CHANGING CITIES AND CHANGING CLIMATE:

INSIGHTS FROM SHARED LEARNING DIALOGUES IN THAILAND AND VIETNAM

ISET & NISTPASS & TEI (2012)

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Citation: ISET, et al. (2012), Changing Cities and Changing Climate: Insights from Shared Learning Dialogues in Thailand and Vietnam, 33 pp, Institute for Social and Environmental Transition: Bangkok.

First Edition: 300 copies

September 2012

Published by: ISET Bangkok Office

Cover Image: Hue, Vietnam
List of Authors: ISET, NISTPASS and TEI
Published by: ISET Bangkok Office
Production Design: Themma Group Co., Ltd.
Printed at: Themma Group Co.,Ltd., Bangkok Thailand

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ACKNOWLEDGEMENTS

This report was made possible by the generous support of the American people through the United States Agency for international Development (USAID) as part of the Mekong-Building Climate Resilient Asian Cities (M-BRACE) program, and the Rockefeller Foundation as part of the Asian Cities Climate Change Resilience Network (ACCCRN)

The opinion expressed herein are the authors' alone. The contents of this report were produced through a collaborative effort by the Institute for Social and Environmental Transition-International, National Institute for Science and Technology Policy and Strategic Studies and Thailand Environment Institute.

This report was complied by Dr. Richard Friend, Ms. Sarah Reed, Dr. Phong Tran, Ms. Nguyen Anh Tho, Mr. Vu Canh Toan, Dr. Chamniern Vorratnchaiphan, Dr. Pakamas Thinphanga as well as Ms. Rojana Nilmanon.

The authors would also like to acknowledge the editorial support provided by Michelle F. Fox for art direction and graphic design support.

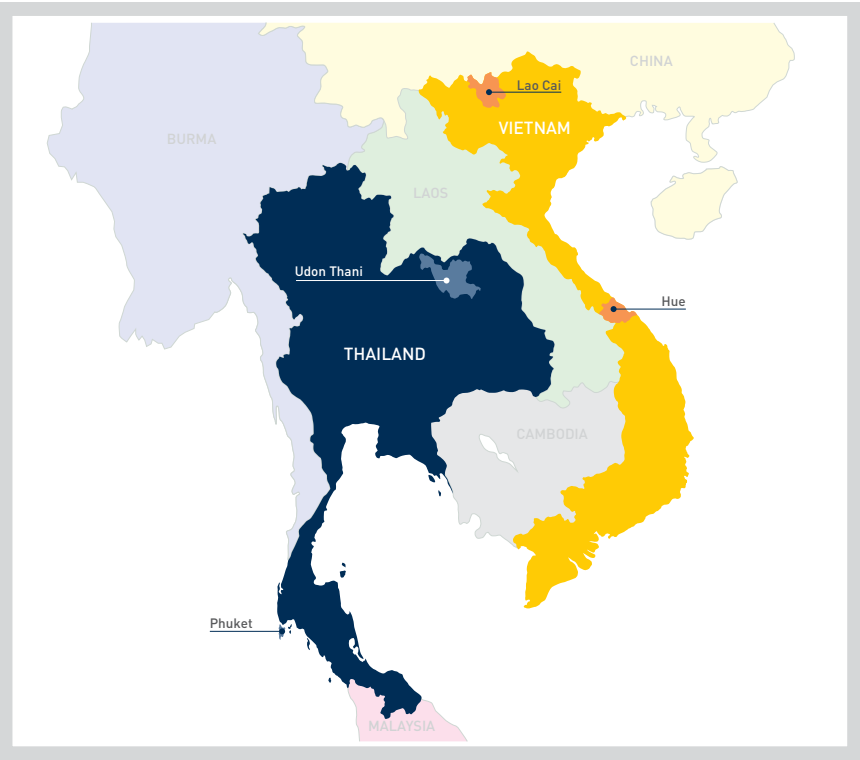
The Mekong-BRACE program aims to ***develop and apply practical methods for building resilience to the impacts of climate change among stakeholders in medium-sized cities in Thailand and Vietnam.*** M-BRACE combines action-oriented research, public dialogue, testing resilience interventions, documentatiogv and dissemination.

