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Pro-Poor Urban Adaptation to Climate Change *Based on Case Studies in Kenya and Nicaragua*

Introduction

Poor urban populations in Southern cities are already experiencing the negative impacts of changing weather patterns associated with climate change and climate variability and future projections suggest that these impacts will get worse. Severe weather patterns, experienced as prolonged droughts, intense rainfall or wind speed cause substantial damage to the assets and well-being of city-dwellers, causing localized flooding, housing damage, economic loss, and posing dangers to health and educational achievement. Yet, severe weather events that do not register as disasters on the national or international screen are rarely addressed in the context of climate change adaptation.

Urban governments face a number of constraints to effectively address and build resilience to severe weather: a knowledge constraint (given the scarce evidence of the impact of ongoing severe weather trends), in addition to institutional and fiscal limitations. Since most climate vulnerability research in urban centers has focused on projections and capacity-building for disaster events, city adaptation plans, where developed, have also centered on establishing disaster prevention and preparedness systems.

This note presents results from field studies of Mombasa, Kenya, and Estelí in Nicaragua¹ looking at the experience of poor urban communities in relation to their changing experience of weather and its impact on their lives. These studies applied a participatory urban methodology by which local city governments - and the NGOs and donors that support them - can address adaptation and resilience to severe weather. It finds that talking to poor urban communities is essential in order to understand the vulnerability and adaptation solutions to severe weather. It also notes that existing financial mechanisms at the city level, including local and community-based organizations, can be used to support low-cost solutions that enhance the resilience of the most vulnerable city-dwellers.

Climate Change and the Assets of the Urban Poor: Evidence from Kenya and Nicaragua²

Vulnerability to severe weather in an urban context cannot be understood in isolation from other aspects of vulnerability e.g. the state of water, sanitation, and drainage infrastructure,

¹ See Moser, C. Norton, A., Stein, A. and Georgieva, S. 2010. "Pro-Poor Adaptation to Climate Change in Urban Centers: Case Studies of Vulnerability and Resilience in Kenya and Nicaragua" *Social Development Department*, World Bank, Washington DC; and Moser, C. and Stein, A. 2010. "Implementing Urban Participatory Climate Change Adaptation Appraisals: A Methodological Guideline" *Global Urban Research Center*, Manchester, UK;

² See Moser et. al. 2010 and Moser and Stein 2010 for the methodology used to collect the evidence presented here.

the availability of garbage collection and public health services, among others. Thus, rather than presenting a separate set of challenges, severe weather exacerbates conditions of vulnerability that already exist. Poor urban residents, and especially those occupying marginal lands and lacking security of housing or land tenure are thus the ones most affected by severe weather.

Participatory research in eight poor communities in Mombasa and Estelí, conducted over five weeks in August-September 2009, highlighted three main categories of vulnerability - physical, politico-legal, and socio-economic. In these contexts, physical vulnerability referred to the lack of adequate drainage, sewerage and garbage collection systems. Politico-legal vulnerability referred to the insecurity of tenure, occupation of marginal lands in most hazardous spots (next to the ocean, river, or natural ravine), and a variety of factors originating from the lack of adequate settlement planning and access to services. Socio-economic vulnerability captured the fact that different groups (according to age, gender, disability or other forms of social difference e.g. immigrant status) had different levels of vulnerability to specific weather manifestations. Despite their urban location and the fact that they did not themselves have a clear concept of 'climate change', poor communities had great awareness of weather and its impacts on their lives. Rain and associated flooding was recognized as the most serious problem in both Mombasa and Estelí, with heat/drought/sun of second importance, followed by winds - more evident in Mombasa than Estelí. Furthermore, people understood that there were negative trends in relation to these phenomena.

Poor households, communities and small business owners were also able to identify the physical, natural, human, and economic assets that were directly impacted by reoccurring severe weather events. Again, it was the relationship between various sources of vulnerability that made the effects of severe weather particularly visible. The link between lack of proper drainage/sewerage and health

issues, reinforced by seasonal flooding, was evident in both cities. Cholera outbreaks, associated with water polluted by drainage seepage, had occurred on a number of occasions in Mombasa. Rat invasions posed a health risk in Estelí year-round, but especially when drains were full of rubbish during and after heavy rains. Lack of garbage collection services, combined with severe weather and flooding, created conditions for mosquito infestation and dramatic increases in the perceived incidence of malaria and thus went beyond being an infrastructural problem to one affecting the health and human capital of the entire local population with children, pregnant women and the elderly being particularly vulnerable. Winds in Mombasa had a serious impact on housing as an asset with bamboo roofs quickly catching fire. Small business owners recognized that the increasing intensity of floods, heat stress, wind and dust caused higher and higher damage to their stock and equipment.

Adaptation to Severe Weather in an Urban Context

Even though all interviewed residents - either at the household level or collectively - applied small-scale adaptation measures to protect their assets before, during or after severe weather, these actions were often not recognized as important adaptation strategies by community leaders and local institutions. In fact, when first asked what they did about severe weather, many local residents did not automatically identify themselves as proactively responding. Nevertheless, the incremental and invidious effects of seasonal or year-round severe weather conditions had necessitated a variety of adaptation responses that tended to be ignored by CBOs or local government officials.

