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**To cite this article:** Diane Archer, Florencia Almansi, Michael DiGregorio, Debra Roberts, Divya Sharma & Denia Syam (2014) Moving towards inclusive urban adaptation: approaches to integrating community-based adaptation to climate change at city and national scale, *Climate and Development*, 6:4, 345-356, DOI: [10.1080/17565529.2014.918868](https://doi.org/10.1080/17565529.2014.918868)

**To link to this article:** <https://doi.org/10.1080/17565529.2014.918868>



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Published online: 17 Jun 2014.



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## REVIEW ARTICLE

### Moving towards inclusive urban adaptation: approaches to integrating community-based adaptation to climate change at city and national scale

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(Received 22 August 2013; final version received 10 February 2014)

Adaptation to climate change in urban areas presents a complex challenge. Consequently, approaches to urban adaptation should be both multilevel and multidimensional. Community-based adaptation (CBA) presents an opportunity for local-level participation in framing adaptation planning and activities, with wider transformative potential for urban governance. This paper presents five case studies from cities in the Global South which offer insights into the different scales at which CBA can be mainstreamed in urban contexts, and the various ways in which this is happening. These examples demonstrate five emerging opportunities for mainstreaming urban CBA, which include using CBA as part of a wider package of approaches; seizing processes of institutional reform as an opportunity to integrate community perspectives; institutionalizing new actors and approaches as a mechanism for scaling up multi-stakeholder approaches; ensuring top-down planning approaches are connected to local dynamics; and using participatory research to facilitate local communities in shaping planning processes. The cases also demonstrate that while obstacles to mainstreaming in urban contexts remain, some lessons in addressing these challenges have emerged, and CBA should, therefore, be a part of the toolbox of local and national urban adaptation policy frameworks.

**Keywords:** climate change; community-based adaptation; urban; cities; mainstreaming

#### Introduction

In a world in which the majority of the population lives in urban centres, the importance of addressing urban vulnerability to climate change cannot be underestimated. Urban areas represent complex systems and concentrations of risk, and both rapid and slow onset disasters can be seen as a result of failures in urban governance (Dodman & Satterthwaite, 2008), with the potential to be aggravated if the impacts of climate change are not adequately planned for. One billion people across the world live in informal settlements, lacking infrastructure, basic services, and secure housing, and are, therefore, particularly exposed to the impacts of climate change (Satterthwaite & Mitlin, 2014). Adequate building regulations, universal provision of infrastructure and services, and emergency preparedness may frequently be beyond the capacity or power of local authorities, while appropriate legal, financial, and insurance systems may be lacking (Dodman & Satterthwaite, 2008; Satterthwaite, Huq, Reid, Pelling, & Romero Lankao,

2007). There is, therefore, also a role for civil society to prepare for climate change, both through local non-governmental organizations (NGOs) and local communities, such as through community-based adaptation (CBA), which integrates governance approaches and tools for participatory planning.

Urban CBA can be seen as a response to rapid urbanization and competing pressures for scarce urban resources which may put communities at increased risk of climate change impacts through displacement effects (Soltesova, Brown, Dayal, & Dodman, 2014). As urban climate change adaptation remains a relatively new area of action for cities, and possible adaptation actions need to be context-specific, there are currently no standards or norms for planning and adaptation at the city scale, and different cities have adopted varying approaches to planning and implementing adaptation actions (Anguelovski & Carmin, 2011). Where community-level actions can be mainstreamed into, and supported by, city-level planning mechanisms, this

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creates the potential for more effective risk reduction whilst building capacity, devolving authority to the community level, enhancing governance and accountability.

CBA refers to the participatory identification and implementation of community-based development activities that strengthen the capacity of local people to adapt to climate change, and building on communities' expressed needs and perceptions to address local development concerns which underlie vulnerability (Ayers & Forsyth, 2009; Reid et al., 2009). Recognizing that adaptation is embedded within an institutional system which may have particular goals (Cannon & Muller-Mahn, 2010), community-led approaches to climate change adaptation may, therefore, either need to challenge both the existing institutional system and its development goals or be better integrated with it. Because CBA specifically seeks to engage with poor and more vulnerable people (Forsyth, 2013), it presents an opportunity to address the social, economic, and political drivers of vulnerability as part of broader development processes. Recognizing the challenges of defining 'communities' in the urban context, for the purposes of this paper they are regarded as residents of a particular area who are vulnerable to similar climate impacts. These residents may be socially and financially heterogeneous, but may be grouped through local administrative boundaries, issue-based local organizations, common interests, values, and activities (Twigg, 2007).

While the need to mainstream climate change adaptation into development planning and decision-making processes has been recognized, the resulting guidelines and tools developed by international agencies and NGOs may have contributed to a lack of clarity regarding mainstreaming (Oloff & Schaer, 2010). Mainstreaming here refers to the integration of climate resilience considerations into development planning objectives and processes from national to local scales (Pervin et al., 2013), recognizing that a transformative approach which positively impacts the development agenda, is preferable to a merely 'additional' approach (Jahan, 1995, in Pervin et al., 2013). This paper explores the opportunities, benefits, and challenges to mainstreaming CBA into urban climate governance, 'in which public, private, and civil society actors and institutions articulate climate goals, exercise influence and authority, and manage urban climate planning and implementation processes' (Anguelovski & Carmin, 2011, p. 169).

