panel on Climate Change (CI No.7) is a good example of a city's attempt to build up its institutional capacity for deliberation. This panel brings together experts in various disciplines to examine, discuss and advise on issues related to climate change (City of New York, 2010), and therefore facilitates evidence-based policy making. The London Climate Change Partnership (CI No. 8) on the other hand is a good example of how an institutional

arrangement can establish a platform to facilitate partnerships among developers, environmentalists and other stakeholder groups (LCCP, 2010).

However, a lack of high-level direction in combating climate change and institutional inertia within the Hong Kong government appears to be the major constraint affecting the government's institutional capacity (Francesch-Huidobro, 2012). The problem of departmental fragmentation which has been extensively documented in policy studies exists here (see for example Peters, 1998). The responsibility to address climate change issues in the Hong Kong government resides mainly with the Environment Bureau. Under the lead of the Environment Bureau, the Inter-departmental Working Group on Climate Change is tasked to coordinate and promote actions on climate change across five different bureaux and 16 departments. These include such diverse units as the Development Bureau, the Hong Kong Observatory and the Home Affairs Department (Environment Bureau, 2010). However, the Environment Bureau appears to lack the institutional capacity to steer policy coordination within the administration (Oxfam, 2010).

It is evident that the lack of institutional capacity has undermined policy integration relating to climate policies in Hong Kong. Although some climate initiatives have been implemented (EPD, 2008), these have been poorly coordinated, and on some occasions have even worked against each other. One obvious example is the introduction of electricity bill subsidies in 2008 discussed in an earlier section.

The lack of institutional capacity also tends to undermine the opportunities for Hong Kong to collaborate with neighbouring Guangdong Province to develop more effective climate change strategies. The national government has given Hong Kong and Guangdong an important role to pioneer and act as a role model of a “Quality Living Area” for the country. The Beijing government has explicitly stated this regional strategy in a number of national government documents including the Outline of the Plan for the Reform and Development of the Pearl River Delta (2008-2020) and the Regional Cooperation Plan on Building a Quality Living Area (NDRC, 2008; NDRC, 2010; ISD, 2012a).

However, cross-border environmental institutions have been limited in their scope, functions and effectiveness. Existing cross-border institutions such as the Hong

Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection has few solid achievements and these are mostly confined to information sharing, exchange of experiences and conducting joint research (Ma and Tao, 2010). Regional collaboration in key areas such as visioning and strategic planning appears to be lacking. The recent establishment of the Hong Kong-Guangdong Joint Liaison Group on Combating Climate Change in May 2012 can be regarded as a major institutional development (ISD, 2012a). However, the major achievements of this new institution are limited to building up information exchange mechanisms and organising seminars (ISD, 2013).

*A lack of enabling capacity for engagement*

A noticeable trend emerging from international experience is the increasingly important role of city governments in engaging and empowering civil society. This more engaging approach is a key element in facilitating partnership and deliberation. New York's NYC°Cool Roofs programme (CI No. 9) illustrates the importance of city government leadership and creativity in facilitating a partnership that has mobilised volunteers to coat New York City's dark roofs with reflective white coatings. This partnership has developed a low-tech, low-cost but effective

community programme that has achieved substantial emissions reductions (City of New York, 2010). The New York City Panel on Climate Change and the London Climate Change Partnership (CI No.7 and 8) are good examples to illustrate how city governments can proactively establish platforms to engage experts, developers, community groups and the wider community in formulating a vision, targets and strategies for climate change.

Our review of city initiatives also highlighted the importance of empowering the public to facilitate more participatory and deliberative decision-making processes. The provision of local funds, the improved accessibility of information, the use of the virtual reality “decision-theatre”, the availability of free technical advice and the establishment of greenhouse gas emissions monitoring systems that are publicly accessible are among the many examples of the means by which city governments can empower their citizens (CI No. 3, 4, 5, 11).