The M-BRACE program plans to:

Establish a shared learning dialogue processes among city stakeholders;
Test and implement practical resilience measures;
Strengthen stakeholder knowledge and awareness of urban climate change vulnerabilities and resilience;
Refine methods, tools and training guidelines;
Document and disseminate lessons and replicable processes

M-BRACE is facilitated regionally by the Institute for Social and Environmental Transition (ISET), by ISET-Vietnam and the National Institute for Science and Technology Policy and Strategic Studies (NISTPASS) in Vietnam, and by the Thailand Environmental Institute (TEI) in Thailand.

Figure 1: Map of Thailand and Vietnam



This paper describes how the concept of shared learning is being applied in 4 cities in the M-BRACE program (Mekong – Building Climate Resilient Asian Cities). It shares insights on the trends of urbanization and climate change from the perspective of stakeholders, as discussed during the first round of "shared learning dialogues" (SLDs) in each city.

Cities and Climate Change

M-BRACE is working with city stakeholders to explore the intersection of two defining trends: urbanization and climate change in four mediumsized cities in Thailand and Vietnam.

Urbanization and climate change are intimately linked. The world is going through a major and unprecedented transition. As the world's population reaches new heights, for the first time in human history the majority of people live in urban areas. This history of urbanization is closely linked to industrialization, changes in energy use, transport and land use that have all contributed to climate change. Increasingly these urban areas are expanding in river basins, deltas and coastal areas that are already prone to climate related hazards.

Cities and urban livelihoods can bring wealth, resources, and provide new opportunities, which can help buffer shocks such as climate events. But at the same time, certain types of urban development can put people and places at risk from climate change impacts, by settling vulnerable places and refashioning landscapes in ways that exacerbate natural hazards or deplete resource bases, and creating complex systems that are unable to withstand shocks and crises. With rapidly growing urban populations and increasing socioeconomic inequalities, these changes do not impact all residents equally.

Phuket Town, Thailand in 2012 © ISET

In both Thailand and Vietnam, cities have grown and experienced rapid change in a very short time. Thailand is now predominantly industrial and urbanized, Vietnam increasingly so. This dramatic change has occurred within one generation. The advent of greater regional economic integration will accelerate the processes of urbanization and also bring the four M-BRACE cities into new types of economic linkages and dependencies.

M-BRACE aims to facilitate city stakeholders to consider the implications of these trends, and from this, to identify actions that can build urban resilience.

Why Shared Learning?

Human history has been based on a degree of predictability in climate. Societies have adapted their economies, architecture, and lifestyles to suit the seasons, temperatures and rainfall patterns, and assessing risk based on the timing and frequency of floods and other hazards. Climate change unravels this predictability, creating in its place a huge degree of uncertainty and added risk. Current scientific assessments provide a good, broad understanding of the ways in which we will be vulnerable to changing temperatures, precipitation patterns, and sea level rise. Yet the climate change science cannot state categorically what will happen where, or when it will happen. It will be variable, dynamic and impacts cumulative across multiple scales, from the individual and household to the ward, village and city (Tyler and Moench in press). **While climate change responses need to be well informed and based on the best available science, it is not possible or desirable to simply 'predict and act'.** Climate change puts risk and uncertainty at the heart of development, and planning for the future.

