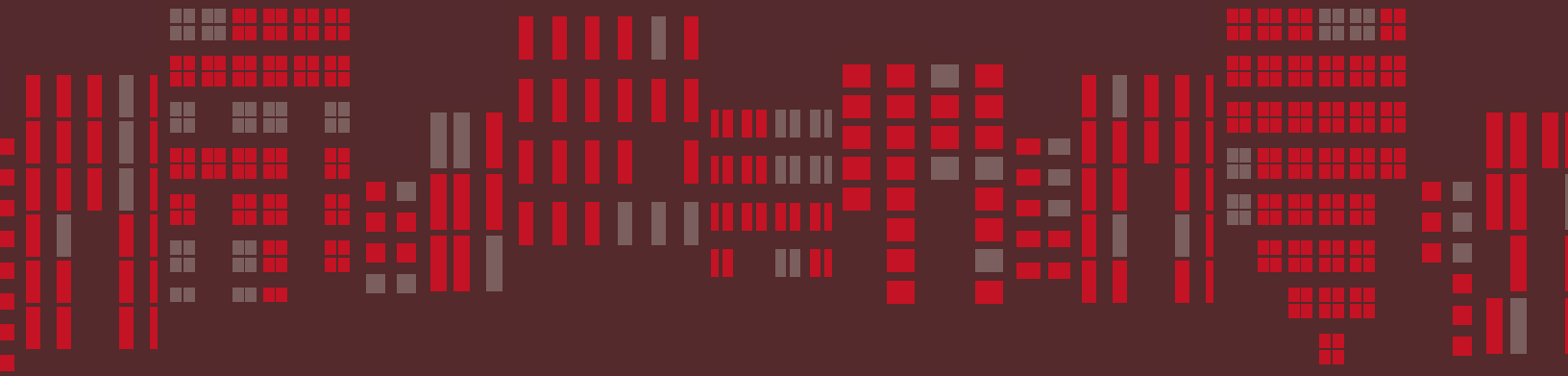
CITIES AT RISK

Developing Adaptive Capacity for Climate Change in Asia's Coastal Megacities

Unprecedented, rapid urban growth is occurring in the coastal regions of Asia's mega-deltas. Severe flooding regularly devastates the region, particularly when high tides are combined with storm surges and high river flows. Large coastal cities are particularly at risk from rising sea levels, storms and storm surges, heat stress and other aspects of climate change. Indeed, the region's densely populated deltas and other low-lying coastal urban areas are identified in the IPCC Fourth Assessment Report as "key societal hotspots of coastal vulnerability" with many millions of people potentially affected.

Increased population in coastal areas is subject to increased potential for loss of life and property. Often, physical risks and vulnerabilities are exacerbated by a deficit of adaptive capacity. Cities generally lack financial, human and institutional resources as well as access to relevant scientific information that would enable them to cope effectively with current climate hazards and adapt to threats posed by future climate change.

Only recently have local governments and the international development community seriously begun to consider the implications of climate change on rapidly growing coastal populations and infrastructure. Through the *Cities at Risk* initiative, START and its partners are helping to facilitate coordinated action among scientists, policymakers and the public to support impact and vulnerability assessments, awareness raising about climate change risks and integration of scientific information about impacts, vulnerabilities and adaptation into planning and policy for the affected areas.



Because of built-in momentum in the climate system, the physical risks posed by climate change to Asia's coastal population will continue to grow, even if a dramatic reduction in greenhouse emissions were somehow to occur. Increases in global temperature are expected to lead to increased frequency, intensity and extent of extreme weather events such as typhoons. In turn, risks posed by storms and storm surges will be compounded by sea level rise. Climate change may even cause shifts in the Asian monsoon system with potentially dire socio-economic consequences.

SHANGHAI

KARACHI

JAKARTA

HONG KONG

MANILA

BANGKOK

CALCUTTA

GUANGZHOU

HO CHI MINH CITY

MUMBAI

DHAKA

TARGET CITIES OF THE CITIES AT RISK INITIATIVE

SHENZHEN

Asia's urban population

GROWS

by appx. **140,000** people per day!

Relentless spread of human settlements in flood-prone, low-lying coastal zones is occurring against a backdrop of GROWING RISK OF DISASTERS related to climate change. PROACTIVE risk management is imperative. We must ACT NOW to manage risks and sustain healthy and resilient urban environments.