Planning is in many cases a top-down process: from national structures to the city to the community level, with limited opportunities for integrating local-level actors in the process. When considering climate change, planning may include vulnerability and risk assessment processes, including community-level assessments – but significant gaps remain in inclusive approaches to urban adaptation which make room for and learn from community-level knowledge and adaptation actions. Recognizing that climate change is a challenge which cannot be addressed solely by a single organization or governance

institution, there is, therefore, a need for 'multi-level or multiscale governance' (Leck & Simon, 2012). This involves agents and institutions from both the government and non-government sectors, including community groups, through inclusion of community voices in defining the problem and finding solutions, and mainstreaming CBA approaches into planning and processes.

This paper draws on case studies of approaches to urban adaptation across five cities in the global South, which provide examples of cities currently implementing resilience-building initiatives through a variety of means and drivers. These cases were presented in the urban plenary session at the 2013 Community Based Adaptation 7 conference on 'Mainstreaming CBA' in Dhaka, Bangladesh, representing some key emerging issues across geographies. The cases consider how urban communities can and have mobilized to pursue adaptation strategies, and how local governments and other actors have incorporated these experiences, priorities, and capacities, in ways that mainstreams urban CBA. Presented from the perspective of local government, civil society, and academia, these examples, while being context-specific, represent emerging opportunities for mainstreaming CBA in urban areas, as follows:

- CBA is part of a wider package of approaches, with the appropriate institutional framing, as in Durban, South Africa;
- CBA offers an entry-point for aligning top-down approaches with local priorities, as in Guwahati, India;
- Processes of institutional reform are opportunities to integrate community perspectives, such as in Uruguay;
- The institutionalization of new actors, approaches, and funding mechanisms is facilitating the scaling up of multi-stakeholder approaches, as is happening in Indonesia;
- Participatory research plays a role in allowing local communities to shape planning processes (Forsyth, 2013), like in Quy Nhon, Vietnam.

While exploring the lessons emerging from current experiences, the paper will also demonstrate the relevance of CBA in building urban resilience to climate change, as well as the benefits of mainstreaming CBA into city- and national-level adaptation planning. The case studies, while limited in number, allow an exposition of various mechanisms for integrating community-level actions into city-level planning processes, as well as challenges which may impede integration, and how they have been or might be overcome. By exploring the scope for mainstreaming CBA at different scales and through a variety of drivers, the emerging lessons provide insights into approaches to building urban resilience which integrate community-level practices into planning at both the city

and national levels, with subsequent potential for reshaping economic, social, and political institutions.

### **CBA within urban climate governance**

While there is significant interest in CBA, existing studies have had a limited urban focus and highlight the gaps between local communities and public institutions. Case studies from Bangladesh offer insight into the potential of CBA in urban low-income settlements. Jabeen, Johnson, and Allen (2010) draw on the coping strategies of the urban poor in Korail slum in Dhaka to demonstrate that these strategies can be both preventative and impact-minimizing, but highlight the need to integrate local knowledge in pro-poor adaptation planning, while at the same time promoting democratic and accountable local governance structures to raise awareness of risks and ensure their integration into land use plans. They also point out that many of the most effective adaptation strategies require local government intervention to be implemented at scale, such as drainage systems. Roy, Hulme, and Jahan (2013) examine differences in adaptive behaviours of squatters who ‘own’ their homes and those who rent dwellings, concluding that governmental and non-governmental organizations must take into account land tenure status when deriving and implementing adaptation plans in urban low-income settlements. Both studies demonstrate numerous initiatives being undertaken at household and community levels which can be regarded as self-help measures, and which, with wider institutional support and provision of basic services, have the potential to adapt urban communities to climate change.

### ***The case for mainstreaming CBA in urban governance***

Urban climate governance remains an emerging policy domain. Carmin, Anguelovski, and Roberts (2012) argue that newer domains like climate change adaptation, endogenous goals, and objectives are more likely to drive adaptation actions at the city level, rather than exogenous factors like regulation or fundraising needs. In Durban and Quito, the endogenous drivers were specifically the cities realizing their vulnerability to climate change impacts, the efforts of champions pushing the agenda forward (a single champion in Durban, as illustrated below; elected officials in Quito), and adaptation being seen as a means to secure the cities’ socio-economic development. Concurrently, ‘the lack of resources, capacity, and best practices available to support climate action may be promoting innovation, attention to the most crucial needs and subpopulations, and the advancement of policies and initiatives that are grounded in local cultures and realities’ (Anguelovski & Carmin, 2011, p. 173), which may be successful in the absence of national government policy.

New approaches to urban governance and institutions to promote resilience are one of the key focus areas of urban resilience literatures, including bundling resilience with broader development efforts in order to contribute to long-term sustainability (Leichenko, 2011). The IPCC (2007) defines resilience as ‘the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity of self-organization, and the capacity to adapt to stress and change.’ In urban contexts, resilience can be framed as the interaction between agents (from households to social organizations); systems of physical infrastructure and ecosystems; and formal and informal institutions, which govern relations between agents and systems (Tyler & Moench, 2012). This framework can facilitate urban adaptation planning by bringing together considerations of physical, ecological, social, and institutional factors.