SLD in Phuket, Thailand © ISET

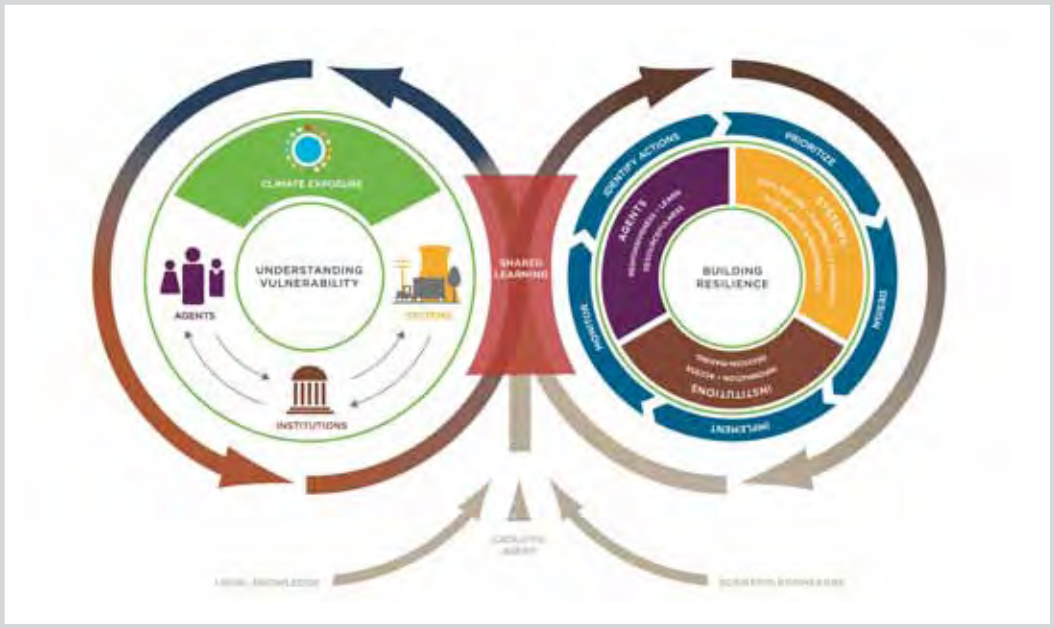
In rapidly changing complex cities, it is difficult to predict how changes in one part of the urban system will reverberate and affect others. The pace of urban growth means that these relationships are constantly shifting. Existing planning mechanisms often take a fragmented approach, with limited coordination or information sharing across scales or sectors. These are inadequate for adapting to rapid development or vulnerabilities wrought by climate change. We understand moreover that these current systems of governance in urbanization processes create winners and losers, evident for instance in rising levels of inequalities in cities, in disputes over land use, and in changing risk patterns that protect economic infrastructure some times at the expense of local residents.

With the scale of risks – and clear dimensions related to justice and equity – we need new ways of working and organizing ourselves, to work out problems and actions, define shared development pathways, and bring together different actors. But equally, much of the adaptation to climate change is autonomous – led by individuals, households, organizations – often without the institutional support of formal planning. **This means that there is a need for more adaptive, responsive, inclusive and accountable development institutions and processes that draw on wide sources of information, and that create space for informed, critical public debate and decision-making. This requires better science that is more engaged, but also informed public arenas for deliberation.** In order to ensure fairness and equity decision-making processes need to be informed, public, accountable and transparent.

The starting point for the **Climate Resilience Framework (CRF)** is therefore a process of shared learning. Shared learning fosters knowledge exchange, dialogue, and deliberation to nurture learning, innovation and flexibility. This is the core process through which vulnerabilities are assessed, resilience strategies identified and implemented – and through which stakeholders are able to reflect and review in a participatory, iterative manner.

The shared learning dialogue process is the keystone of the M-BRACE approach brining together different stakeholders and different types of knowledge both scientific and local. It is intended to generate discussion and innovation based on new understandings of climate change, risk and uncertainty. But additionally, commitments to shared learning are founded on principles of meaningful public participation – bringing together stakeholders with different interests and perspectives, different information, knowledge and power – in a public arena of debate on a level playing field

