

CATALYZING URBAN CLIMATE RESILIENCE

Applying Resilience Concepts to Planning Practice
in the ACCCRN Program (2009–2011)



Edited by: Marcus Moench, Stephen Tyler, and Jessica Lage



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Moench, M., S. Tyler, et al. (2011), Catalyzing Urban Climate Resilience:
Applying Resilience Concepts to Planning Practice in the ACCCRN Program (2009–2011),
306 pp, ISET- Boulder: Bangkok.

This project was supported by the Rockefeller Foundation.

ISBN: 978-0-9843616-2-5

First Edition: 1,500 copies

September 2011

Published by: The Institute for Social and Environmental Transition, International,
Boulder, CO, USA

Book design: Michelle F Fox

Cover illustration: Brady Fitzgerald

Editorial assistance: Dana Cappelloni and Lea Sabbag

Printed at: Themma Group, Bangkok, Thailand

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LIST OF ACRONYMS

ACCC	Adapting to Climate Change in China	DARD	Department of Agriculture and Rural Development, Vietnam
ACCCRN	Asian Cities Climate Change Resilience Network	DEMs	Digital Elevation Models
BAPPEDA	Regional Body for Planning and Development, Indonesia	DfID	Department for International Development, U.K.
BAPPENAS	National Development Planning Agency, Indonesia	DoC	Department of Construction, Vietnam, provinces
BMKG	The Indonesian Meteorological, Climatology, and Geophysical Agency	DoFA	Department of Foreign Affairs, Vietnam, provinces
C4	Center of Cities and Climate Change, Semarang, Indonesia	DONRE	Department of Natural Resources and Environment Development, Vietnam, provinces
CAC	City Advisory Committee	DPI	Department of Planning and Investment, Vietnam, provinces
CAS	Complex Adaptive Systems	DRR	Disaster Risk Reduction
CBA	Cost-Benefit Analysis	EPA	Environmental Protection Agency, United States
CCCMA	Canadian Centre for Climate Modeling and Analysis	GCMs	General Circulation Models
CCE	Climate Change Explorer Tool	GDA	Gorakhpur Development Authority
CCROM	Centre for Climate Risk and Opportunity Management, Indonesia	GDP	Gross Domestic Product
COP	Conference of Parties	GEAG	Gorakhpur Environmental Action Group, India
CORDEX	Co-ordinated Regional Climate Downscaling Experiment	GHCN	Global Historical Climatology Network
CRED	Center for Research on Environmental Decisions at Columbia University of New York City	GHG	Greenhouse Gas
CRS	City Resilience Strategy	GIS	Geographic Information System
CRU	Climatic Research Unit of the University of East Anglia	GMC	Gorakhpur Municipal Corporation, India
CSAG	Climate Systems Analysis Group at the University of Cape Town	HCVA	Hazard, Capacity, and Vulnerability Assessment
CSC	City Steering Committee	ICCSR	Indonesian Climate Change Sectoral Roadmap
CtC	Challenge to Change	ICLEI	International Council for Local Environmental Initiatives
CTU	Can Tho University	IDA	Indore Development Authority, India
CWC	Central Water Commission, India	IDRC	International Development Research Centre, Canada
CWM	Urban User Groups for Conjunctive Water Management, Indore, India	IITM-Pune	Indian Institute of Tropical Meteorology at Pune
		IMD	Indian Meteorological Department
		IMHEN	Institute of Meteorology, Hydrology, Environment, Vietnam
		IPCC	Intergovernmental Panel on Climate Change
		IPCC AR5	IPCC Fifth Assessment Report

ISET	Institute for Social and Environmental Transition
IWE	Institute for Water Resources and Environment, Vietnam
MONRE	Ministry of Natural Resources and Environment, Vietnam
NCMRWF	National Centre for Medium Range Weather Forecast
NGO	Non-Governmental Organization
NIES	National Institute for Environmental Studies, Japan
NISTPASS	National Institute for Science and Technology Policy and Strategy Studies, Ministry of Science and Technology, Vietnam
NOAA	National Oceanic and Atmospheric Administration
NPCC	New York City Panel on Climate Change
NTP	National Target Program to Respond to Climate Change, Vietnam
PPC	Provincial People's Committee, Vietnam
RCMs	Regional Climate Models
RCPs	Representative Concentration Pathways
RF	Rockefeller Foundation
RPJMD	Indonesian regional mid-term development plan
RPJP	Indonesian regional long-term development plan
RtR	Risk to Resilience
RTRW	Indonesian regional spatial plan
SEA START	South East Asia START Regional Center
SEI	Stockholm Environment Institute
SEDPs	Socioeconomic Development Plans, Vietnam
SGCCI	Southern Gujarat Chamber of Commerce and Industry, India
SIWRR	Southern Institute of Water Resources Research, Vietnam
SLD	Shared Learning Dialogue