In contrast, the Hong Kong government appears to lack this kind of capacity. The administration has appeared to rely on a more technocratic approach for energy management rather than taking a more proactive role in enabling and facilitating public engagement (CCSG, 2007; Lo, 2008). The Council for Sustainable

Development is a good example, illustrating how this government-led initiative has limits in engaging the public in policy-making. Current practices tend to inform and consult the public, but have limits in ensuring that public feedback can influence the actual decisions that are made (CCSG, 2007). In contrast, the governance literature has contended that informing and consulting are lower forms of public participation while empowering the public to make final decisions is a more desirable form (Arnstein, 1969). Good practices elsewhere suggest that there are a broad range of tactics and methods that can be deployed to improve public engagement in environment decision-making. These include the provision of funds for citizens to commission studies, continuous solicitation and reporting of public inputs, and the facilitation of iterative discussion in both formal and informal settings (Adams *et al.*, 2011). However, there is minimal evidence that these good practices have been used in formulating climate policies in Hong Kong. The scale and variety of formats of empowerment are both insufficient in Hong Kong. As such, the Hong Kong government is vulnerable to criticism that public engagement is simply a tactic of legitimising a government decision that has been made, rather than regarding the public as equal partners.

On the other hand, although environmental NGOs and the business sector have been increasingly active in this policy area, such bottom-up climate initiatives are limited in number as well as impacts. They are also limited in terms of inter-party cooperation as well as social mobilisation (Chan, 2008; Lo, 2008). The government has made some progress in empowering civil society through by providing funding opportunities such as the Sustainable Development Fund and the Environment and Conservation Fund. However, few efforts have been made to provide expert support, information-sharing mechanisms or engagement platforms such as those provided by many of the other city governments in our review (CI No. 3, 4, 5, 11).

## **CONCLUSION AND POLICY IMPLICATIONS**

This paper presents a local governance perspective for examining, understanding and analysing local climate change initiatives. Our conceptual framework emphasises the critical building blocks of local climate governance, which comprise strategies, values, indicators and outcomes. The applicability of the framework has been tested and illustrated with a review of 20 climate initiatives in selected cities. The framework also guided us in our critical evaluation of the Hong Kong experience.

The paper makes three major contributions. First, our findings enrich the literature on local governance by shedding further light on the mechanisms that appear to be more conducive to effective climate initiatives. Our framework certainly borrows key insights from Painter (2002). However, it differs from this earlier work by specifying some key strategies commonly adopted in climate change initiatives. It also emphasises the integral nature of these strategies, values and governing outcomes. In so doing, we partially close the gap in the local governance literature by explaining how and why deploying a governing strategy such as public participation cannot guarantee good outcomes. By highlighting the values dimension of these governing strategies, our framework suggest that a governing strategy would be ineffective if it is adopted simply as a procedural requirements and is not underpinned by the associated governance values. Our framework can explain why some initiatives in the fields of environment and energy have failed to succeed even when such strategies were introduced (Li *et al.*, 2012; Yung and Chan, 2011). The nuclear decision-making process in the UK is a good example illustrating how and why a highly extensive public engagement exercise ended up in a stalemate in part because trust was not enhanced but was eroded in the public engagement process. The UK government was perceived as using an engagement tactic to legitimise a

pro-nuclear decision that had already been made before the public consultation (Mah *et al.*, 2012a).

Secondly, this paper offers an empirically-tested framework that can be applied to cities from developed and emerging economies, including Hong Kong. Our findings are consistent with the literature that local governments at the city level have an important role to play in climate change policies (IEA, 2008; Bulkeley *et al.*, 2009).

We found that these local initiatives embrace some key strategies and values of good governance. They are based on innovative strategies including partnerships, deliberation and policy integration (Petts, 2001; Abelson *et al.*, 2003; Koontz *et al.*, 2004; Underdal, 1980). They have also addressed the key values of good governance such as equity, legitimacy, trust and coherence (Painter, 2002; OECD, 2012).

