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# Integrating the Climate Resilience Agenda Into Local Urban Decision-Making and Planning: Assessing Local Institutional Support and Capacity

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**Abstract:** Building resilience to climate change impacts necessitates a paradigm shift in planning and action towards a focus on strong involvement of local policy- and decision-makers. An adaptive urban governance is required that allows for an integrated approach in which climate change adaptation and urban development are synergized. To enable this type of governance, four different factors are essential: political support; institutional capacity; multi-stakeholder partnerships and engagements; and an overarching plan or strategy to guide the initiatives. Illustrated by two case studies in New York and Copenhagen, this paper sets out key considerations with regard to the necessary institutional basis for integrating climate resilience efforts into the local-level urban agenda.

**Keywords:** urban climate resilience, institutional capacity, adaptive governance

## 1. Introduction

Rapid urbanisation worldwide has led to substantial economic growth and development. These highly dynamic urban areas form thriving economic centres and are constantly expanding. At the same time, they are becoming increasingly more vulnerable to the impacts of climate change. Increased river discharge, extreme weather conditions, subsidence and an increasingly limited access to resources pose

significant risks to the inhabitants of these regions. Demographic and socio-economic pressures add to the challenge. Building resilience to these uncertain but urgent threats necessitates a paradigm shift in planning and action towards a focus on strong involvement of local policy- and decision-makers. This involvement is necessary to obtain the relevant local data and knowledge for climate-resilient action plans but also to ensure effective and efficient implementation and monitoring of these plans.

However, realisation of this involvement requires institutional capacity– which is currently often lacking. Capacity building of local actors- and decision-makers therefore needs to become an integrated part of climate-resilient action planning and development. Stakeholders' commitment to embrace the paradigm change is also essential to ensure consistent and effective implementation. Building on previous research on the assessment of cities' sustainability, this paper gleans on urban governance aspects of climate resilience planning. It particularly focuses on the importance of integrating the climate change agenda into the local planning vision, and the existence of climate resilience-focused urban governance and institutional support to make this integration possible. The paper discusses four factors that need to be considered to assess such governance by policy and decision makers to facilitate them in evaluating their own potential to integrate climate resilience strategies into the local urban planning agenda. This, then, enables them to take necessary actions.

To illustrate the discussion, this paper highlights some practices that demonstrate effective implementations. It ends with main conclusions and recommendations on the required conditions for the integration of climate resilience into the urban planning agenda.

## 2. Making Climate Resilient Cities

As stated by UN Secretary General Ban Ki-Moon, "our struggle for global sustainability will be won or lost in cities" (UN, 2012). Over the past years, rapid urban expansion has put pressure on infrastructure, livelihoods and the environment - a pressure that is exacerbated by climate change. Although climate change has an impact on most city dwellers, the urban poor are affected disproportionately, for instance due to their vulnerable physical location and their limited capacity to prepare for, cope with and recover from the shocks and stresses that climate change inherently brings (UN-Habitat, 2014). Overall, there appears to be an 'uneven allocation of risks, and uneven commitment of resources' (Baud and Hordijk, 2009, p1072).

### *2.1. The importance of building resilience*

The need to build resilience to these shocks and stresses has been acknowledged by many [see for instance Tyler and Moench, 2012; Corfee-Merlot et al., 2011]. Urban climate resilience, defined as the 'state that a city, including its most poor and vulnerable populations, strives to achieve to be safe and able to prosper in the face of a changing climate with uncertain impacts' (Adger, 2014, p18 cited in UN-Habitat, 2014), has been studied to a considerable extent. It can be understood in two ways: as an ongoing process that involves 'cities and their communities as climate risks and vulnerabilities change' (UN-Habitat, 2014, p18) or as a normative goal that 'a city […] strives to achieve to be safe and able to prosper in the face of a changing climate with uncertain impacts' (UN-Habitat, 2014, p18).