However, the concept of resilience has been challenged as being insufficiently transformative, for promoting ‘bouncing back’ rather than ‘bouncing forward’ (Roberts et al., 2012), and not recognizing that often the current state of many institutional systems is the cause of problems. Pelling (2011) argues that adaptation presents an opportunity to move from the status quo of resilience towards transformation, that is, changes to the balance of power in society, through social reform and improved governance. While mainstreaming of CBA by itself will not automatically be transformative, this paper argues that approaches to urban resilience which give more room to community voices can reshape the definition of climate-related problems and hence solutions to them, in such a way that urban governance becomes more inclusive, transparent, and accountable.

### ***Approaches to mainstreaming urban CBA***

Mainstreaming of CBA cannot be considered outside of the wider policy-making context of adaptation, and the link between national- and local-level adaptation planning and the local communities on the ground. Ayers (2011) examines the potential for participatory, deliberative adaptation policy-making in the context of developing the National Adaptation Plan of Action (NAPA) in Bangladesh. She argues that for adaptation governance, it is necessary to move beyond simply creating institutional spaces for participation, towards ‘deliberative governance, which should provide arenas for “risk-based” and “vulnerability based” adaptation discourses to come together and be resolved’ (Ayers, 2011, p. 68). She found that adaptation priorities identified in the NAPA were based on expert-driven physical, impacts-based framings of risk, whereas local adaptation priorities were based on addressing development factors which made people vulnerable to climate impacts in the first place (Ayers, 2011, p. 81). Ayers recommends that deliberative adaptation governance should engage local institutional structures in adaptation planning

from the beginning of the process, allowing CBA to be a starting point for adaptation planning, rather than the end-point – while these findings are based on rural cases, they have resonance for urban areas.

For meaningful and deliberative governance, it is important to understand the role and dynamics of institutions functioning at different levels which can shape adaptation responses, whether they are public, private, or civil society institutions. Agrawal, Kononen, and Perrin (2009, p. 10) suggest that this shaping of adaptive capacity is determined by these institutions in three ways: they structure the nature of impacts and vulnerability to climate change through governance and communications; they create the incentive framework in which individual and collective actions take place; and they control access to resources and information which shape adaptation practices locally. Applied to an urban context, this relates to household provision of basic services and infrastructure by the state, access to financial institutions, and insurance mechanisms, which will shape collective and individual responses by local households (Satterthwaite et al., 2007). Dodman and Mitlin (2013) highlight the limitations of CBA in this regard, given the need for careful consideration of the potential of community-led projects to influence political and institutional structures, in order to contest the role of the state and necessary redistribution of resources. Examples from African and Asian urban poor federations demonstrate the potential for collective approaches to challenge underlying political and social structures for transformative effect (Dodman & Mitlin, 2013).

Planning plays an important role in adaptation given its forward-looking nature and its institutional basis within government (Hurlimann & March, 2012) – however, market mechanisms and politics mean that planning cannot be considered outside of power relations. Some cities may lack the flexibility to plan for uncertain futures, while adaptation plans may be motivated or influenced by external strategies or funders (Johnson & Breil, 2012). Nevertheless, effective and balanced planning for climate change adaptation can support action across spatial, temporal, and governance scales, in a way which maintains the public good while balancing competing interests (Hurlimann & March, 2012). However, planning as an effective and responsive adaptive mechanism requires sufficient capacity from planners and government institutions, as well as an informed public with the mechanisms to participate effectively, to ensure goals are not maladaptive. Few, Brown, and Tompkins (2007) highlight difficulties of planning for adaptation, where balancing immediate problems against a strategic, longer term perspective can make consensus difficult. Stakeholders may be selectively included or excluded, given the difficulties of defining the ‘community’ (Few et al., 2007).

While inclusive, deliberative approaches to urban climate governance are desirable, in practice their feasibility is constrained by capacity gaps, power relations,

and politics, which may limit the transformative potential of such an approach in an urban context. However, inclusive, multi-stakeholder approaches to building urban resilience open up avenues for effective urban climate governance, and as the case studies from low- and middle-income countries below demonstrate, these can be initiated at a number of different levels and through a variety of approaches.

### **Emerging lessons for mainstreaming urban CBA**

#### ***CBA is one of multiple tools for municipal climate governance***

The Municipality of eThekweni (the local government responsible for the city of Durban, South Africa) recognizes that CBA is one of the several types of tools at its disposal to address climate change, and is adopting a variety of approaches to adaptation and mitigation. The adaptation initiatives of eThekweni Municipality are described elsewhere in urban climate governance literature (Carmin et al., 2012; Roberts, 2008; Roberts et al., 2012), with the city seen as a global leader in urban adaptation. The city’s climate protection programme has been driven by the Environmental Planning and Climate Protection Department, with an emphasis on municipal-, ecosystem-based adaptation, and CBA, and has also focused on developing new tools and mainstreaming climate protection into city plans and operations. Seven years of adaptation action have demonstrated that there is no textbook approach to integrating CBA with other adaptation activities, in the context of multiple pressures including social inequity, substantial infrastructure backlogs, and risk-tolerant communities, which represent a ‘wicked’ mix of problems to which climate change is added (Roberts, 2013). The municipality clearly recognizes that approaches to mainstreaming CBA are not without difficulties and that a learning-by-doing approach is necessary.

