

ACCCRN City Projects

Asian Cities Climate Change Resilience Network

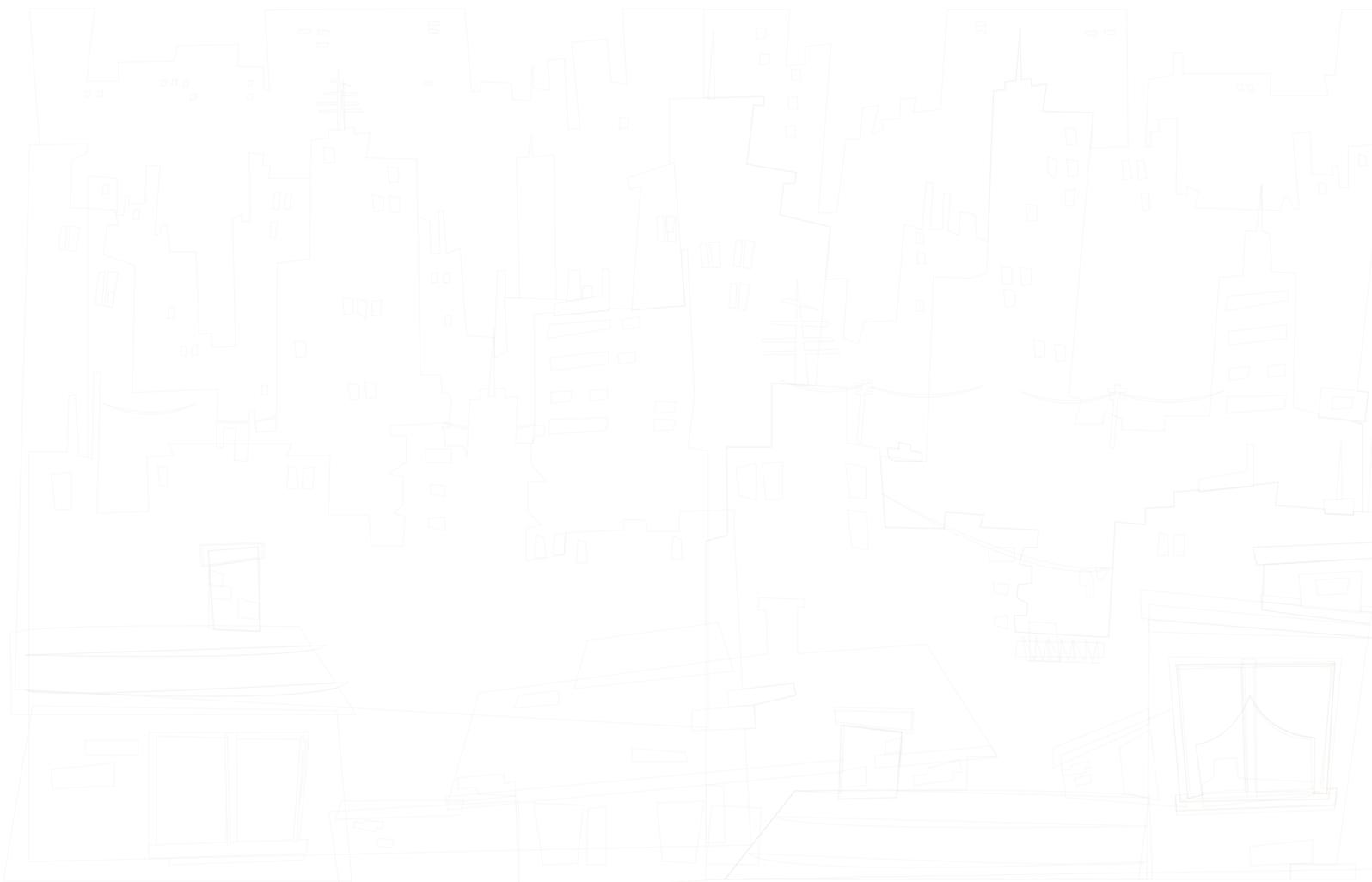
August 2012

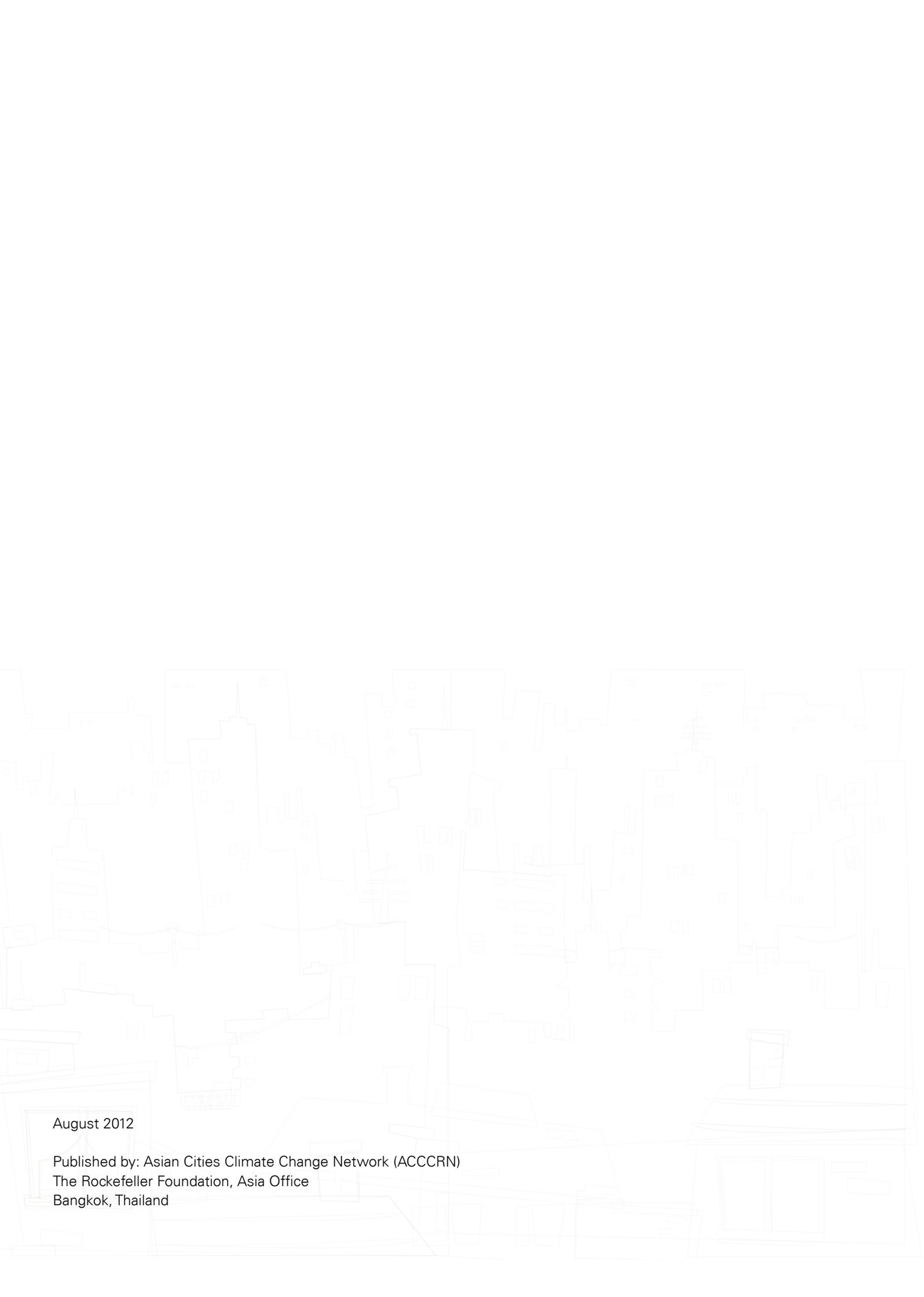


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Acknowledgements

This publication draws on the intensive work of a number of ACCCRN partners who have provided vision, dedication and technical support that has led to the generation of diverse city projects. The content of this catalogue draw significantly from key city project documents prepared by in-country partners who work closely with partners in each of the 10 ACCCRN cities to design and implement intervention projects. These partners include the Institute for Social and Environmental Transition (ISET), Challenge to Change, the Natinal Institute for Science and Technology Policy and Strategy Studies (NISTPASS), TARU Leading Edge, Gorakhpur Environmental Action Group (GEAG), Mercy Corps, and Thailand Environment Institute (TEI). These partners and their roles are discussed in more detail on the following project sheets.