CITIES AT RISK WORKSHOP
BANGKOK, THAILAND - FEBRUARY 2009

Kishore U. Gajbhiye, Municipal Corp. of Greater Mumbai, India

Fei-Yu Kuo, Dept. of Urban Housing, Taipei, Taiwan

The *Cities at Risk* workshop was held 26-28 February 2009 in Bangkok, Thailand. The workshop brought together nearly 80 scientists, urban planners and officials, and representatives of disaster management and development agencies to review the most recent scientific findings and projections regarding climate-related risks for Asia's coastal megacities. Participants examined potential vulnerabilities and current coping mechanisms in the cities and then discussed actions, in both the short and long term, that would enhance the capacity of cities to manage the risks and vulnerabilities posed by climate change.

Workshop discussion investigated possible planning and governance mechanisms that would better integrate science information, planning, development, and disaster management. Participants also considered means for improving networking and communication among urban planners/officials and the scientific community in order to enhance urban resilience and adaptive capacity.

Major Recommendations from the *Cities at Risk* Workshop

1 There is urgent need to bridge the 'information disconnect' between the climate science and planning communities. Scientists tend to provide climate information at long-term timescales – often several decades into the future – that pertains to a large geographic region. Relatively shorter-term decisions that benefit from city-scale information tend to demand priority from city managers. To help reconcile these differences, scientists should aim to provide information that is more suitable to higher resolutions and shorter time scales; planners and policymakers should work to lengthen their time horizons.

2 The urban planning community needs to adopt a comprehensive view of climate risks. Within urban planning, there is often uncertainty in understanding climate change versus shorter-term climate variability. Approaching risk management by first considering cities' practical experiences in addressing current climate variability can be an entry point for longer-term planning and adaptation. Lessons learned from managing the stresses that currently affect cities can inform adaptation to longer-term climate impacts and changes.

3 It is important to identify and encourage an 'entrepreneur' in urban government to help make climate change a priority. Past experiences show that a catalyst for the integration of climate change concerns into city planning is the presence of a climate change 'entrepreneur' within city management. Such a person recognizes the importance of climate change and adaptation, has a strong knowledge base to draw upon and is positioned in the government with substantial influence to permit him or her to make climate change a priority in planning and development.

4 We need to acknowledge that there are gaps in our knowledge and then invest in strategies to bridge those gaps. Both the science and urban planning communities need to examine and better understand how cities develop, how climate change and associated sea level rise will impact development and potential response options and strategies.

MANILA - September 2009 Floods Displace 60,000 People HOMELESS **GUANGZHOU**

Nurul Islam, Dhaka City Corporation, Dhaka, Bangladesh

Baode Chen, Shanghai Typhoon Institute, Shanghai, China

Antonia Y. Loyzaga, Manila Observatory, Philippines

Chanchai Vitoolpanyakij, Bangkok Metropolitan Administration, Thailand

5 Assessments of likely climate change impacts should begin with an analysis of current climate stresses and then investigate how changes or shifts in the climate will magnify current vulnerabilities and/or create new ones. This method is recommended over the traditional top-down approach of using downscaled general circulation models to project smaller-scale changes. Instead, the proposed approach would aid in assessing critical thresholds for the city and factors that result in those thresholds being crossed. Precautionary actions to manage risk could then be taken.

6 Climate change science – and information about impacts and vulnerability, in particular – needs to be communicated more effectively. The communication barrier between those who produce scientific knowledge that can inform adaptation and those who need that knowledge hinders action. Improved, multi-directional communication and information exchange will promote more effective integration of climate change into planning and development. Additionally, stakeholders should be involved in risk and vulnerability assessments so that they can provide perspective on and learn about related decision-making processes.

7 There is urgent need to build capacity among individuals and institutions to respond to climate change in Asia's megacities. Enhancing local expertise in climate risk management for cities should be a priority. Innovative activities and initiatives are needed that enable the participation of a variety of stakeholders in an informed urban planning and development process. This will require institutional strengthening, networking and cooperation amongst megacities, improved knowledge sharing and additional financial resources.