The difficulties of developing a participatory approach to adaptation were highlighted with the creation of the Durban Climate Change Partnership (DCCP) in 2010, with a steering committee representing all major stakeholder groups being established (Roberts, 2013). However, due to a combination of factors, including distrust between parties, a lack of sustained motivation and influential leadership, and the related inability to find funding external to local government, by August 2012, the activities of the DCCP had stalled despite the local government’s willingness to encourage a participatory approach. Local government was prevented from continuing to fund the partnership by national financial regulations and the lack of a legal structure which could equally accommodate the various stakeholder groups and eThekweni Municipality.

Another lesson which has emerged is the importance of local champions. At the municipal level, Debra Roberts, head of the Environmental Planning and Climate Protection

unit, is recognized as the champion making Durban a leader in adaptation (Carmin et al., 2012). In the Buffelsdraai Community Reforestation Project, where local households grow native tree seedlings in exchange for credit notes, one of the local facilitators championed sponsoring school fees using credit notes, with resultant beneficial impacts on the local community. At the same time, analysis showed that many ‘treepreneurs’ were not aware of the motivation behind the reforestation project (Debra Roberts, personal communication, November 28, 2013), and thus, if an ecosystem-based adaptation approach is to affect local understanding of climate change impacts, this needs to be at the forefront. However, this also highlights the difficulties of making adaptation a priority in a context of social and economic deprivation where more immediate needs may be prioritized by residents.

The Durban case shows that a single approach to adaptation is insufficient, and CBA needs to be integrated as part of a package of tools applied at the city level. In order to effectively mainstream a CBA agenda, a city needs to ensure that any new institutions established appropriately respond to the needs of stakeholders and are suitably framed and facilitated so as to break down any existing distrust which may be a result of the existing political and social power relations.

### ***Ensure top-down priorities are aligned with local-level needs***

While the Durban example illustrates the role of city-level policies, the case of Guwahati in India demonstrates that, in order to avoid mismatched priorities across different levels of government (Leck & Simon, 2012), a coherent top-level policy framework is important in shaping the mainstreaming of CBA into local- and state-level planning. Because urban development in the Indian federal system is a State subject, State Government is a powerful entity in facilitating the urban climate adaptation agenda. While Central Government has the powers to make policies and schemes related to urban development, their adoption and implementation rests with the State. However, the State Climate Change Action Plans, which all States should develop and implement under the Prime Minister’s National Action Plan on Climate Change (NAPCC), and the National Mission on Sustainable Habitat, one of the flagship Missions of the NAPCC (yet to be implemented), are the only windows of opportunity for integrating CBA into urban development planning processes. The Indian Constitution’s 74th Amendment Act gives powers to urban local bodies to plan for themselves, and requires cities to elect mayors and ward councillors. However, mechanisms for elected representatives to receive regular feedback from the community are ill-defined (Sivaramakrishnan, 2007). Elected representatives are often unfamiliar with approaches to addressing climate change and its

impacts at the city level (Divya Sharma, personal communication, December 30, 2013). Vested interests play a critical role in shaping action, as does the character of the political economy of the State in terms of reigning party and political–bureaucratic relationships. However, if implemented in its true spirit, the 74th Amendment Act holds potential for supporting locally led approaches to climate change through decentralization of functions to urban local bodies.

For communities, their ability to demand action on disaster-risk reduction (DRR) and climate adaptation planning are limited by a lack of awareness. There is no system of community feedback or participation (both core components of CBA) within city development planning and State governments’ budgetary planning, preventing formal and regular communication between citizens and the government (TERI, 2011).

A study by The Energy and Resources Institute (TERI, 2011), in the context of the Asian Cities Climate Change Resilience Network (ACCCRN)<sup>1</sup> initiative, developed a detailed framework for the preparation and mainstreaming of a resilience strategy for Guwahati. The resilience strategy consisted of an integrated plan involving housing, ecologically sensitive urban planning, and urban infrastructure and services, overarched by DRR. This was substantiated by a detailed regulatory and institutional analysis of the urban development planning processes adopted in Guwahati and the State of Assam, to identify the entry points for mainstreaming the strategy.

The Guwahati study demonstrated that adaptation actions can be developed if the city government has the will and leadership needed to take up the tasks and actions towards climate resilience, and where knowledge and capacity gaps are filled by external actors like the national ACCCRN partners (see also Kernaghan & da Silva, 2013). However, implementation of strategies not falling under the ‘regular’ mandate of the city or the state government remains questionable. While the Guwahati city government has accepted the study recommendations, to adopt these they need State Government’s acceptance of the resilience strategy to be forwarded to the city for implementation. This is logical given the regulatory-institutional set-up where urban development is a State subject, and both the State and national levels should work with cities when building climate policy which reframes city-level development (Corfee-Morlot, Cochran, Hallegatte, & Teasdale, 2011; Sharma & Tomar, 2010). Adoption of CBA would require institutional mandates and proper application of existing regulations for community participation. Additionally, planning for any new challenge, particularly for short- and medium-term actions, requires the solution to be based on existing implementation frameworks of the state or city. The long-term actions could focus on bringing in the absent laws, regulations, and policies that could steer and sustain such efforts for other cities.