The analyses of climate change risks and resilience characteristics associated with the city projects are based largely on contributions by the International Development team of Arup. The Urban Resilience Framework, which guides the resilience planning approach utilized in ACCCRN and has been refined through demonstrations in ACCCRN, has been jointly developed by Arup and ISET. The contributions of these organizations and individuals are gratefully acknowledged.

OVERVIEW



RESPONDING TO CLIMATE CHANGE IN AN URBAN CONTEXT

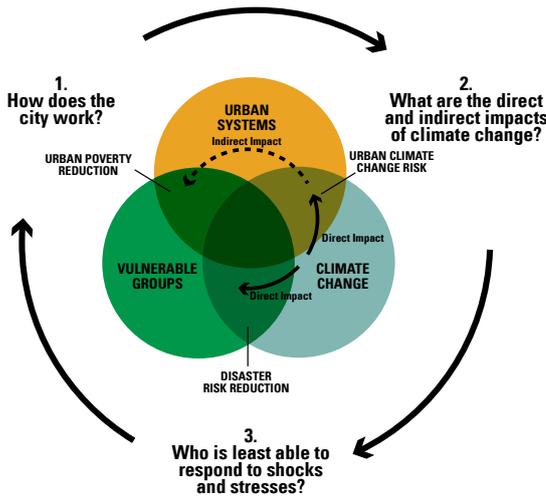


Figure 1 Climate impacts: a compound effect combining direct impacts, indirect impacts, and pre-existing vulnerabilities¹

Cities around the world are facing challenges brought about by rapid increases in population and geographic spread which places greater pressure on infrastructure and services. More than 50% of the world's population currently lives in cities. By 2050, this figure is expected to increase to 70%, or 6.4 billion people. Asian cities are likely to account for more than 60% of this increase.

Climate change impacts, including rising sea level, more frequent and severe storms, coastal erosion and declining freshwater sources will likely exacerbate urban issues, in particular in poor and vulnerable communities that lack adequate infrastructure and services.

The Asian Cities Climate Change Resilience Network (ACCCRN) works at the intersection of climate change, urban systems and vulnerability to consider both direct and indirect impacts of climate change in urban areas.

ABOUT ACCCRN

ACCCRN is a 7-year initiative (2008-2014) supported by the Rockefeller Foundation. It aims to catalyze attention, funding and action to strengthen cities' resilience to climate change impacts. ACCCRN has been working in 10 cities in 4 Asian countries (India, Indonesia, Thailand and Vietnam) to develop and demonstrate effective processes and practices for addressing urban climate vulnerabilities using multi-stakeholder planning as well as implementing targeted intervention projects.

ACCCRN aims to achieve three outcomes:

1. Capacity building

Improved capacity to plan, finance, coordinate and implement climate change resilience strategies within ACCCRN cities;

2. Developing a network for knowledge and learning

Shared practical knowledge to build urban climate change resilience deepens the quality of awareness, engagement, demand and application by ACCCRN cities and other stakeholders; and

3. Expansion and scaling up

Urban climate change resilience (UCCR) is expanded, with ACCCRN and new cities taking action through existing and additional support (finance, policy, technical) generated by a range of actors.

ACCCRN cities employ multiple analyses :

- VULNERABILITY ASSESSMENTS
- CLIMATE CHANGE RISK ASSESSMENTS
- CLIMATE CHANGE SCENARIOS
- URBAN GROWTH SCENARIOS
- SECTOR STUDIES

¹ da Silva, J., Kernaghan, S, & Luque, A (2012). A systems approach to meeting the challenges of urban climate change. International Journal of Urban Sustainable Development. November 2012.