Thirdly, our findings can be generalised to other cities in China. Hong Kong is an atypical Chinese city as it is a Special Administrative Region and because of its colonial history. However, Hong Kong does share with other Chinese cities the barriers to effective local climate governance that we identified in this paper. These include problems in central-local relations (Mah and Hills, 2008), a lack of institutional capacity (Tang *et al.*, 1997) and the problems of engaging the public (Li

*et al.*, 2012). The insights gained in this study may be useful for deriving policy recommendations for other cities such as Guangzhou and Shanghai where climate change policies have also attracted growing attention from researchers and policy-makers (ISD, 2013; Ma *et al.*, 2011).

The local governance perspective has important implications for climate policy direction in Hong Kong. We compared experiences in Hong Kong and other cities, and identified the barriers that appear to limit Hong Kong's ability to adopt new forms of governance that would allow it to better respond to climate change challenges. We propose three specific policy recommendations. Firstly, the Hong Kong government needs to explore new possibilities of governing to better respond to climate change challenges. It can play a much more proactive role in deploying new forms of local climate governance. These initiatives should be supported by an intelligent use of governing strategies, in particular public participation, deliberation, partnership and policy integration. Empowering society, and shifting the role of the government from a top-down one to a more inclusive and facilitating approach appear to be the two most critical processes that the Hong Kong government needs to pay attention to. This finding is consistent with a theme of the governance literature that highlights new roles of state in governing. Work by Sbragia (2000)

and Weiss (2000), for example, sheds light on the needs for government to search for and develop more appropriate roles in governing. These proposed changes would place new requirements on the governing capacity of the Hong Kong government to assume, not necessarily less, but more appropriate roles in these participatory and deliberative ways of governing. **The government, for example, needs to formulate a set of robust empowerment strategies that can improve not only the scale, but also the nature and quality of public engagement in climate policy-making.**

Secondly, the government needs to ensure that demand-side initiatives receive as much attention as supply-side measures in its climate change strategies. Energy saving and energy efficiency initiatives are seen by some local environmental groups and academics as inadequate (Greenpeace, 2010). The promotion of green buildings and the introduction of dynamic pricing are some of the prioritised areas for more proactive demand-side initiatives (CSD, 2011; Mah *et al.*, 2012b). In contrast to supply-side initiatives, demand-side initiatives often place new requirements on governing, which include the provision of information transparency and disclosure on electricity consumption, promotion of carbon audits, and a close partnership between professional bodies, consumers, environmental groups and the government to develop effective incentive programmes for motivating behavioural

changes. Such initiatives therefore require governing approaches that rely less on command-and-control and more on partnership and deliberation.

Thirdly, the Hong Kong government should strengthen its regional climate institutions with its counterparts in Guangdong. Climate change is a global issue that has local impacts but some solutions may be regional. The Regional Co-operation Plan on Building a Quality Living Area jointly announced by the three governments in Hong Kong, Guangdong and Macau is a good example of these regional strategies (ISD, 2012c). In this regard, governments across the border in this region can set up cross-border partnership platforms with a broader membership that include government officials, the business sector, academics and other stakeholder groups. Good practices elsewhere (e.g. CI No. 7 and 8) suggested that such partnerships, if well facilitated by governments, may enable stakeholders to work together to identify green business potential, examine key issues, and formulate strategies and action plans for a low-carbon region in this part of China.

This paper is a case study of Hong Kong. As we noted in earlier sections, Hong Kong is atypical in many important aspects that set it apart from many other major cities. However, Hong Kong shares with New York, Singapore and other developed

and developing cities many features of urbanised physical setting such as high-rise buildings and extensive transport networks. A dynamic stakeholder landscape in which business and civil society are seen as playing an important role provides another shared feature between Hong Kong and other major cities (Centre for Civil Society and Governance, 2007). Our analysis therefore has relevance beyond Hong Kong, and can contribute to an understanding of how cities respond to climate change challenges.