SLR	Sea Level Rise
SMC	Surat Municipal Corporation, India
SRES	Special Report on Emissions Scenarios
START	Global Change System for Analysis Research and Training
SWM	Solid Waste Management
TCPO	Town and Country Planning Office, India
TEPCO	Tokyo Electric Power Company, Japan
TEI	Thailand Environment Institute
TMD	Thai Meteorological Department, under the Ministry of Information and Communication Technology
UCAR	University Corporation for Atmospheric Research
UCRPF	Urban Climate Resilience Planning Framework
UKCIP	United Kingdom Climate Impacts Program
ULBs	Urban Local Bodies, India
UPT	Technical Implementation Unit, India
URDI	Urban and Regional Development Institute, Indonesia
UrSMS	Urban Service Monitoring System, Surat, India
USAID	United States Agency for International Development
WAS*IS	Weather and Society* Integrated Studies

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ACKNOWLEDGEMENTS

This publication was made possible through funding provided by the Rockefeller Foundation as part of the Asian Cities Climate Change Resilience Network (ACCCRN). The contents of this report draw heavily on the efforts of dozens of local partners in ten cities across Asia. They undertook the challenge of plunging into a difficult set of issues with limited knowledge but strong interest. The number of individuals and organizations involved in all these cities is too great to name, but each has contributed to the activities that are reported in this volume. The authors deeply appreciate their efforts.

At the national level, the work was coordinated and led by TARU Leading Edge in Indore and Surat, by the Gorakhpur Environmental Action Group in Gorakhpur, by Mercy Corps in Indonesia, by the Thailand Environment Institute in Thailand, and by the National Institute for Science and Technology Policy and Strategy Studies together with Challenge to Change in Vietnam. These partners and their roles are introduced in more detail on page 18 of this report. In each case, several different individuals contributed to the fieldwork, analysis, and report writing for the key documents that were used as sources for this summary. The contributions of these organizations and individuals are gratefully acknowledged.

The Urban Climate Resilience Planning Framework presented in Chapter 2 is based in part on contributions by the International Development team at Arup, who are advisors to the ACCCRN program. Their collaboration is acknowledged more specifically in that chapter.

The authors and editors would also like to acknowledge the editorial support provided by Dana Cappelloni and Lea Sabbag at ISET, who worked closely with editor Jessica Lage and designer Michelle Fox, providing valuable last-minute research and helping assemble and review components of the draft.

Finally, while acknowledging these vital contributions to the publication, the authors take responsibility for its contents and conclusions, including any errors or omissions therein.

EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

This publication discusses the activities and findings from the second phase of the Asian Cities Climate Change Resilience Network (ACCCRN), a program supported by the Rockefeller Foundation. Changes in climatic conditions represent one of the greatest challenges facing humanity over coming decades. Climate change poses special concerns for the rapidly growing cities of Asia, where large populations, rapid urbanization, extensive poverty and social marginalization, and an already high level of exposure to climatic extremes create risks for large numbers of people. The impacts of climate change are likely to be particularly severe for poor and marginalized populations.

The ACCCRN program represents a unique initiative to understand and support urban areas in building climate resilience. The program's work in cities in India (Surat, Indore, and Gorakhpur), Indonesia (Bandar Lampung and Semarang), Vietnam (Da Nang, Can Tho, and Quy Nhon), and Thailand (Hat Yai and Chiang Rai) provides practical insights into the processes and outcomes that contribute to urban climate resilience. The ACCCRN program was a new and innovative approach for program partners. City representatives worked with diverse local stakeholders in novel ways to ensure that outcomes were directly relevant.

This report begins by presenting the overall conceptual framework that ISET and partners have developed through the program. It then describes the communication of climate information; the applied approaches to shared learning; the implementation of supporting vulnerability analyses, sector studies, and pilot projects; and the resilience planning processes and outcomes that were the key activities of the second phase.

The key insights generated by the program are briefly highlighted below and then discussed in detail in the subsequent chapters.

LINKING CONCEPTS AND PRACTICE

The Urban Climate Resilience Planning Framework (UCRPF), developed as part of the ACCCRN program, represents a practical way of systematically translating the growing body of natural and social scientific knowledge regarding resilience into applied planning practice. By focusing on urban systems (the foundations on which urban areas survive), urban agents (the diverse organizations that make up the urban social environment), urban institutions (the rights, laws, regulations, and other social structures that mediate relationships among agents and between agents and systems), and exposure to climate change, the UCRPF helps to identify specifically who might do what to build climate

resilience. It also helps to identify specific points of entry for addressing the differential impact of climate change on the urban poor and other socially marginalized communities. As a result, while the framework is firmly grounded in emerging scientific knowledge, it is also a practical base for planning and action, and for building the knowledge and capacity necessary to respond effectively as climatic conditions evolve.

