An Urban Challenge

In the most urbanized region in the world, city authorities are searching for ways to address the interrelated threat of climate change and natural events (such as hurricanes, volcanic eruptions, floods) within a context of economic uncertainty, ongoing urban change, and inadequate sources of information. With that in mind, the World Bank’s Urban and Disaster Risk Management Unit in the Latin American and Caribbean region is sponsoring a regional study and technical assistance initiative to strengthen climate adaptation planning for cities.

The initiative has benefited from the research inputs and technical advice of its advisory committee. The committee members are international climate change experts from the Massachusetts Institute of Technology, University of the West Indies, Federal University of Rio de Janeiro, and the London School of Economics.

The initiative’s main objective is to support small and medium-sized cities with their adaptation planning for floods and landslides, two of the most recurrent climate-related impacts in the region. This focus on small and medium-sized cities addresses the likelihood that they have not had access to climate change adaptation training, finance or knowledge networks. First implemented in 2010 and expected to be completed by 2013, the initiative includes two phases.

Scoping, Review, and Selection of Five Pilot Cities

During the first phase, the initiative designed and launched a regional e-survey for mayors and city officials across the region and completed a literature review. The survey received over 300 responses from over 15 countries. Survey findings were compiled, analyzed and summarized in a written report. The literature review examined the impacts of climate change on cities and existing tools and approaches for urban climate change adaptation planning. Finally, the initiative selected five cities for subsequent pilot activities: El Progreso, Honduras; Castries, Saint Lucia; Estelí, Nicaragua; Santos, Brazil; and Cuzco, Peru.

The selection of the pilot cities was based on the survey results; regional and climate diversity;
recommendations provided by World Bank staff leading operational activities across the region; the cities’ political willingness, interest, and commitment to working with the initiative; the prevalence of floods or landslides as major climate change-related risks; and the availability of climate risk-related data. El Progreso, Honduras, a modern regional transport hub and agricultural center, is threatened by flooding and hurricanes. Estelí, Nicaragua, a dynamic commercial and tobacco growing center, is located in a mountainous region with elevations between 400 and 1,500 meters. Because of its location in a dry tropic zone, the Estelí region is threatened by drought, flood, landslides, and hurricanes. Castries, Saint Lucia, built on reclaimed land in a flood zone surrounded by a hilly topography, is threatened by landslides, flooding, coastal land loss, and loss of coastal infrastructure. Cuzco, Peru, a city of great historic value in the Andes Mountains is threatened by water shortages, in addition to periods of extreme cold. Finally, Santos, Brazil is a growing and active seaport with a strong trade-related economy tied to the exploding economy of São Paulo. Its location on the coast and channeled rivers expose Santos to a number of risks related to climate changes, such as torrential rain, floods, high tides, and heat waves.

**Pilot Technical Assistance**

The activities of the second phase, currently under implementation, are focused on building or strengthening capacities for climate change adaptation at the city level. During this phase, the initiative is assessing each city’s institutional and socio-economic adaptive capacities to adapt to climate change; evaluating climate-related risks (floods and landslides); and formulating strategic climate adaptation investment and institutional strengthening plans. The capacity building exercises will inform planning and policy making for city authorities and incorporate technical and local knowledge and expertise on challenges presented by climate change. Figure 1 illustrates the main outputs proposed for each city.

**A Plan of Activities**

**Institutional Adaptive Capacity Assessment**
Climate change awareness of city officials; commitment to the issue; barriers to work on it; existence of planning instruments for climate change, and/or presence of climate considerations; planned and underway adaptation initiatives; budgetary allocations for city departments; staffing; technology available (e.g. Geographical Information System (GIS)); and social considerations related to climate change adaptation etc.

**Institutional Strengthening Plans**
Identification and prioritization of interventions such as: training needs; climate funds accreditation; sector-specific planning strategies; and installation of GIS, among others.

**Socio-economic Adaptive Capacity Assessment**
Degree of vulnerability and adaptive capacity of the urban population to natural disasters and climate change.