A major limitation of this study relates to the application of the *outcome* dimension of our framework as we have discussed in earlier section. This is in part due to the lack of data for assessing the efficacy of these initiatives. It is also beyond the scope of this study to evaluate the changes in governing capacities as a result of such initiatives. A more in-depth comparative case study of Hong Kong, New York and London, for example, could help to develop a framework for assessing the factors enabling or constraining the efficacy of climate initiatives.

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Table 1: A conceptual framework for local climate governance

Strategies	Values	Indicators	Outcomes
<ul style="list-style-type: none"> <li>▪ Policy integration</li> <li>▪ Partnership</li> <li>▪ Deliberation</li> <li>▪ Participation</li> </ul>	Equity	<ul style="list-style-type: none"> <li>▪ Fair allocation of costs and benefits in the processes and in outcomes</li> </ul>	Governing capacity to mitigate and adapt to climate change impacts <ul style="list-style-type: none"> <li>▪ Inducement capacity</li> <li>▪ Consensus-building capacity</li> <li>▪ Institutional capacity</li> <li>▪ Enabling capacity</li> </ul>
	Legitimacy	<ul style="list-style-type: none"> <li>▪ People have trust in the motives, transparency and competency of the government</li> <li>▪ Science-based decision-making that emphasises the need for evidence-based policy, formal policy evaluations, and informed decision-making</li> <li>▪ Serious debate around competing views; careful weighing up of reasons in favour of and against some policy actions</li> </ul>	
	Efficiency	<ul style="list-style-type: none"> <li>▪ Competitive forces; self-interested pursuits are legitimate in market settings</li> </ul>	
	Trust	<ul style="list-style-type: none"> <li>▪ long-term relationships</li> <li>▪ Willingness of players to respect, accept different view and cooperate</li> <li>▪ The public is seen as equal partners</li> </ul>	
	Coherence	<ul style="list-style-type: none"> <li>▪ Mutually reinforcing policy towards a defined goal</li> <li>▪ Various government agencies work together</li> <li>▪ Short-term benefits are consistent with long-term goals</li> </ul>	
	Decisiveness	<ul style="list-style-type: none"> <li>▪ Systemic thinking</li> <li>▪ Strategic vision</li> <li>▪ A strong sense of what is needed to attain a specific goal</li> </ul>	
	Accountability	<ul style="list-style-type: none"> <li>▪ Government is able and willing to show the extent to which its decisions and actions are consistent with what it has promised</li> </ul>	
	Transparency	<ul style="list-style-type: none"> <li>▪ Information is accessible</li> </ul>	

(Sources: Abelson *et al.*, 2003; Braithwaite, 1998; Bulkeley and Kern, 2006; Chaskin, 2001; Gouldson *et al.*, 2008; Machado and Burns, 1998; OECD, 2012; Painter, 2002; UNCTAD, 2004)

Table 2: A review of 20 climate change initiatives in cities in developed economies