### ***Seize opportunities for institutional reform to put community-based approaches on the agenda***

In South America, efforts to reshape policies and regulations are emerging. Case studies from Argentina and Uruguay show how certain local governments are seeking to engage in multilevel adaptation planning, and how these approaches may be strengthened by integrating community-based perspectives in a two-way process. A research project analysing the impact of climate change on coastal areas of the Rio de la Plata, and potential for multilevel governance of risk-management and adaptation, compares two cities each in Uruguay and Argentina (Almansi & Hardoy, 2013). This study offers a number of insights into the socio-institutional barriers which are hampering full integration of community voices in urban climate governance<sup>2</sup>.

Uruguay is undergoing an institutional redesign, with a mandate to use more holistic approaches at multiple levels. In 2009, the government created the National Climate Change and Variability Response System for coordinating risk prevention, mitigation, and adaptation, and preparing the national climate change response plan. However, although the new laws consider the cross-cutting nature of climate change and the necessary interaction needed between land use, water use, and the environment and disaster-risk regulations, advances in the national institutional architecture have not yet permeated to sub-national levels, excepting isolated pilot projects. Active citizen participation in drafting of territorial and urban water plans is also being considered, but this requires a strong political will and commitment from technical experts, given the deviation from traditional processes. The pace of change is thus slow.

In Argentina, the process is nascent, without large-scale change in the institutional structures or legal frameworks to support cross-cutting climate change adaptation (Almansi, 2010). However, some advances have been made. The secretariats of different Ministries are working together to integrate DRR and climate change adaptation into territorial planning – however, climate change issues and integrated approaches do not really permeate other Ministries nationally or guide local planning and DRR.

This comparative study highlights the difficulties of DRR and climate change planning, which are seen as the responsibility of the environmental offices, while plans for urban services falling under other offices may actually increase vulnerability and risk if implemented, and may pay no regard to adaptation. Local governments lack financial resources earmarked for disaster risk, much less for climate change planning, nor the associated technical capacity or legal mandate.

On the other hand, communities historically have developed strategies for adaptation to different environmental conditions in anticipation of government actions. Self-organized community groups exist, for example issuing emergency warnings. Climate change now brings

new challenges associated with uncertainty and its effects on everyday life. Local community demands may consolidate risk, for example, when informal settlements in flood risk areas are regularized in order to avoid social conflict arising from relocation. In the best cases, this regularization is approved with the requirement of carrying out preventive hydrological works. (Almansi, Hardoy, & Pandiella, 2014).

What emerges from this is an opportunity for raising awareness about the links between urban and infrastructure planning, emergency management, housing, and urban services in the context of increasing climatic uncertainty, and the potential for reshaping socio-institutional relations. There are difficulties in learning from the failures of old land use regulations, plans, and poverty reduction strategies, which may themselves have contributed to the cities' current risks (Almansi et al., 2014). A municipality which does not limit the speculative retention of land, whose building regulations create spatial segregation between rich and poor, and which does not create mechanisms for the recovery and distribution of land rents, is ill-positioned to consider an urban risk reduction policy (Almansi et al., 2014). This presents an opportunity to improve urban planning and poverty alleviation policies from a community base. Local communities can generate clear and practical information and disseminate it, opening different options to enable more effective actions in cities. Involvement by communities which have been affected by climate impacts can drive action by decision-makers, and awareness of other communities to start adaptation, which is particularly important in the context of uncertain or non-existent data, and reluctance by politicians to share information about probable risk areas. As Agrawal et al. (2009) suggest, these communication barriers hamper effective multi-level governance by blocking participation by local organizations in the local government response.

### ***Institutionalise multi-stakeholder approaches to facilitate national mainstreaming***

In Indonesia, city-level adaptation approaches are an opportunity to shape governance at different scales, by scaling up multi-stakeholder approaches to urban climate change planning from two cities (Bandar Lampung and Semarang) to another six cities. This is being done through a multi-pronged process, making use of local and national networks of city-level actors through the institutionalization of multi-stakeholder groups, strengthening the take-up of a resilience-building approach within and beyond the city, through direct engagement with national state actors (Syam, 2013). As part of ACCCRN, city resilience strategies for Bandar Lampung and Semarang were developed through an inclusive, multi-stakeholder process building on vulnerability assessments. These are now being mainstreamed into city development plans. The process rests on having a wide cross-section of stakeholders, including civil society and NGOs, academics,

and practitioners, working with a range of city-level officials, within a city team formally agreed with the city government, thus giving it the necessary institutional standing. A number of other bodies have been established to institutionalize the process at different scales (Table 1), thus facilitating uptake nationally, and demonstrating how adaptation processes need to be ‘multidimensional and multiscalar’, bringing together ‘actions, actors, sectors, and governance levels’ (Leck & Simon, 2012).