Adaptation strategies to flooding included annual repair of roofs, clearing drains, and digging trenches and piling sandbags around houses, and sealing leaking areas. Most strategies were adopted at the household level although some communities organized collectively to unblock drains, build small contention walls next to a river, or wooden

bridges over a ravine. The majority of small businesses were also aware of and actively responding to seasonal hazards e.g. maintaining limited stock, unplugging electric equipment, covering it with plastic or storing it in containers during strong rains, shielding equipment e.g., sewing machines from dust during strong winds.

Even though poor residents identified a number of local institutions that were regarded as important in their community – ranging from formal state and religious institutions and NGOs to informal associations – few of these organizations were perceived as supportive in building resilience to severe weather. Most of the identified adaptation strategies were informal, bottom-up initiatives. This confirmed the observation that formal institutions at the local level rarely acknowledge the increased variability and severity of weather as requiring targeted attention in poor communities, except in cases of disaster relief.

In the absence of a broad national and global assistance framework for city-level adaptation, supporting the bottom-up adaptation strategies in urban communities presents an opportunity for low-cost yet effective solutions to enhance their resilience to a changing climate. At the same time, community-based adaptation activities have a number of limitations e.g., in their ability to provide key infrastructure and services, or secure tenure rights, that would reduce dramatically poor people's sensitivity to severe weather. In this context, building climate resilience for the urban poor would require both reinforcing small-scale local initiatives by state and non-state actors, as well as improvements in infrastructure, services, and tenure rights policy by local government officials. With a view to producing change at all these levels, local initiatives should be geared to strengthening the capacity for poor urban residents to make claims for better urban services, infrastructure and improved clarity of tenure rights – as well as take practical measures to increase their resilience in the face of severe weather.

Conclusions

Climate Change – Not Only a Disaster Story

Vulnerability to climate change in cities is not always a shock disaster story. The slow and incremental impacts of increasingly variable and intense weather events are already being felt by urban residents in developing countries. They are especially pronounced in poor and informal settlements where severe weather exacerbated already existing conditions of vulnerability. The onset of severe weather events is gradual and reoccurring often in a seasonal pattern e.g. of heavy rains or heat stress. Because these changes are invidious and sometimes imperceptible they tend to be ignored.

Long-term climate change projections may be limited at the city level but this should not be a constraint on thinking how to build resilience to severe weather. Despite their urban location, city-dwellers perceive variations in weather patterns and have reasonable knowledge as to how it affects their assets and well-being. By drawing on the lived experience of urban communities much can be learned about both the impacts of a changing climate, and the ways in which spontaneous adaptation occurs and can be supported.

Why Talk to the Urban Poor?

Urban vulnerability assessments and adaptation action plans often take place without much reference to poor communities. Indeed, few of the current urban vulnerability assessments incorporate any interaction with communities unless for ground-truthing of scientific data. This is partly because adaptation activities rarely extend beyond the community of public officials and planners. But it is also because the poor are generally excluded from most formal planning processes not least due to the informal nature of their communities and tenure arrangements.

Including poor urban communities in local climate resilience plans means more than expanding adaptation benefits where they may otherwise not be felt. It is also necessary in order to ensure that adaptation plans in wealthier areas are not adopted at the expense of poor and

informal residents. Where the primary problem is flooding, for example, increasing the defenses of the commercial and formal residential areas may actually send more water the way of informal settlements – impacting those least able to cope. Informal communities may also perceive adaptation actions as a threat and an excuse to evict them unless security of tenure is discussed as part of resilience-building action plans.

Capturing the perceptions of the urban poor and strengthening their resilience is also important given the sheer number of poor and informal urban dwellers. According to UN Habitat (2008/9) one billion, or one in three, urban residents around the world currently do not have adequate access to water and sanitation, live in overcrowded conditions or lack security of tenure. The number of slum dwellers is predicted to double to two billion by 2050. Marginalized groups commonly have the highest exposure and sensitivity to adverse weather, yet their perspectives on severe weather effects are largely unknown.

Climate Change Adaptation or Good Urban Development

Weak institutional and financial resources dedicated to urban climate change adaptation are a constraint to effectively building cities' resilience to severe weather. Adaptation funds for cities may be available in the future, yet the timing and modalities for such support is still unknown. Nevertheless, as confirmed by findings from the participatory research in Mombasa and Estelí, climate change-related vulnerability is not an isolated phenomenon. It is the relationship between severe weather and existing conditions that causes the greatest erosion in assets of the urban poor.

Resilience to an increasingly adverse climate can be enhanced through an array of measures in the current policy domain of city authorities such as improvement of basic services, infrastructure, and tenure rights for informal settlers. Certain adaptation strategies can be supported on an ongoing basis by local NGOs, CBOs or city authorities such as regular cleaning of drains, building of contention walls. Others may require larger efforts in physical planning and building of infrastructure. A stronger voice for poor urban dwellers can help to mobilize urban authorities to provide these services for all citizens.

At the same time, if and when climate adaptation funds are available to city governments, climate change and associated severe weather would present an opportunity to address a number of existing concerns in urban areas including but not limited to disaster preparedness. Trusted local institutions, whether community based organizations (CBOs) and NGOs or local government officials can provide critically important institutional structures for the delivery of community-based climate change adaptation funds.

This note was prepared by Caroline Moser, Andrew Norton, Alfredo Stein and Sophia Georgieva. The findings, interpretations, and conclusions are entirely those of the authors and should not be attributed in any manner to the World Bank, its affiliated organizations, or members of its Board of Executive Directors or the country they represent. For additional copies please contact: socialdevelopment@worldbank.org