The UCRPF has three broad components. First, it is founded on recognition that building resilience requires shared learning. Climate change is a global process, but local conditions strongly shape its impacts, so practitioners must integrate local and global knowledge in order to identify effective responses. Furthermore, because many of the impacts depend on interactions between sectors, across scales, and among communities of actors, communication and the development of common understanding among diverse groups is essential. As a result, shared learning is a fundamental part of the resilience planning process: shared learning dialogues help cross barriers and initiate collaboration across sectors and scales, introduce scientific knowledge into local contexts, and drive action over an extended period of time — all critical aspects of resilience planning.

Second, understanding resilience requires analytical approaches that are capable of addressing the diverse components that make up urban areas. The UCRPF distinguishes between urban systems, urban agents, institutions, and climate change and identifies analytical approaches for understanding the interactions among these fundamental components of urban areas. The analysis then integrates these factors in order to understand vulnerability and identify potential points of entry for building resilience.

Third, the UCRPF focuses on process. It incorporates a specific yet flexible set of process considerations and supporting activities that can assist urban areas in planning, capacity building, implementing, and

supporting the continuous process of learning that is central to the growth and maintenance of urban resilience.

LESSONS FROM ACCCRN PHASE 2

The activities in Phase 2 of the ACCCRN program focused on engagement with local partners to introduce climate change issues and to develop locally specific climate resilience strategies in the ten partner cities. Lessons from these activities include:

Linking concepts with practice

Unless there is a solid conceptually grounded analytical foundation, practice cannot move forward except on an ad hoc basis. One of the greatest challenges for organizations working on urban resilience is that individual interventions often appear exactly this way — ad hoc. In order to contribute in a significant way, local actions must be linked together as part of a conceptually well-founded strategy.

Balanced approaches

Responding to climate change requires strategies that address both the physical dynamics of systems and the social and institutional context of the city level. As a result, analytical and other strategies need to combine technical as well as social science-based approaches. Specialized technical studies as well as more “people-centered” forms of engagement are essential. Strategies that overemphasize one dimension to the exclusion of the other are likely to be ineffective.

Climate data

Quality climate information is difficult to access, particularly at a scale useful to adaptation planners. Local-scale historical climate information and future projections are not always easy to find and often do not exist at all for ACCCRN cities; even appropriate

historical data can never tell us exactly what to expect in the future. Resilience planning, however, cannot wait for the ideal information.

Communicating climate information

High-quality translations of climate information — both of scientific terms and concepts into lay language and, subsequently, from English into local languages — are crucial. Sufficient time and resources must be allocated to allow for interacting and discussing the nuances of various specialized climate change and resilience building terms — many of which are still being clarified in English. In order to develop effective response strategies, local stakeholders must understand the uncertainties inherent in climate projections and what they might realistically indicate for the future, rather than interpreting them as fixed scenarios. Doing so requires skilled facilitators and translators who can bridge between the language of science and the local languages. It also requires the ability to work with diverse communities, from scientists to women living in vulnerable floodplains.

Responsiveness

While climate change is likely to affect many of the systems on which urban areas depend, few people are aware of climate change issues where they live. Engaging policymakers and local populations requires finding the issues that they view as tangible and immediate. Practical responses — such as sector studies, pilot projects and other ACCCRN planning responses — to immediate concerns such as storm risks, flooding, water supply, and disease are important entry points that respond to immediate needs and lay the foundation for understanding wider sources of risk.

Action

People will not be able to build understanding, ownership, and engagement unless they take tangible steps to respond to the problems urban areas face. As a result, while the development of overall understanding and proper planning will require a sustained effort, initial activities — whether at a pilot scale or larger — that address immediate problems as well as larger climate concerns are essential. In addition to building ownership and engagement, such activities provide the practical experience necessary to inform strategies. Furthermore, pilot projects lend credibility to climate resilience programs and instill faith in stakeholders that the programs will produce tangible outcomes.

Champions

Effective engagement within cities depends on active commitment to resilience planning on the part of a small number of individuals who are well connected with diverse local groups. Because for many urban areas, climate change is a “new” and poorly understood issue, and because effective responses must involve interaction among diverse groups of actors, identifying a few charismatic and articulate individuals who can serve as champions can greatly facilitate the growth of awareness and action.

Tailoring strategies to local contexts

While basic principles and broad process elements do apply across regions, results from ACCCRN demonstrate that variations in local contexts can be a significant challenge for resilience planning, so strategies must be tailored to localities. Because cultures, bureaucratic structures, physical characteristics of regions and urban areas, and a myriad of other factors affect how climate change impacts urban areas and what practically can be done, strategies must be locally grounded. “Cut-and-paste” solutions are inappropriate, and actors must have an open mind and be willing to consider diverse approaches.