CITY PROJECTS

As of August 2012, the Rockefeller Foundation has approved and funded 23 city projects that build urban climate change resilience (UCCR). These interventions have been initiated in the 10 core ACCCRN cities and have amounted to US \$9.4 million, with some additional contributions from local governments and other local partners. Through ACCCRN, new projects in the 10 core cities will continue to be initiated until 2014, further expanding the base of practice. The city projects include both “hard” and “soft” measures, span multiple thematic sectors – flood/ drainage, disaster risk reduction, water resources, housing and health—with most projects addressing more than one sector in a single intervention. They also employ a range of approaches e.g. planning, further analysis, direct action, and coordination mechanisms.

This catalogue provides a brief overview of ACCCRN city projects across 10 cities. The following project sheets provide basic information about the city project, intended impacts and key beneficiaries. They also highlight the climate change vulnerabilities and urban issues that each project aims to address, as well as how projects contribute to improved urban climate resilience of the city’s systems. These aspects are further explained below and are highlighted in each project sheet.

RESILIENCE

With a growing understanding of climate change impacts, and the lessons learned by the collapse of urban systems in places like New Orleans in the aftermath of Hurricane Katrina, resilience has increasingly been seen as a useful concept to approach risk, unpredictable change and the efforts to return to normalcy. Practitioners and academics in the fields of climate change science, disaster risk reduction and infrastructure security tend to consider resilience as an attribute of the urban system that reflects the ability of its infrastructure, institutional and knowledge networks to return to or maintain a stable state.² In ACCCRN, the concept of resilience has drawn heavily from literature on ecosystems and socio-ecological systems, which typically define resilience as “the ability to absorb disturbances, to be changed and then to re-organize and still have the same identity (retain the same basic structure and ways of functioning)”.³

Urban resilience to climate change demands that key actors develop and demonstrate a set of core capacities and that city systems exhibit a number of essential characteristics.⁴ See Box 1. These characteristics of resilience can be used to group and conceptualize a set of systemic behaviors that avoid catastrophic outcomes or system breakdown, and enable recovery and stability after dramatic and unexpected events or gradual impacts that force change over time. Each of the characteristics is applicable to the infrastructure, institutional and knowledge networks that comprise the urban system.⁵

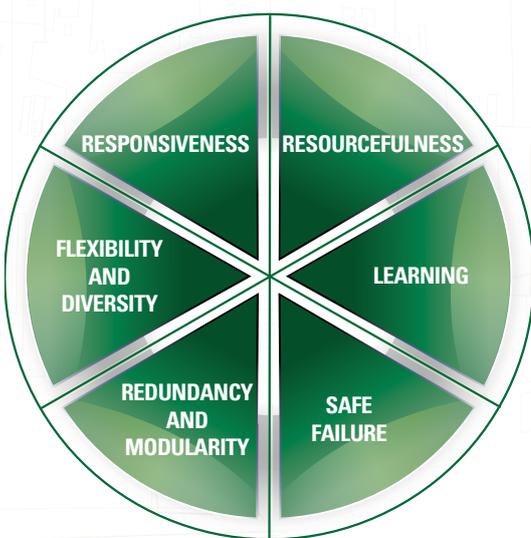


Figure 2 Resilience Characteristics

² *ibid.*

³ Resilience Alliance webpage, “Key Concepts”, accessed 30 April 2012 at http://www.resalliance.org/index.php/key_concepts.

⁴ Moench, M., S. Tyler, eds. 2011. *Catalyzing Urban Climate Resilience. Applying Resilience Concepts to Planning Practice in the ACCCRN Program (2009-2011)*. Boulder, the Institute for Social and Environmental Transition.

⁵ da Silva, Kernaghan & Luque, *op.cit.*

BOX 1: RESILIENCE CHARACTERISTICS⁶

[1] Flexibility:

The ability to change, evolve and adopt alternative strategies (in either the short or longer term) in response to changing conditions. Flexibility implies recognizing when it is not possible to return to the previous way things worked and finding new solutions and strategies (evolution). This favors 'soft' rather than 'hard' solutions.

[2] Redundancy:

Spare capacity to accommodate increasing demand or extreme pressures. Redundancy is about diversity and the ability to adopt alternative strategies through the provision of multiple pathways and a variety of options. Some components of the urban system serve similar functions and can provide substitute services when another component is disrupted.