8 Effective governance is needed at all levels to integrate adaptation into development strategies. Governments at all levels must act in timely, proactive and harmonized ways to address climate change issues and adaptation measures. Implementation of adaptation can be prioritized through legislation, where possible, but governments must, in turn, ensure effective implementation of such legislation. Governments at all levels should also strive to enhance the capacity of institutions that implement adaptation strategies, including private sector and civil society institutions.

By bringing together key stakeholders under a common umbrella, the *Cities at Risk* workshop contributed to the sharing of critical knowledge and experiences among participants and helped lay a foundation for future communication and collaboration.

The *Cities at Risk* workshop was organized by START, the East West Center and Ibaraki University/ Integrated Research System for Sustainability Science (IR3S) (Japan). Local workshop host was the Southeast Asia START Regional Research Center (SEA-START) in Bangkok. Additional collaborators included the World Climate Research Program (WCRP), the ICSU Regional Office for Asia and the Pacific, the IHDP Urban Global Environmental Change (UGEC) project, the Monsoon Asia Integrated Regional Study (MAIRS) and the Asian Development Bank (ADB). The *Cities at Risk* Workshop was funded by the Asia-Pacific Network for Global Change Research (APN) and the International Council for Science (ICSU).

+ SHENZHEN + HONG KONG - Mega-Region of 100 Million - Coming Soon!

WORKSHOP FOLLOW-ON & FUTURE PROGRAMMING

Cities at Risk participants identified city-specific adaptation visioning exercises as an immediate and practical workshop follow-on activity. In June 2009, START partnered with SEA-START, the World Bank Institute (WBI), Moxie Designs, LEAD International and Victoria University to facilitate "Training of Trainers" and adaptation visioning exercises in Bangkok, Thailand.

The training exercise introduced eleven facilitators from Thailand, the Philippines, Indonesia and Vietnam to the concept of people-centered storylines. Storyline activities employed role-playing and group exercises to enable scenario building and visioning in cities affected by climate change. The training allowed the new facilitators to gain an appreciation for facilitating participatory engagement of different stakeholders in envisioning future challenges and possible outcomes of alternative coping strategies.

The "Training of Trainers" was followed by a storyline visioning exercise for the city of Bangkok, which engaged participants from the Bangkok City and Governor's offices as well as representatives from the private sector and civil society in activities that aimed to promote mainstreaming of climate change considerations into city planning and policy. Participants visualized various scenarios in which the city was affected by climatic hazards and then developed different options and actions to adapt or cope with the effects. The newly trained facilitators helped to lead the Bangkok exercises.

Cities at Risk partners intend to learn from the Bangkok visioning experience and broaden the effort so that similar exercises might be hosted in other major cities in Asia.

Cities at Risk participants also recommended additional capacity building workshops that raise awareness within urban management of the magnitude of growing risks and vulnerabilities confronting Asian megacities. Plans are currently underway for facilitation of a two-week intense training course that introduces, reviews, analyzes and applies tools for risk and vulnerability assessment and mapping in targeted Asian coastal cities. It is expected that small research grants will then enable training participants to carry out vulnerability assessments linked to urban and regional development plans for their own cities.

The results of these and other follow-on activities will be reported and discussed in a *Cities at Risk II* planned for 2011.

MUMBAI - 150 Year-Old Storm Water Drainage System - Gates close to prevent sea intrusion

CITIES AT RISK PARTNERS & SPONSORS

INTERNATIONAL START SECRETARIAT (IHDP • IGBP • WCRP)

茨城大学 Ibaraki University

EAST-WEST CENTER

SOUTHEAST ASIA START REGIONAL CENTER (IHDP • IGBP • WCRP)

WCRP World Climate Research Programme

World Bank Institute

APN Asia-Pacific Network for Global Change Research

ICSU International Council for Science

Enhancing adaptive capacity will require sustained collaborative efforts between the research, science, education, policy and decision-making communities.

To participate in future *Cities at Risk* activities or to request more information about the *Cities at Risk* initiative please contact Clark Seipt (**cseipt@start.org**) at START or Roland Fuchs (**fuchsr@eastwestcenter.org**) at the East West Center. Additional information about past and future activities may also be found on the web at: **http://start.org/programs/cities-at-risk**

but also block outward drainage causing PANIC!

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