**Structural Investment Plans**
Identification and prioritization of interventions such as: installation of early warning systems; retrofitting of vulnerable infrastructure; and installation of new disaster risk reduction infrastructure such as flood control schemes, raised walkways, development of safe havens, etc.

**Climate Adaptation Mainstreaming**
Incorporation of the 2 plans into existing planning instruments for the city.

**Climate-Related Risks Assessment (Floods and landslides)**
Human exposure, urban buildings and infrastructure.

**Figure 1.** Main Outputs for Each City.
Institutional Adaptive Capacity Assessment

This assessment focuses on the risk management and planning structures and capacities of city governments in each urban location, since adaptation is a planning challenge that must be incorporated into most areas of government activity in order to shape local changes; as well as positively influence the relationships between municipal authorities and local level organizations working to adapt to climate change.

Socio-economic Adaptive Capacity Assessment

The degree of vulnerability of urban residents will be evaluated. The assessment will identify demographic, economic production and investment, housing, welfare and human development variables to understand the impact of poverty and environmental degradation on disaster risk and climate change risk. The assessment will take into account variables such as tenure security, access to basic services and social and economic activities that could increase (or diminish) urban residents’ vulnerability to disasters and climate change.

Findings from the Online Survey

Disaster risk management programs were identified as the principal programs currently in operation to address the impacts of climate change (37 percent of respondents). Within this response, the largest proportion of respondents referred to flood management programs to re-route rivers (11 percent), followed by a conventional set of disaster risk management activities: risk mapping (5 percent), the formulation of risk management plans (5 percent) and relocation of high-risk settlements (5 percent); early warning (4 percent) and implementation of stations and information systems (4 percent). Only a very small proportion of respondents referred to measures related to the reduction of vulnerability to climate-related events and all were in reference to the housing sector: 1 percent to building safer houses, 1 percent to slum upgrading and 1 percent to the control of slum building.

Adoption of policy measures to adapt to climate change was viewed as urgent and important: 78 percent of those who responded to the question (93 percent of all respondents) stated that the adoption of such measures was urgent.

Main barriers to working on climate change adaptation in their cities: 30 percent of respondents cited finances, followed by lack of awareness (20 percent); need for information and knowledge (20 percent); and absence of necessary policies, regulations, and controls (18 percent).

Among the climate phenomena that most strongly affect cities are floods and landslides. Half of the respondents (50 percent of respondents and 56 percent of cities) reported flooding, followed by drought (31 percent of respondents and 38 percent of cities), storms (16 percent of respondents) and hurricanes (11 percent of respondents). Landslides were listed as a climate phenomena affecting the cities for 13 percent of respondents (16 percent of cities).
Climate-related Risk Assessment for Floods and Landslides

This assessment evaluates the current flood and landslide hazard levels, estimates of the change in future hazard levels (looking forward roughly 30 years), accounting for projected changes in precipitation, sea level rise, and storm surge to the extent that data is available, and a high-level assessment of flood and landslide risk.

Strategic Climate Adaptation Investment and Institutional Strengthening Plans Formulation

The climate risk, socio-economic and institutional adaptive capacity assessment activities lead to the identification and formulation of prioritized structural investments and institutional strengthening interventions linked to or incorporated into existing priorities, sectoral plans, and other planning instruments in each of the pilot cities. The activities also specify costs and sequencing of adaptation measurements.

“Floods affect an important number of the low-income population, who need to be evacuated to temporary housing because their houses are affected. There are great losses to their belongings. They are also increasingly exposed to water-borne diseases.”

—Civil servant, Artigas, Uruguay.

A Sourcebook for City Officials

A final output of these activities will be a sourcebook on climate change adaptation for city officials. The sourcebook will draw on the activities in the first phase and on findings and lessons learned from the climate change adaptation experiences of the region, including the five pilot cities. The final result of this work will be enhanced local adaptive capacity and increased urban resilience through mainstreaming climate change adaptation.

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