Novel planning processes

Planning for urban climate resilience involves integrating many new concepts and tools into already complex local planning processes, and under conditions in which local government resources are already strained. Time constraints are a fact of life, but short time horizons are the enemy of quality engagement and learning. Even using iterative processes, it may be difficult to anticipate how much time is needed for introduction of basic concepts, collection of relevant climate and planning information, sharing and digestion of new information, and building consensus on action. Resilience is unlikely to be achieved without carefully acquired, shared understanding about the interdependencies of systems and people. Attempts to shortcut this process even with skilled external support run the risk of yielding ineffective or even maladaptive results. Working with local partners also involves being flexible: scheduling conflicts, shifting priorities, staff changes, political and bureaucratic procedures are inherent to this work.

Partnership

Building resilience at the urban scale requires recognizing the importance of partnership. No single organization alone will create resilience; it requires a small, core team of local stakeholders from diverse organizations who are able to coordinate the work, act as the repository of new knowledge, and promote climate issues within their own organizations. Furthermore, since implementing effective activities will require the ownership and direct engagement of a diverse array of stakeholders, the most important personal and professional characteristic in this work is not technical expertise, but rather the ability to coordinate across organizations in an open manner and work with diverse groups of people, recognizing the validity of their insights, their knowledge, and their perspectives on effective strategies.

Process

Just as the climate and our projections about it are changing, adaptation and resilience building must be understood as a continually evolving process. The process will be most successful if the strategy is continually revised, such that planners continue to gain new knowledge about city vulnerabilities and potential interventions from both local and global sources; engage and build awareness among the public, sector leaders, and decision makers; and evaluate and reevaluate priority areas for action. The resilience strategy is a useful tool only to the extent that it is revisited over time and generates further action. It is the process of developing the resilience strategy — bridging sectoral gaps, raising awareness, creating new knowledge, introducing coordination mechanisms, and especially building the capacity of key stakeholders — that is far more important than the document itself.

Much of ACCCRN's importance lies in its contribution to an emerging body of practice. While there is increasing interest in urban climate resilience globally, very little has actually been done. Because ACCCRN actively engages diverse groups of urban stakeholders in planning processes and implementation activities across a diverse array of contexts, it represents a unique initial contribution to practice. The analysis presented by ISET in this report represents only one facet of that experience. More can be gained from the reports and other materials produced by partners or through direct contact with these partners to understand their perspectives and the knowledge they have developed.

For more information on Catalyzing Urban Climate Resilience, please visit: www.i-s-e-t.org and www.acccrn.org

Climate change and dynamic urbanization processes present new and unfamiliar planning challenges for cities globally. Nowhere is this more apparent than in the developing world, where the challenges of urbanization and climate are compounded by poverty and social marginalization. Since most attention to climate change has focused on reductions in greenhouse gas emissions, far less has addressed the equally essential question of adaptation. As a result, the body of analysis and practice regarding adaptation is limited. “Catalyzing Urban Climate Resilience: Applying Resilience Concepts to Planning Practice in the ACCCRN Program (2009-2011)” reports on the results of an innovative initiative supported by the Rockefeller Foundation—the Asian Cities Climate Change Resilience Network (ACCCRN) program—to assess and respond to the interaction between urbanization and climate change and the impacts on particularly vulnerable communities in ten medium-sized cities in India, Indonesia, Thailand, and Vietnam.

“Catalyzing Urban Climate Resilience” describes the experiences of ACCCRN cities with assessing climate vulnerability and applying emerging concepts of urban climate resilience. It presents an innovative resilience-planning framework that offers multiple entry points for local resilience-building interventions. The framework introduces an iterative shared learning process

to engage diverse forms of knowledge and build joint understanding and commitment to adaptation actions among diverse stakeholders. The framework looks at broad sources of risk and opportunities for building resilience and helps to identify specifically who might do what to build climate resilience. It also helps to identify specific vulnerabilities and practical interventions for the urban poor and other socially marginalized communities.

While the framework is firmly grounded in emerging scientific knowledge, it is at the same time a practical base for planning and action at the local level and for building the knowledge and capacity necessary to respond effectively as climatic conditions evolve. The climate resilience strategies that cities have developed as part of the second phase of ACCCRN serve as early examples of what can be achieved with relatively modest levels of investment across a diverse array of urban conditions and governance contexts. The ACCCRN experience described in this publication offers meaningful innovations in both conceptual synthesis and informed practice at local to global levels. It provides the key tools for shared learning, vulnerability assessment, and intervention analysis for replication in other cities around the globe.