Figure 2: The Urban Climate Resilience Planning Framework



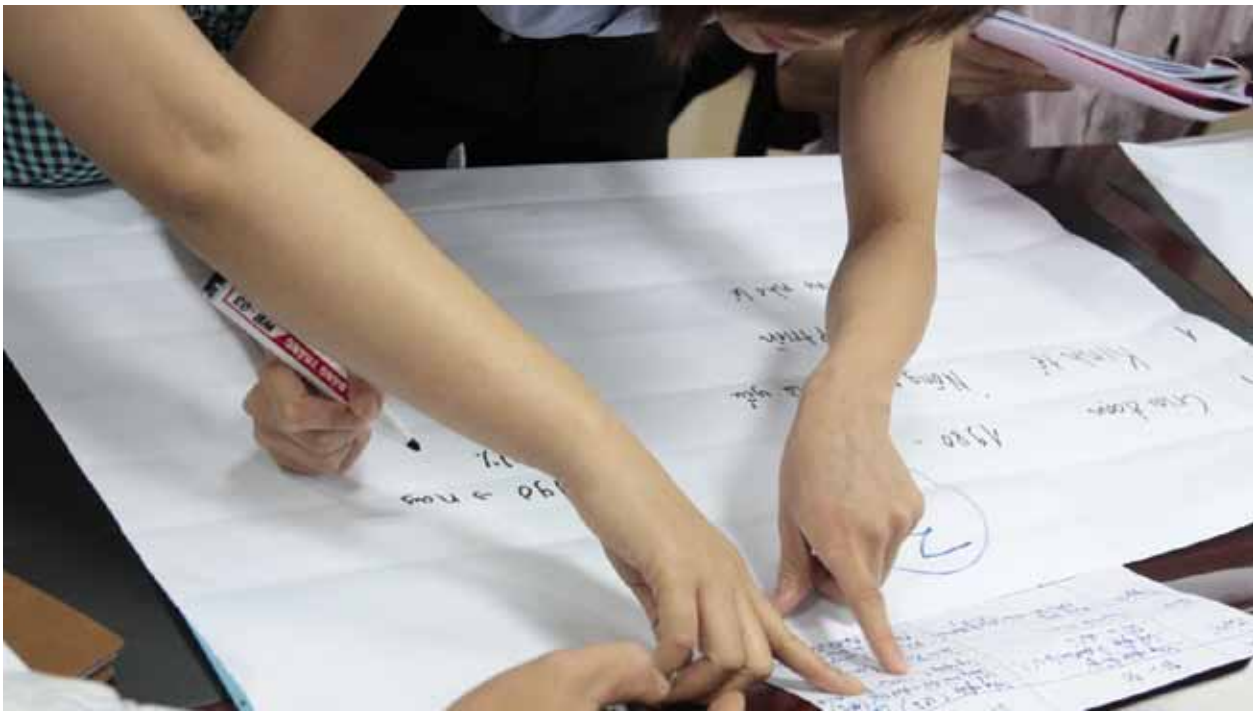
"This framework is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The framework is also made possible by the Rockefeller Foundation through its Asian Cities Climate Change Resilience Network (ACCCRN)."

The Shared Learning Dialogue

For many local stakeholders, climate change itself can seem rather remote. Moreover, the linkages between urbanization and climate change are not immediately apparent. Often climate change is seen as a number of discreet changes (temperature, precipitation) that lead to specific types of impacts on certain places, people and activities. The approach in M-BRACE is to encourage stakeholders to regard climate change and urbanization as being linked, and to consider climate change as creating a different context of uncertainty but also intensifying existing risks.

In order to draw out these linkages and to encouage stakeholders to present their own perceptions and analyses, the first SLDs are designed as participatory scenario exercises in which participants consider:

- **Trends** – focusing on significant changes within the recent past (usually around 30 years) highlighting growth of cities and pace of urbanization
- **Trajectories** – focusing on the future implications of current trends of urbanization within the context of future climate change
- **Key areas of vulnerability** that need to be better understood in order to plan and act for building resilience



SLD in Lao Cai, Vietnam © ISET

SLDs apply a range of participatory tools and methods to encourage brainstorming, discussion and debate among stakeholders.

Trends & Trajectories: Using a range of photographic tools, stakeholders are presented images of their cities from the recent past that are compared with more recent images. This helps to focus attention on the types of changes in the last 30 years or so – and to draw people's attention to considering the trends that they have observed. Working together in small groups, stakeholders use a simple matrix to note down the type of changes that they have observed between the last 30 years and today (see examples in image: SLD in Lao Cai, Vietnam ©ISET). Small groups then come together to share and discuss their insights.

This kind of exercise is then continued but with the focus shifting towards considering future **trajectories of the trends** that they have identified, and to consider the implications of such trajectories. At this stage stakeholders are encouraged to avoid thinking of problems and solutions – but rather simply focus on the future implications of current trends. By doing so stakeholders are able to identify some of the future risks and potential benefits associated with continued pace of urbanization.

SLD in Lao Cai, Vietnam © ISET

This then forms the context for beginning to consider the **implications of climate change.** The science of climate change is then presented in an accessible manner highlighting key messages – that the climate of the future will be very different and more variable than the climate that they (and their parents) have become familiar with, but also providing some of the core areas of future climate risk. Given the complexity of the science, water is taken as a proxy indicator of climate change - particularly in terms of water availability, water related hazards, and storms.

These discussions provide the basis for stakeholders to move on to identifying potential areas vulnerability – in terms of people, places and actions. By working together on identifying future vulnerabilities related to urbanization and climate change, stakeholders begin the process of framing the scope and terms of reference for a process of Vulnerability Assessments.

Participants

The participants in SLDs represent different groups of stakeholders in the cities bringing together government officials, academics, NGOs, media, private sector and individual citizens. The range of participants at any one SLD is partly shaped by the particular institutional and governance context of the cities. In Vietnam local government officials, representatives of mass organizations and local academics are the main participants, though with participation from local NGOs in Hue. In Thailand participants also include local grassroots organizations and citizen groups. In all SLDs particular attention is paid to the proportion of female representatives – and in ensuring that all participants are provided the opportunity to air their views.