[3] Resourcefulness:

The capacity to visualize and act, to identify problems, to establish priorities and mobilize resources when conditions exist that threaten to disrupt an element of the system. This capacity is related to the ability to mobilize assets (financial, physical, social, environmental, technology, information) and human resources to meet established priorities and achieve goals.

[4] Safe failure:

Resilient network infrastructure is designed for safe failure. This is related to its ability to absorb shocks and the cumulative effects of slow-onset challenges in ways that avoid catastrophic failure if thresholds are exceeded. When a part of the system fails it does so progressively rather than suddenly, with minimal impact to other systems. Failure itself is accepted.

[5] Responsiveness:

The ability to re-organize, to re-establish function and sense of order following a failure. Rapidity is a key part of responsiveness in order to contain losses and avoid further disruption. However, such rapidity of response should not impair the capacity to learn, and therefore a balance between learning and rapidity should be achieved.

[6] Learn:

Direct experience and failure plays a key role in triggering learning processes. Individuals and institutions should have the ability to internalize past experience and failures, and use such experience to avoid repeating past mistakes and exercise caution in future decisions.

There is no silver bullet action that will make a city resilient. Rather, resilience will only be achieved through a collection of interventions and actions over time, and the ability of individuals and institutions to internalize learning and experience to inform future behavior.⁷ While each project profiled in this catalogue individually strengthens the resilience of the city, multiple interventions that span different action areas are required in each city to develop the needed resilience capacities and characteristics.

6 Moench, M., S. Tyler, eds., op.cit.

7 da Silva, J., Kernaghan, S, & Luque, A (2012)

CLIMATE CHANGE RISKS

City projects supported under ACCCRN respond to a range of current and future urban climate change impacts faced by the city. Key climate change risks considered here include:

Direct impacts- **temperature increases, rainfall variability and more intense or more frequent storms** and

Indirect impacts - **sea level rise, saline intrusion, flooding, drought and increased risk of water- or vector-borne diseases.**

These impacts present some of the greatest challenges of our time and present a variety of threats and opportunities for urban communities, governments and businesses around the world.

10 UCCR ACTION AREAS:



Land use & Urban planning



Drainage, flood & solid waste management



Water demand & conservation systems



Emergency management & early warning systems



Responsive health systems



Resilient housing & transport systems



Ecosystems service strengthening



Diversification & protection of climate affected livelihoods



Education & capacity building of citizens



Institutional coordination mechanisms & capacity support

URBAN CLIMATE CHANGE RESILIENCE (UCCR) ACTION AREAS

Through the range of city projects that have been proposed, funded and implemented so far under ACCCRN, 10 major Urban Climate Change Resilience (UCCR) action areas have emerged. These represent categories of action that cities must consider to strengthen their ability to anticipate, prepare for and respond to climate change impacts.⁸