	<b>Cities</b>	<b>Climate Initiatives (CI)</b>	<b>Illustrations</b>	<b>Outcomes</b>	<b>Relevance to Local Governance Framework</b>
1.	New York, USA	PlaNYC	Under the high-level direction of Mayor Bloomberg, New York formulated PlaNYC in 2007. The PlaNYC laid out a long-term vision and has set clear objectives and goals in the areas of climate change and sustainability for New York (City of New York, 2010).	GHG emissions reduced by 16 % during 2005-2010. Emission intensity of electricity and energy use per capita also decreased (City of New York, 2013).	Strategies: policy integration Values: decisiveness, coherence
2.	Los Angeles, USA	Green LA	The mayor formulated the Green LA as an action plan in 2007 to lead the nation in fighting global warming (City of Los Angeles, 2007).	Estimated at least 7% CO <sub>2</sub> emission reduction by 2012. More than 30 measures to be implemented via the ClimateLA action plan (City of Los Angeles, 2008).	Strategies: policy integration Values: decisiveness, coherence
3.	Phoenix, USA	A virtual reality "decision-theatre"	A virtual reality "decision-theatre" was pioneered in Phoenix to support stakeholder engagement (Dawson, 2007).	N.A.	Strategies: participation; deliberation Values: legitimacy, equity, consent
4.	Canada	Green municipal fund (CAD 550 million)	The <i>Federation of Canadian Municipalities'</i> (FCM) <i>Green Municipal Fund</i> (GMF) is a long-term, source of grants and below-market loans for municipal governments and their partners (Jollands <i>et al.</i> , 2009).	Annually, 339,000 tons of CO <sub>2</sub> emissions reduction, 138,000 tons of waste diverted from landfill, and 136 million m <sup>3</sup> of water treated since 2000 (FCM, 2012).	Strategies: partnership Values: trust
5.	Espaces Info Energie, France	Provision of free and independent technical advice	The <i>Espaces Info Energie</i> offer independent and free energy efficiency advice to individuals and small companies. It promotes information dissemination on energy efficiency (Jollands <i>et al.</i> , 2009).	N.A.	Strategies: partnership Values: trust, transparency
6.	Austin, USA	Reinforcing policies for water saving	Austin uses a combination of rebates, education and regulation to reduce water usage (C40, 2009).	Reclaimed water use has decreased since 2008. But the conservation program is criticised for its unjustified cost and savings and lack of saving monitoring and documentation (Robbins, 2013).	Strategies: policy integration Values: coherence
7.	New York, USA	New York City Panel on Climate Change (NPCC)	The NPCC was convened by Mayor Michael Bloomberg, and funded by the Rockefeller Foundation. The NPCC is a panel of experts in climate science, social sciences, economics, risk management and law to advise on issues related to climate change and adaptation. The NPCC has prepared a set of climate change projections for New York City, examined how climate change has the potential to affect the city, and offered suggestions on approaches to create an effective adaptation program (City of New York, 2010).	The second NPCC published the updated data on risk and projections related to climate change and recommendations on improving risk monitoring and assessment mechanisms (NPCC2, 2013).	Strategies: participation, deliberation Values: equity, legitimacy, decisiveness, accountability
8.	London, UK	London Climate Change Partnership	<i>London Climate Change Partnership</i> is a platform that allows stakeholders to work together in preparing London for climate change impacts. Being coordinated by the Greater London Authority, it comprises over 30 organisations with representation from climate	LCCP has produced a number of reports on climate change adaption strategies in certain regions and consultation responses to Defra's environmental	Strategies: partnership, deliberation Values: equity, trust, legitimacy, accountability