SLD in Udon Thani, Thailand © ISET

The practical difficulties of bringing diverse stakeholders together means that in some cases smaller SLDs with a particular group of stakeholders is held to allow for free discussion and as preparation for bringing a more diverse group of stakeholders together. By preparing in this way, stakeholders are better placed to join a constructive learning process – and avoid any potential conflict.

Overview of the four M-BRACE cities

There are some important similarities between the four M-BRACE cities. All have experienced rapid and recent development. With regard to climate change, regional assessments suggest that all will experience water stress. Many of the key resources on which the cities depend reside outside of their administrative boundaries. Urbanisation itself is a new phenomenon, often poorly understood, and is accompanied by weak planning frameworks.

Still, the ways in which both urbanization and climate change are understood in the cities is very different, especially between Vietnam and Thailand. Cities as administrative units in Thailand are not clearly defined, with urban development extending far beyond the jurisdiction of a single municipality. There is still no clear mechanism for planning and coordination between these municipalities that share a common urban system. Vietnamese cities have clear administrative boundaries and a rigorous and established urban planning system. But this suffers from poor coordination between departments and across scales, plans suffering from over-specificity and assumptions, and therefore an often ambiguous and non-transparent relationship between plans and implementation.

Udon Thani, Thailand in 2012 © ISET

Climate change is also perceived differently between the two countries. In Vietnam, policy at the national level has driven a variety of activities and public awareness efforts around climate change. The prominence of climatic hazards, particularly for coastal areas, also contributes to an environment in which stakeholders can more easily understand climate change, albeit predominantly in a natural disaster sense. Thai cities historically have had less experience with big disasters from storms and floods—although this is quickly changing—and policy and public debate on climate change have focused more on mitigation than on climate change impacts.

As we learned during the first round of SLDs, the degree to which the four cities are vulnerable to climate change varies—and is significantly influenced by current development and urbanization processes.

Lao Cai, Vietnam in 1990s © Lao Cai Museum

Border Gate Lao Cai, Vietnam in 2010 © http://laocai.gov.vn

Lao Cai

Lao Cai City is the capital of Lao Cai Province in Northwestern Vietnam on the Red River, bordering the Chinese city of Hekou to the south. In the 1970s, Lao Cai was a market town for agriculture. It has since experienced significant growth due in part to deliberate government population redistribution programs in the preceding decades. Lao Cai is now a prominent regional economic center with forestry and mining industries. In particular, it functions as a regional hub because of its linkages with Chinese trade. It was granted city status by the central government in 2004.

Udon Thani, Thailand in 1970s © ISET

Udon Thani, Thailand in 2012 © ISET

Udon Thani

Udon Thani in North East Thailand, is a relatively recently established city. Following a boom associated with the USA military base and airstrip during the Vietnam War, the city emerged as an important administrative centre with regional importance being close to Lao PDR and Vietnam. It was upgraded from town and formally established as a city (Nakhorn Thesabarn) only twenty years ago. The ring road surrounding the city defined its administrative boundary, but the urban area has since expanded beyond this original demarcation.

Phuket, Thailand in 1970s @ http://www.siamsouth.com

Phuket, Thailand in 2012 © ISET

Phuket

An island on Thailand's southwestern coast, Phuket is best known as a major tourist beach destination. In previous decades, Phuket experienced several cycles– fishing, tin, and rubber. Tourism has replaced these as the centerpiece of provincial economic development for the past 30 years, and now the economy is almost entirely dependent on it. While the formally designated municipality of Phuket covers a relatively small area, within the last twenty years the pace of change has been so dramatic that almost the entire whole island is considered urbanized.

Tran Hung Dao Street in Hue, Vietnam in 1960s © LIFE

Hue Town, Vietnam in 2012 © ISET

Hue

The city of Hue in central Vietnam has been an important political and cultural center for Vietnam over the last several centuries. It remains globally renown as a cultural and tourist center, designated by UNESCO as a World Heritage Site. Locally, it is also infamous for its typical weather – frequent rain and frequent floods. Hue is located in coastal central Vietnam on the coast at the Perfume River delta and flanked by a large lagoon used for fishing.