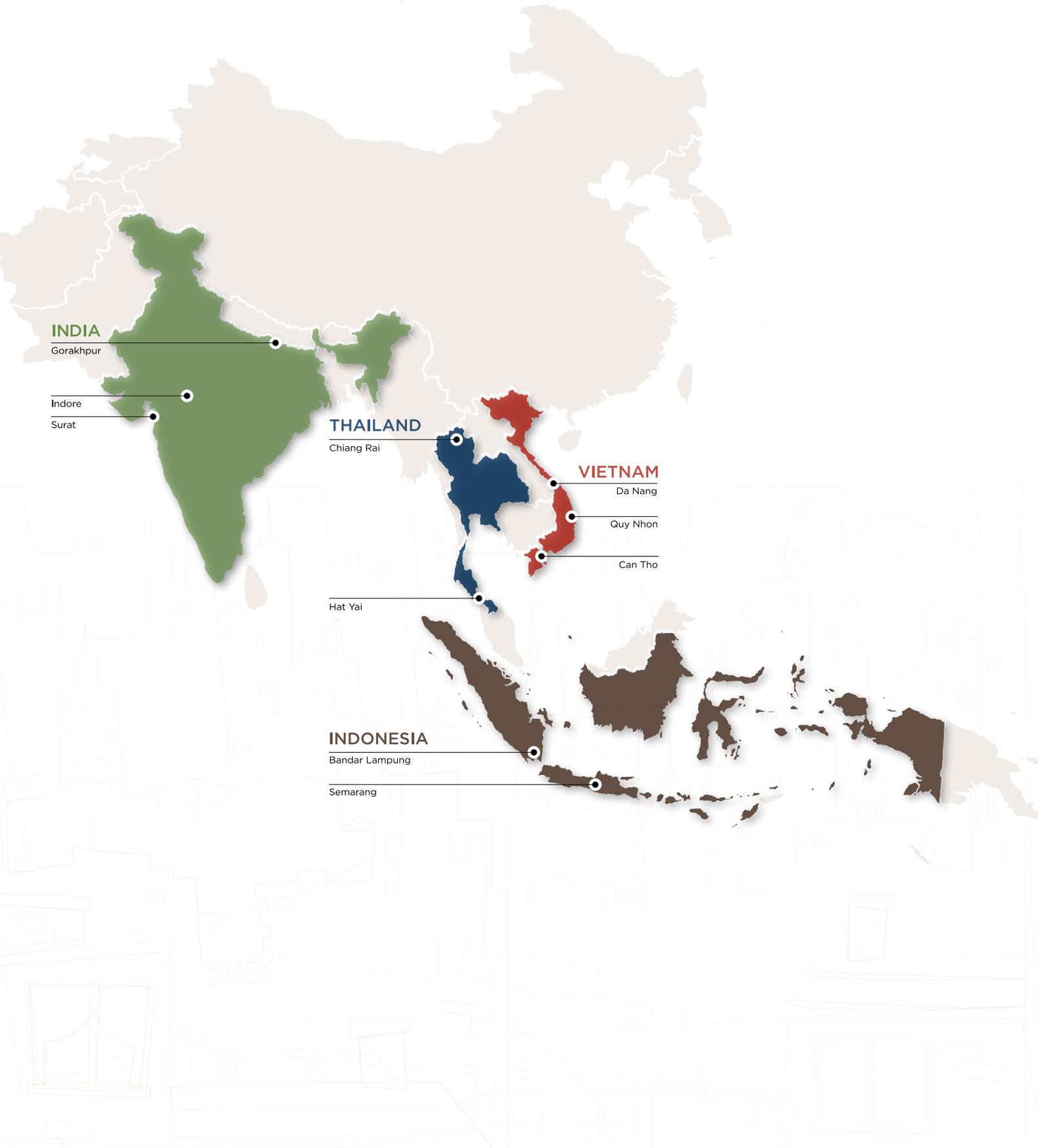
In each of the city project sheets, we identify the UCCR action areas that the project addresses.

⁸ Brown, Dayal, Rumbaitis del Rio: *Environment and Urbanization*, Vol. 24, No.2, October 2012.

CITY PROJECTS



ACCCRN Cities



City Projects

INDIA

Gorakhpur: Implementing and Promoting Ward-level Micro Resilience Planning

Gorakhpur: Implementing and Promoting Adaptive Peri-urban Agriculture

Indore: Testing and Promoting Decentralized Systems for Differential Water Sources and Uses

Indore: Strengthening Vector-borne Disease Surveillance and Response Systems

Surat: End-to-end Early Warning System

Surat: Urban Health and Climate Resilience Center

INDONESIA

Bandar Lampung: Integrated Solid Waste Management Master Plan

Bandar Lampung: Ground Water Conservation (Biopores)

Bandar Lampung: Building Teachers and Students Climate Change Resilience Capacity

Semarang: Pre-feasibility Study for Expanding Rainwater Harvesting Systems

Semarang: Flood Forecasting and Warning System

THAILAND

Chiang Rai: Restoration of Kok River for Urban Flood Management

Hat Yai: Community-based Flood Preparedness and Institutional Coordination Systems

VIETNAM

Can Tho, Da Nang, Quy Nhon: Climate Change Resilience Coordination Offices (CCCOs)

Can Tho, Da Nang, Quy Nhon: Vietnam Youth Urban Resilience Competition

Can Tho: Strengthening Dengue Fever Surveillance and Response System

Can Tho: Developing and Implementing Real-time Salinity Monitoring, Dissemination and Response Mechanisms