			scientists, government, environment, developers, finance and health sectors. This Partnership aims to help London understand and prepare for climate change impacts. It assists in the development of London's climate change adaptation strategy and other policies. It also responds to key consultation undertaken by the government. It helps stakeholders in London to be aware of climate change impacts and help them develop appropriate adaptation measures (LCCP, 2010).	policies (LCCP, 2013).	
9.	New York, USA	NYC°Cool Roofs programme	In 2009, Mayor Michael Bloomberg and former Vice President Al Gore launched <i>NYC°Cool Roofs programme</i> . This initiative mobilises volunteers to coat New York City's existing roofs which are typically dark in color with reflective white coatings. Nearly 250 volunteers came together in 2009 to coat 100,000 square feet of roofs in Long Island city. Participating buildings include businesses and government departments (City of New York, 2010).	About 3,671,032 ft <sup>2</sup> of roof has been coated during 2010-2012, which is equivalent to a reduction of over 3,671 tons of CO <sub>2</sub> (NYC °CoolRoofs, 2013).	Strategies: partnership Values: efficiency, trust
10.	Australia	Transnational municipal networks	Transnational municipal networks such as ICLEI CCP or the Climate Alliance have provided opportunities for municipalities to lead – for example, to be the first to complete a particular performance measure, or to develop particular projects – and have also developed means of recognizing and rewarding leadership – including the Climate Alliance Climate Star award and CCP Australia's 'outstanding council initiative' award (Bulkeley <i>et al.</i> , 2009).	N.A.	Strategies: partnership Values: decisiveness
11.	Newcastle, Australia	ClimateCam	ClimateCam was created by Newcastle City Council in 2001 to measure greenhouse gas emissions in the Newcastle local government area, and report the data online and on the ClimateCam Billboard (Bulkeley <i>et al.</i> , 2009).	N.A.	Strategies: participation Values: transparency
12.	Philadelphia, USA	Philadelphia's Heatwave Preparedness Plan	It was estimated that Philadelphia's Hot Weather Health Watch Warning System saved 117 people during heatwaves from 1995 to 1998. The System comprises a number of integral elements including: using mass media to encourage friends and neighbors to visit elderly people daily; activating a telephone hotline to provide information and counseling; and informing care homes of a high-risk heat situation (IFRC, 2004).	N.A.	Strategies: partnership Values: trust, transparency
13.	Seoul, Korea	Competence in using economic instruments	Congestion fees was introduced in Seoul and resulted in a 10-20% CO <sub>2</sub> emissions reductions (Jollands, 2008).	N.A.	Strategies: policy integration Values: coherence
14.	Oslo, Norway; Vaxjo, Sweden	Government procurement	The use of public procurement to create markets for LEDs which are used for traffic signals and public lighting. It resulted in a reduction of 50-70% of street lighting CO <sub>2</sub> emissions (Jollands, 2008).	N.A.	Strategies: policy integration Values: coherence
15.	Tokyo, Japan	Competence in using	A city ordinance requires that all households meet certain building	N.A.	Strategies: policy integration

		regulation and re-enforcing policies	standards when they are sold, transferred or renovated. This ordinance has reduced residential energy consumption by over 13%, annually reduced CO <sub>2</sub> emissions by over 5,000 tons and allowed households to save up to US\$ 450 on their energy bills (C40, 2010).		Values: coherence
16.	New York, USA	Regulation	New York City has updated building code that requires cool roofs, that is rooftops with a reflective white coating, for all new construction and re-roofing (City of New York, 2010).	See no. 9 above.	Values: coherence Strategies: policy integration
17.	Cape Town, South Africa	Cape Town Energy & Climate Change Strategy	Cape Town has developed an energy and climate change strategy which provides a relatively comprehensive policy framework for a number of interdependent issues that include energy, transport, biodiversity and air quality (City of Cape Town, 2006).	Electricity use per capita gradually decreases since 2007. Water use per capita has decreased since 2005. Waste to landfill reduced by 7.7% during 2008-2011 (ERMD, 2012).	Strategies: policy integration Values: decisiveness, coherence
18.	Johannesburg, South Africa	Greenhouse gas inventory and vulnerability assessment	The city has compiled a city-scale greenhouse gas inventory and conducted a climate change vulnerability assessment which would assist policy-makers to develop and compare alternative strategies (Liphoto, 2007).	N.A.	Strategies: policy integration Values: transparency, legitimacy
19.	Guangzhou, China	Energy Saving Project "10,100, 1000, 10000"	This project was launched in 2008 and it planned to involve 10,000 enterprises in the city to reduce coal consumption of 1 million tons through energy-saving technological transformation (OECD, 2010).	N.A.	Strategies: policy integration. partnership Value: coherence
20.	Bangkok, Thailand	Bangkok Metropolitan Administration's Action Plan on Global Warming Mitigation	36 private and public sector organisations jointly signed the Bangkok metropolitan Administration's Declaration of Cooperation on Alleviating Global Warming Problems in 2007. The declaration then led to the establishment of this Action Plan which was developed through a consultative process in the same year (BMA, 2007).	Reduced about 3.67 million tons of CO <sub>2</sub> during 2007-2011 (JICA, 2012). A number of education and outreach on tree planting, waste reduction, energy conservation, public awareness, etc. (Jungrungrueng, 2011).	Strategies: participation, partnership Values: legitimacy, trust, transparency