In Semarang, a body called the Initiative for Urban Climate Change and Environment (IUCCE) supports the resilience-building process at the city level, bringing together different stakeholders to coordinate local processes and gather evidence. The establishment of the IUCCE forms part of the strategy for sustaining city-level activities post-ACCCRN, providing opportunities for stakeholders from multiple sectors to assist the city government. Meanwhile, the Best Practice Transfer Program supports replication by other Indonesian cities through city-to-city peer-learning opportunities. Nationally, the Indonesian Climate Alliance brings together local and national government, civil society, donors, academics, and private sector representatives to actively support the institutionalization of urban climate resilience. The Indonesian Climate Alliance informed the development of the Indonesian Climate Change Adaptation plan, which is being formally adopted by the National Development Planning Agency. The recommendations include a specific mandate for local governments to develop their own local climate change adaptation plan as a downscaling strategy.

These initiatives, spurred on by ACCCRN, demonstrate a growing momentum for replicating and geographical scaling up through national engagement, embedding urban climate planning more deeply within cities and nationally. Building alliances between national and city actors can incentivize replication and scaling up of urban

climate interventions. Establishing dedicated institutions can synchronize perspectives between the national and city levels. Standardized methodologies and tools can facilitate this, particularly vulnerability assessment and city resilience strategy processes, as these initial steps secure the engagement of a range of actors from communities to officials.

### *Participatory research to influence local government adaptation planning*

Where community-level knowledge may be acknowledged by local government actors, the approaches to adaptation they propose may not be – and participatory research approaches can facilitate local knowledge to shape adaptation actions. This is the case of Quy Nhon, a Vietnamese coastal city in Binh Dinh province, where planned urbanization and infrastructure development has begun encroaching on low-lying agricultural land on the city outskirts (DiGregorio, 2013a; DiGregorio, 2013b). In 2009, typhoon Mirinae killed seven people and caused roughly \$21 million USD in damage in Quy Nhon City. Mirinae is the type of extreme hydro-meteorological event projected to worsen in future. DiGregorio and Huynh (2012) examined the causes of Mirinae’s severity, in order to reduce risk and prevent such future catastrophes, particularly concerning plans to urbanize the Ha Thanh River delta, the area most severely impacted by the flood.

Through interviews at 21 sites in the delta, the researchers determined historical flood patterns and local adaptation strategies, the height and chronology of flooding, and developed hypotheses regarding causes of the flood’s severity. They tested these hypotheses by reviewing official damage assessments, urban plans, satellite imagery, and history of infrastructure construction and urbanization in the delta. A senior researcher<sup>3</sup> at the Southern Institute of

Table 1. Institutionalizing urban climate change resilience within urban governance in Indonesia.

Goal: Institutionalising urban climate change resilience within the Government of Indonesia, including the incorporation of resilience-building strategies in planning and budgeting processes across all sectors and levels of government.		
Objectives	Platform(s)	Key actor(s)
Build active national-level multi-stakeholder platform to support institutionalization of urban climate change resilience	Indonesia Climate Alliance	Representatives from government ministries and departments, donors, selected civil society, and private sector
Provide knowledge and toolkits for national government to integrate and apply urban resilience strategies	Online vulnerability assessment tool and system; climate spatial planning	Government ministries and agencies, universities
Work with ‘early-adopter’ cities and replication cities to apply methodologies and build knowledge to support momentum for national mainstreaming of urban climate resilience	Best practice transfer programme; Initiative for urban climate change and environment (IUCCE) and network (IUCCN)	City-level teams from both early-adopter and replication cities, universities
Advocate for funding mechanisms for climate change adaptation at the national level	Indonesia Climate Alliance, existing climate financing mechanisms	Representatives from government ministries and departments, donors, selected civil society, and private sector



Water Resources Research developed a whole watershed hydrological model, to test for impacts related to recent construction in the delta, full implementation of the proposed Nhon Binh Area Plan, and full implementation plus climate change under conditions of a Mirinae-type storm.

Interviews with residents in the Ha Thanh delta revealed that recent urbanization and infrastructure construction may have aggravated the flood. Floods are a seasonal occurrence in the delta to which generations of inhabitants have adapted. Older residents realized that new construction in the delta changed flood patterns over the years, resulting in higher flooding overall. This was confirmed by hydrological modelling. Before 2003, the relatively few barriers in the Ha Thanh delta allowed floodwater to gradually dissipate. New urban areas and infrastructure constructed between 2003 and 2009 constrained floodwater flows. The study found that if the Area Plan for Nhon Binh ward was fully implemented, damage from seasonal flooding would increase in areas outside the plan, and loss of life and property from an extreme climate event would be much greater across the delta. Under the approved climate scenario to 2050, with flood conditions similar to Mirinae, fully implementing the Area Plan could result in higher flood levels, with the most severe impacts suffered by residents of older settlements.