To clarify the relation between the concept of resilience and climate change adaptation, the following definitions are used throughout this paper. Firstly, adaptation is considered by the IPCC to involve efforts "to reduce the adverse impacts of projected climate change and variability" (IPCC, 2007, p14) undertaken to reduce the vulnerability of a system or city. Smit and Pilifosova (2003, p881) elaborate on this by stating that adaptation can be seen as an "adjustment in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. This term refers to changes in processes, practices, or structures to moderate or offset potential damages or to take advantage of opportunities associated with changes in climate". In this paper, both terms are used yet the focus of the paper is on achieving urban climate resilience as it is generally considered "a more comprehensive approach capable of both addressing underlying climate vulnerabilities and of dealing with a range of uncertainties" compared to climate change adaptation (UN-Habitat, 2014, p19).

### *2.2. An integrated approach*

In their 2007 Assessment Report, the IPCC stress the importance of embedding policies aimed at climate change adaptation into a city's broader sustainable development efforts (IPCC, 2007). This recommendation is predominantly based on the two-way relationship between (sustainable) development and climate change adaptation. Cities are not only part of the problem – by concentrating "economic activity, population and thus also sources of energy and waste-related greenhouse gas emissions" (Corfee-Morlot et al., 2011, p170) but can also contribute majorly to the 'solution'. This is supported by the role of urban development patterns as main drivers of vulnerability (Corfee-Morlot et al., 2010) highlight the importance of an integrated approach. The adequacy and quality of housing and infrastructure, the appropriateness of land use zoning and the level of preparedness of residents and key emergency services greatly influence the vulnerability of the urban population; hence any intervention to build resilience through climate change adaptation inherently has an overlap with interventions aimed for local development (Satterthwaite, 2009). As a result, 'integrated urban planning is […] central to both adaptation and mitigation efforts' (Corfee-Morlot et al., 2010, p170).

A further argument for integration is that separating adaptation from other local concerns like food security, water management, housing, transport, infrastructure etc., and keeping it out of the purview of local planning systems would only obscure its importance in society and provide little impetus for local planners to actively engage in the climate adaptation process (Kithiia and Dowling, 2010).

### *2.3. The involvement of local government*

In this integration of the climate resilience agenda into local development, local government involvement is crucial (see for instance Satterthwaite, 2009; Baud and Hordijk, 2009; Corfee-Morlot et al., 2010). There are several arguments for involving local governments into these efforts. Firstly, since the brunt of impacts caused by crises on a global scale is in fact felt locally, these impacts need to be addressed at the local scale. To ensure effectiveness and appropriateness of efforts to address the vulnerability and building the resilience of urban areas, they need to be attuned to local characteristics, and rooted in local contexts and realities (Satterthwaite, 2009, p322). Local governments therefore clearly need to have a strong role in the development of approaches aimed to increase resilience as they will be best informed with regard to local needs and opportunities. The strong interrelation between

urban development patterns, (in)adequacy of urban services and climate vulnerability mentioned previously further support the importance of their involvement.

At the same time, local governments are faced with several obstacles in taking on these efforts. The following four types of obstacles were identified by Corfee-Merlot (2009): jurisdictional and institutional; political; economic and budgetary; and technical or scientific. The jurisdictional and institutional barriers include for instance a lack of mandate to address climate issues. Addressing climate change adaptation necessarily involves changes in policies and practices, the responsibility of which lies at national level and is usually not part of the local government mandate (Satterthwaite, 2009). In addition, local governments may suffer from lack of institutional capacity to be able to coordinate across relevant issues both vertically and horizontally.

As for political barriers, electoral pressures may encourage a local government to favour short-term goals and economic growth over longer-term risk reduction and climate change adaptation, of which immediate (economic) benefits are not always necessarily clear. Related to the notion of economic benefits is the economic or budgetary barrier: in addition to lack of resources or funding, the distribution of perceived and real costs and benefits can be a barrier. Finally, there may be technical or scientific barriers: climate change adaptation carries with it an inherent level of (scientific) uncertainty; there may be an inadequate understanding of the risks associated with climate change or there may be a lack of technical capacity or a lack of scientific or technical information. (Corfee-Merlot et al., 2009).