Da Nang: Hydrology, Hydraulic and Urban Development Simulation Model

Da Nang: Storm and Flood Resistant Credit and Housing Scheme

Da Nang: Developing, Testing and Promoting New Education Modules to Increase Youth Awareness on UCCR

Da Nang: Pathways to Water Resilience: A Comprehensive Assessment

Quy Nhon: Hydrology and Urban Development Modeling for Flood-related Land-use Planning

Quy Nhon: Urban Mangrove Restoration for Storm Surge Protection and Resilient Land-use Practice

Hat Yai: Community-based Flood Preparedness and Institutional Coordination Systems



Proponents

Project Holder: Thailand Environment Institute
Project Implementer: The Songkhla Community Foundation
Project Period: January 2012- December 2013 (24 months)
Budget: \$196,750

Other Partners: Hat Yai Working Group comprising; Local governments: Hat Yai Municipality & Kutao Municipality; Office of Disease Prevention and Control, District Office of Public Health, and Public Health Services Centre; Office of Social Development and Human Security; Provincial Office of Natural Resources and Environment; Provincial Office of Energy; Provincial Office of Community Development; Provincial Office of Public Works and Town Planning; Prince of Songkhla University
Contact: Pakamas Thinphanga (pakamas@tei.or.th)



Population 160,000

Project Rationale

- The need for Hat Yai flood preparedness:** Urbanization, modern agricultural practices and new construction have obstructed waterways, consequently exacerbating seasonal flooding problems. Land use decisions do not adequately consider the implications for the passage of flood water. The insufficient drainage causes long-lasting inundation, environmental and property damage, and negative impacts on people's lives. There is a lack of integration of key systems such as the early warning system, health services system, and welfare system, constraining the ability to tackle flooding effectively.
- Climate change risks:** The ACCCRN vulnerability assessment of Hat Yai indicated more frequent **flooding** in the U-Tapao Canal Basin due to periods of **more intense rainfall**. This severely affects vulnerable groups, who already bear huge losses and health burdens during floods; and usually have limited capacity to adapt to such challenges.



Project Overview

The project aims to improve the life of vulnerable communities through strengthened capacities of community-based services for the preparation and mitigation of flood-related impacts. The project will promote collaboration between communities and local governments to tackle disaster risk reduction, welfare and health issues, and to develop an integrated plan on these issues. The project involves two key components:

- Community assessment and planning: This encompasses identifying community needs in strengthening capacities to cope with climate disasters, and development of an action plan. Local communities will provide information on disaster preparedness, and community-based management including waste management, neighborhood watch, basic services revolving fund systems, and land use management.
- Knowledge capacity building on climate implications and flood related risks, preparedness and adaptation within the selected communities.

Urban Climate Change Resilience Action Areas

	
Drainage, flood & solid waste management	Emergency management & early warning systems
	
Education & capacity building of citizens	Institutional coordination mechanisms & capacity support

Expected Impact

The project will reduce the vulnerabilities of local communities who are repeatedly impacted by floods. Integrated community plans will ensure that the local communities have access to healthcare, better land use zoning, improved sanitation, provision of basic infrastructure, and improved environmental conditions. Communities will have access to climate information and a community-based early warning system, as well as essential equipment, goods and services to assist the communities before, during and after flood hazards. Mapping of vulnerable groups within the community will provide faster responses. Furthermore, flood management of Kutao sub-district will directly benefit flood drainage of Hat Yai city.

This project contributes to building 3 resilience characteristics in Hat Yai. **'Responsiveness'**- the project strengthens local community's flood adaptive capacities and the local government's ability to support these processes in an integrated way. **'Resourcefulness'**-the process of assessment and planning will build the community's capacity to identify problems and establish priorities. **'Safe Failure'**-catastrophic failure is lessened through more secure natural habitats and improved surroundings.

Key Beneficiaries

The project will directly benefit Kutao sub-district, which has a total population of 12,990, most of whom are poor farmers and fishermen. Communities from other areas will also indirectly benefit from the project through lessons learned.

Resilience Characteristics





ACCCRN is supported by the Rockefeller Foundation



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