Following the advice of residents and hydrological modelling, the researchers concluded that improvement of drainage rather than dike construction should be the primary means of reducing vulnerabilities to flooding. This contrasts the civil engineering approach that attempts to balance the risk of flooding against perceived economic benefits of urbanization. Information from this research was shared through workshops with the provincial Department of Construction, as part of ACCCRN activities in the city. Despite this, the Department chose to reject a 'room for rivers' approach to urbanization of the delta in favour of recommendations offered by water engineers working for a national institute, allowing for greater urbanization of the Ha Thanh River floodplain. Based on the research findings, this decision will likely lead to the need for construction of hugely costly flood diversion channels. At the same time, as a result of this study, provincial administrators have begun reassessing plans to incorporate more flood plain areas into the growing city (Centre for Urban Planning and Construction Inspection, 2012). On one hand, they are looking to expand towards the hills, whilst on the other, they have used several key planning elements arising out of the community-based research to consider development of existing settlements or 'urban clusters' in floodplains, with flood channels and agricultural flood buffer zones. As the city revises its master plan to 2030, this urban clusters approach is appearing as a key element in planning for climate adaptation.

The Quy Nhon case demonstrates the potential for local knowledge in informing urban development plans, and the

value of research to confirm and quantify community observations. However, it also highlights the tensions between social, physical, and economic impacts of rapid urban development on local communities, and pressures faced by local officials to accommodate developers and the potential short-term economic benefits they offer (Brown, Dayal, & Rumbaitis del Rio, 2012).

### **Addressing obstacles to mainstreaming urban CBA**

The case studies above have provided insights into the different scales at which CBA can be mainstreamed in urban contexts, and the different ways in which this is happening, as well as possibilities for geographical scaling up nationally. Multilevel governance, with national and local governments working together on urban climate governance, has been emphasized in the literature (Bulkeley & Tuts, 2013; Corfee-Morlot et al., 2011), and by extension, the multilevel approach should extend to local-level community and civil society organizations. If urban resilience is to enter the discourse at the city scale, the capacity of city residents as well as officials to understand the implications of climate change and how to adapt to it needs to be strengthened. Where certain actions are beyond the scope of individuals or community collectives, such as putting in storm drains, opportunities for scaled up action by the state should be highlighted and citizens should be empowered to demand action by the government. This can be facilitated by mainstreaming climate change considerations into existing processes of consultation and planning, and cities planning for adaptation will need to engage differently with communities (Bulkeley & Tuts, 2013).

The case studies have demonstrated that while CBA is not the only approach to addressing climate change in urban areas, it is a valuable tool within a package of tools to be applied by cities. CBA is very relevant given that climate change impacts are highly context specific and thus should be informed by local knowledge and experience. However, in order to be applied effectively and supported on a city-wide scale, CBA should be mainstreamed alongside other climate interventions, while recognizing that different areas will have their specific adaptation actions. Thus, the intervention of external actors, such as NGOs, to facilitate the link between the communities and local government, may be necessary, particularly where communities are not easily identifiable or defined. This was demonstrated in Quy Nhon where a research project gathered the voices of grassroots groups and validated their local observations through scientific modelling before linking them to local government planning processes. Similar roles could be played by civil society organizations. It is important to note that an external donor-driven process may provide the initial impetus for such approaches, such as the ACCCRN process encouraging multi-stakeholder engagement in vulnerability assessments and development of city resilience strategies, while

in Uruguay, a research project facilitated local community awareness of and engagement in climate change planning. On the other hand, mainstreaming may be initiated from the top-down, such as in Durban where community-based approaches are actively applied alongside other adaptation mechanisms, with built-in poverty alleviation and education strategies, thus mainstreaming adaptation across sectors.

Mainstreaming of CBA should be facilitated if there is an existing policy framework which allows climate change considerations to be mainstreamed across the board. Policy frameworks which require community consultation or participatory approaches can facilitate the inclusion of local community groups in climate change planning processes; however, even where such frameworks exist, as in India, communication barriers, a lack of locally available and understandable data, and local power relations can hamper effective participation. Similarly, there are challenges to ensuring participation happens through a process of deliberative governance, rather than as part of a preordained agenda (Ayers, 2011). New institutional forums operating on urban scales may be required (Bulkeley & Tuts, 2013) and could strengthen accountability and inclusiveness by devolving authority to the local level. Where local communities are well-informed and able to effectively participate in and shape local planning processes, they can hold local bodies to account, and this can be the beginning of a transformative process of social and political change.

The examples presented above demonstrate some of the benefits emerging out of specific attempts to mainstream community-based approaches in urban contexts. In fast growing urban areas, where local communities may face a number of development challenges, CBA can be integrated alongside a wider development package with positive effects on education and livelihoods. Community-based approaches can have an empowering effect, particularly where mechanisms are developed for community voices to feed into planning processes as in Quy Nhon, where development pressures might otherwise outweigh grassroots' rights, or in Indonesia where community vulnerability assessments shaped city resilience strategies. Where opportunities arise, they should be seized to facilitate community engagement with local officials, as in the case of Uruguay's national policy change opening up space for local reshaping of institutional frameworks to build forms of resilience that support transformation towards inclusive governance, rather than the rigidity of the status quo (Pelling & Manuel-Navarrete, 2011).