In order to be able to overcome these barriers and allow for an integration of the climate resilience agenda into 'everyday' decision-making and planning, an adaptive urban governance approach is required (Adger et al., 2005; Cooney and Lang, 2007). Adaptive governance is particularly suitable to the challenges of developing an integrated approach to building resilience. Being based on "continuous learning, experimentation, broad (processes of) participation, and flexibility (Ellen et al. 2014, p111), it is designed to address the dynamics and uncertainties that climate change necessarily entails and is becoming more widespread within the context of climate change adaptation (Brunner and Lynch, 2013).

However, often, local governments lack an institutional basis (Satterthwaite, 2008) to address the challenges mentioned above and to encourage and enable the integrated approach to urban development and urban climate resilience. The following section addresses the considerations and the types of conditions required to enable more climate responsive urban adaptive governance and future urban development.

## 3. Four key factors of climate resilient urban governance

A study done by the National University of Singapore (Centre for Sustainable Asian Cities, 2013) on *'Benchmarks, best practices and framework for sustainable urban development and cities*', identified four factors that are key to a climate resilient urban governance that is focusing on creating an enabling environment and institutional mechanisms for responding to climate change adaptation.

### 1 Political support and leadership

Political factors that shape the opportunities and constraints of urban climate governance include issues of leadership. The World Bank (2011) recommends that cities consider starting climate leadership teams within the government. In this regard, the leadership should ideally include the following three

elements. Firstly, political support is essential, representing high level of commitment to mitigation and adaptation, initiated and sustained by executive leadership and supported by effective public communication. Furthermore, operational knowledge is required of city rules and regulations and relationship with external actors. And finally, scientific expertise or competence is needed to translate climate science into sound policy and decisions.

## 2 Institutional capacities

Institutional factors affecting urban climate change involve developing governance capacity in terms of a) building support from national/regional governments in a multi-level governance system; b) ability to implement and enforce policies and measures, and c) presence of alternative institutional arrangements like international networks and partnerships from which governance capacity can be generated. As climate change is a cross-cutting issue, avoiding fragmentation and encouraging collaboration between different agencies is critical. More overarching responses may be in the form of improving the capacity of organizations and individuals; improving communication between government officials and scientists, raising awareness of climate change in communities, and increasing stakeholder participation in planning and implementation (FIS Broker, 2013).

## 3 Multi-stakeholder partnerships and engagements

Climate change is a cross-cutting issue which impacts, as well as gets affected by, a variety of stakeholders in both the public and private sectors. As a result, it cannot be addressed in isolation and ideally would require actions from individuals, organizations, industries and governments in concert. Even within the government departments, there is a need to get an official recognition and consensus that climate change impacts need to be considered and addressed at all possible levels (FIS Broker, 2013). In addition to the required commitment from government as described previously, support from other stakeholders such as citizens, community groups and the private sector is critical for climate initiatives. Inclusion of stakeholders in planning and implementation can provide longer term support and increased chances of success for climate resilience initiatives. Hence specific steps to create awareness and developing participatory channels are critical, and the assessment framework would require a consideration of what is done in this area and who gets involved.

The World Bank's guide to climate change adaption in cities (2011) identifies the common actors to be involved as follows - academic and scientific organizations, community-based organizations and small business, governments, international NGOs, the United Nations as well as international financial institutions, and large scare industry or business. Research on integrated planning also highlights the role of participatory planning processes in focusing the sectoral strategies to optimize the scarce resources between sectors, geographical areas and across population groups, in a manner that is equitable and sustainable (Kithiia and Dowling, 2010). Stakeholder involvement which has been identified as a key component for integrated planning by the IPCC (IPCC, 2007 (e)) would help to synergize efforts, and bottom-up approaches advocated as crucial elements in adaptation responses (Carter, 2011) would strengthen local participation. However, there remain limits to the extent of integration, as urban planning may only be able to address space and resource-related concerns, and wider policy areas

straddling the domains of natural sciences, climate-specific studies, public health, etc. may still have to be separately addressed outside the conventional urban planning regimes.