Nevertheless, obstacles remain in attempts to mainstream urban CBA in city- and national-level planning, and in enabling truly multilevel governance. Capacity gaps remain at multiple levels: in understanding the potential impacts of climate change and the best response, within both local government and local communities; in accessing

urban adaptation financing; and in the ability of intermediary organizations to support local communities. Existing institutional structures may shape or prevent inclusive approaches or may be constrained by the lack of appropriate legal mandates to enable action, as with the DCCP in Durban. In other contexts, such as the Latin American cases, the climate change agenda may be hampered by the persistence of an emergency response and good development discourse, rather than forward-looking transformative planning which could encompass all of these approaches.

More fundamentally, in diverse and dynamic urban contexts, it may be difficult to clearly define 'communities' or tensions and power imbalances may exist within communities (Forsyth, 2013). Participation may be driven by reasons other than an understanding of the need for adaptation, as with the 'treepreneurs' in Durban. There may also exist tensions between local communities and economic development needs and demands, as in Quy Nhon, whether driven by the government, private developers, or both. Therefore, adaptation may be seen not as something to be done in order to become a resilient city, but rather something necessary in order to achieve other city development goals (DiGregorio, 2013a) – and the city's development vision may affect the manner in which local communities are included, or not, in this process.

'Adaptation for whom' should remain a central question to be addressed in planning processes. The matter of who defines the climate-related problem becomes crucial in determining the type of solutions proposed. The case studies demonstrate that climate change adaptation is very much a 'wicked' problem of governance, and as a consequence requires that power relations and equity issues be addressed, beyond solely applying technocratic or cost-versus-benefits approaches (Dewulf, 2013). There are lessons to be learnt from community-led approaches to development, such as the work of community federations in African and Asian cities (see for example, Mitlin & Satterthwaite, 2012), particularly given the difficulty of separating adaptation from development (Cannon & Muller-Mahn, 2010).

The five examples offer some lessons for overcoming obstacles. The overarching policy framework, at national or state level, plays a key role in shaping action at the local level through legal mandates, as in India. However, the institutional framework itself is not enough if there is insufficient capacity in local bodies to ensure policies and approaches are implemented in the appropriate manner or if local power relations distort incentives. Better communication between local communities and their representatives can facilitate a discourse around resilience. Organized communities may be better placed to push forward an agenda, and may be organized around a common hazard, or supported by external intervention by NGOs or researchers. This is aided by improved awareness at the community

level of climate change risks and actions which can be taken to address these. There is a role here for strategically located champions to drive the adaptation agenda, whether at the community or government level or outside these sectors. Thus, while mainstreaming, CBA can facilitate the application of community-based approaches on a wider geographical scale, localized drivers on the ground are still required for its implementation. Nevertheless, it remains the case that there is no ‘one-size-fits-all’ solution, and in planning activities, it is important to be aware of local priorities, which may not be climate change, and thus integrate adaptation into the pre-existing development agenda.

### Conclusions

Climate change adaptation provides an opportunity for transformative change in socio-institutional structures at the national and local scale (Pelling, 2011), and mainstreaming community-based approaches is one avenue for this change by giving agency to the local level. Adaptation actions as demonstrated by local communities can complement actions by local government, within a larger toolbox of responses. However, mechanisms are required to facilitate local community voices being heard in planning processes, whether through institutional reforms supporting participatory planning and recognizing this at the national as well as local scales or research feeding into planning processes, and to empower local communities to ‘take charge of the direction of change’ (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008, p. 143). Recognizing that for community-based approaches to lead to transformative change, they should be combined with other mechanisms to support the ability of local communities to contest existing power relations (Dodman & Mitlin, 2013) and hence engage in the ‘adaptive challenge’ that questions the creation of current systems and structures (O’Brien, 2012).

What emerges from the case studies is a clear lesson that communities can provide valuable insight into city development plans and activities addressing adaptation beyond the community scale, and there is a role for building the capacity of local organizations and government bodies to ensure that these views are captured and taken into consideration when planning for adaptation. While climate change adaptation approaches have to be context specific, this paper has used lessons from a growing number of urban experiences to demonstrate five emerging opportunities behind mainstreaming CBA. At the same time, CBA can bring new adaptation methods and local knowledge to improve city- and national-level policies and approaches. CBA is also a mechanism for ensuring that the stresses and risks associated with climate change are considered in an integrated manner alongside other problems currently faced by local populations as part of a development-based approach to adaptation.

### Acknowledgments

The authors would like to thank the anonymous reviewers for their constructive comments, as well as Dr Hannah Reid for her comments. This paper arose out of the CBA7 Conference 2013 on Mainstreaming CBA, and draws on the presentations made in the plenary session on CBA in Urban Areas, which was sponsored by the Rockefeller Foundation.

### Notes

1. The Asian Cities Climate Change Resilience Network (ACCCRN) is an eight-year initiative funded by the Rockefeller Foundation, which aims to demonstrate approaches to building urban resilience to climate change in secondary Asian cities. Initiated in 10 cities across Thailand, Vietnam, Indonesia, and India, the programme is now extending to Bangladesh and the Philippines.
2. See also the project website <http://www.iiied-al.org.ar/riberas/home.html>
3. To Quang Toan.

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