4 An overarching strategy or policy to guide climate change initiatives

A well-defined plan or vision is required to guide a city in addressing climate change concerns. This may take the form of a long term strategic plan or policy statement, but in either case needs to address the integration of climate change initiatives into the wider urban development agenda. Such an overarching strategy or policy should be developed with the involvement of all stakeholders, including businesses, academic, non-government organisations, special interest groups and ordinary citizens. The policy should be articulated with defined goals and objectives, as well as aspirational targets. It would serve as a platform for further engagement with both the international and local community, as well as serve as a guide toward effective implementation.

The existence of stable financial resources to implement or support this strategy or policy is crucial as these resources can form both constraints and drivers in fostering effective responses to climate change (UN-HABITAT, 2011). With multiple pressing development issues competing for space on a city's agenda and funding constraints, many cities may find it difficult to justify climate responses involving large funding outlays, and so even if cities are committed to act, financial constraints may prevent governments from effectively implementing plans (UN-HABITAT, 2011).

## 4. City responses to climate change impacts thus far: two case studies

The challenges relating to the integration of climate change policies across all planning domains includes a lack of consensus on how this climate-focused planning is to be undertaken in practice (Kithiia and Dowling, 2010). As a general guideline, Kithiia and Dowling (Kithiia and Dowling, 2010), in their framework for integrated city-level planning process, suggested that the challenge is for planning to use a set of "climate change lenses" throughout the entire planning process, but there are insufficient practical considerations of what this actually means. With the more broad-based integrated planning processes (Herman, 2003), a challenge lies in the fact that in such a situation, climate change may be seen as an additional source of stress on both the natural and human system, alongside other conventional pressures such as poverty, public health, economic and infrastructure development and rapid population growth (Kithiia and Dowling, 2010). The alternative approach of standalone climate response planning is in fact currently practiced more widely by cities and donor agencies, as this approach allows for more measureable, reportable and verifiable use of new and additional funding (Kithiia and Dowling, 2010, Herman, 2003). Nevertheless, the general direction today seems to favour the integration of climate adaptation across the planning domain, rather than creating another layer of climate adaptation planning (Bulkeley et al., 2009, Kithiia and Dowling, 2010).

In spite of the many challenges, there are examples of cities, mostly in the developed world, that are planning and implementing adaptation responses in various ways and in the last decade, integrated climate change adaptation strategies, in the form of policy documents and action plans, have started to emerge. In developing countries, many of the cities have only begun to initiate the conceptual thinking, and by and large, they are in the early stages of climate change impact assessment studies (FIS Broker, 2013). To illustrate the discussion, two examples are summarised below of climate resilience plans that

were part of larger sustainability strategies or city development plans. Although both plans started out with a strong mitigation component, New York and Copenhagen both demonstrate how cities can accommodate efforts towards climate change resiliency.

### *4.1 The experience of New York: PLANYC*

The city of New York set up a specialized climate change panel under mayor Bloomberg's office to form a long-term sustainability plan, PLANYC in 2007. At that time, climate change was not part of the common municipality agenda in cities, but recognizing the risk of New York City's position both geographically and economically, the Mayor's office decided to put the climate change agenda as a top priority (The City of New York, 2013). PLANYC was devised to address the challenge of both a growing population and climate change, and included recommendation that ranges from brownfields, housing, water supply and solid waste. Taking the climate change agenda particularly into consideration, the plan addressed vulnerable communities, readiness to deal with natural disasters and reducing their carbon foot prints. The plan furthermore aimed to reduce city's GHG emissions by 30% in 2017 (The City of New York, 2013).

The first New York City Panel on Climate Change (NPCC1) was convened in 2008 with aims to respond to climate change challenges in the city and help accomplishing goals outlined in PLANYC. NYPCC1 was assigned to advise the Mayor and the city's Adaptation Task Force on issues related to climate change and adaptation, whereby it produced a set of climate change projection for the city. In 2012, the City passed a local law that established NPCC as an on-going body that is required to meet regularly to review recent climate change data and its impacts, and devise recommendations for projections regularly (The City of New York, 2013).

The NPCC's recommendations were grounded on city level actions that include mapping of vulnerable communities and neighbourhoods that are prone to climate stresses such as river flooding, heat waves and the urban heat island effect. The recommendations also included the development of a system of indicators and monitoring systems that can contribute towards better-informed climate change related decision-making in the City. It also recommended enabling more transparent data and information communication with regard to climate hazards and their impacts to potential users at city, state and national level. Since the implementation of PLANYC, the City has achieved the cleanest air in 50 years, improved the urban landscape (by planting more threes and installing reflective rooftops), has upgraded building codes, and has achieved a 19% reduction of CO2 emission since 2005 (NYC Gov, 2015).

### *4.2 The Copenhagen Climate Plan*

Copenhagen also has a successful climate change initiative, the Copenhagen Climate Plan. In 2009, the City Council adopted the Climate Plan for Copenhagen with a goal to reduce CO2 emissions by 20% by 2015 – although in fact the City managed to reach its mitigation goal ahead of time, in 2011. To support this Climate Plan, a vision for a carbon neutral Copenhagen in 2025 was formulated (Ministry of Foreign Affair of Denmark, 2015) – the so-called CPH 2025 plan.

In achieving the goal, the City has been actively implementing a series of actions on the urban planning level, emphasizing on the energy and transport sectors. The reform on energy production

accounted for 74% of the total CO2 reduction while transport 11% (Ministry of Foreign Affair of Denmark, 2015). The city worked together with a hundred partners ranging from grass roots organizations, developers and planners. Ways of multidisciplinary collaboration among authorities, universities and businesses were clearly specified in the CPH 2025 plan. The plan also detailed how residents of Copenhageners could contribute to the climate tasks.

One of the keys of Copenhagen's success story was the integration of the Climate Plan with the urban development plans and strategies. The City of Copenhagen Climate Adaptation Plan was fully adopted by the City in 2011, outlining the physical climate mitigation planning and addressing ways to deal with physical changes resulting from global CO2 emissions. The CPH 2025 Climate Plan was also strategically linked to local master plans, the Agenda 21 Plan, the Action Plan for Green Mobility, the City of Copenhagen Resources and Waste Plan, Cycling Strategy 2025 and the visionary plan, the Eco-Metropolis 2015. It thus served as an overarching planning vision for the City (Ministry of Foreign Affair of Denmark, 2015).

A challenge for Copenhagen was that the legislative framework for the green transition is formulated at the national level; the city of Copenhagen has little influence on it. Nevertheless, as a capital city, Copenhagen was able to influence at the regional level the conditions that govern CO2 reduction, energy production and consumption, infrastructure retrofitting and so forth.

## 5. Recommendations and conclusions

The examples from New York and Copenhagen show that city level climate change response can actually be initiated and implemented, without having to rely solely on the national level. It is crucial that the plan is politically supported by the local leaders, and that multi-stakeholder collaboration between government and the public sectors is enabled and encouraged. The two cities' experiences highlight the importance of adopting the climate change goals into the local planning strategies. These climate change goals in the two cities serve as overarching visions for future development ensuring a well-informed and holistic city wide urban and infrastructure planning. The experiences also highlight the required flexibility of the local governance in adapting the local planning with these goals in terms of streamlining the urban planning visions.

In conclusion it can be stated that building resilience to climate change requires a governance approach with strong local-level involvement that is able to integrate the climate change adaptation objectives with overall urban development needs. For this governance approach, sufficient institutional capacity is needed, as well as political support, multi-stakeholder partnerships, and broad processes of participation. Through an overarching vision, a synergy can be created between initiatives towards climate change adaptation and those towards urban development, allowing for cities to become a key part of the solution, rather than merely cause of or victim to, the problem.

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**Conflict of Interest**

The authors declare no conflict of interest

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