Key Trends

Below, we summarize some of the main reflections and themes shared by SLD participants across four cities about recent trends.

The pace of change is dramatic – and has accelerated in the last 10 years. Apart from Hue, all of the M-BRACE cities are relatively recently established, and all have grown rapidly over the last 2 decades in both size and population. Lao Cai residents estimate that in the early 1980s the area now constituting the city boundaries had a population of roughly 10,000. This has since grown to 120,000, primarily due to in-migration from other part of Vietnam. Udon Thani has experienced similarly dramatic growth: the city 40 years ago had a population of roughly 20,000, which is now 140,000. These estimates do not account for non-registered migrant workers and foreign residents living in Udon Thani, moreover.

Phuket residents tell an interesting story about its quickly growing population. 40 years ago, Phuket had a population of roughly 100,000, composed mostly of ethnically Chinese and Muslim Thai. In the following decade, people began moving out of Phuket in search of education and work. This trend has shifted. By the early 1990s, 3.5 million tourists were visiting the island per year. Today, it receives 8.5 million tourists, and at any one time there are over 1 million people (between regular residents, migrant works, and tourists).

Lao Cai, Vietnam in 2012© ISET

Cities are moving from strong agricultural base towards industry and services. The economies and lifestyles on which these cities historically have depended have shifted. 40 years ago, Udon Thani and Lao Cai were rural towns. Phuket was an agricultural island covered in rich forests and abundant coastal fisheries. Hue stands out as an old city but like the others had a primarily agricultural base with small home industry. Many city residents were involved in farming either through trade or provision of inputs, and there was significant farming and small garden cultivation within the city boundaries.

There has a been a rapid shift in several decades away from these rural/agricultural economies to urban ones. Phuket has witnessed a cycle of boom & bust over the previous decades, specializing in tin, rubber, and now tourism, fuelled in particular where government policy has opened up economic opportunities and investment. Currently, the economy is almost completely dependent on tourism. Industry in Lao Cai shifted to forestry, then more recently to mining. Udon Thani is becoming a center for retail, trade and services.

Phuket 1971–1980, as described by local stakeholders:

During 1971 -1980, the landscape of Phuket was covered with forest, green conserved area, mangrove forest and nipah forest, which provided a habitat for aquatic animals. Nature was abundant. What they did for living was agriculture, rubber plantation, fishery and tin mining. There was a harbor and a car ferry was used between Chatchai pier and Nun pier. They had just started building Sarasin bridge and the airport. The electric and water supply system covered only the municipal area. Most of Phuket residents had been born on the island, with a large proportion of ethnic Chinese and Muslim. The island was somewhat remote, and malaria was prevalent during this period.

In 1981 – 1990, the beaches were still free from the hotel construction, and people could access public water sources.

Development has dramatically altered landscapes and land use

Changing economies and urban growth has meant expansion of city limits and boundaries and changing land-use, visible in land conversion, construction and development of new infrastructure. This means the gradual disappearance of agricultural land as the cities expand onto new areas.

In Udon Thani, the urban area has expanded beyond the municipal boundaries defined by it external ring road, into neighboring local authorities that are becoming increasingly urbanized. Within Lao Cai, a large percentage of forest area has been lost due to logging and conversion of forestland for cultivation purposes. Older Phuket residents described the island in the 1970s as covered in forest and green areas (see box). Now, they remark that the whole island has been urbanized in a short time: 10 years ago the first 7-11 and department stores appeared, and these can now be found everywhere on the island.

Expansion has been both planned and unplanned in Vietnam, the process of urban expansion process has been partly state-led. In Hue, the city has expanded geographically by annexing surrounding agricultural land and re-designating it as urban. In the Thai cities, participants reflected on how much of the urban expansion has been unplanned.

Acceleration of development is being driven by greater regional economic integration. Participants themselves highlighted the significance of economic regionalization as a driver of urbanization. All of the cities now play a strong role as regional or even international hubs. Twenty years ago when Udon Thani was upgraded to a city municipality, it benefited from a national strategy of "turning a battlefield into a market place" that hinged on building regional economic linkages with Laos and Vietnam, as well as China. Phuket's tourism strategy began in the mid-eighties and

Flood in Udon Thani, Thailand in 2011 © ISET

has since seen the development of an international airport receiving direct flights from Europe, bypassing Bangkok. The nature of its economic integration is changing however, with tourism from Western Europe in decline and tourism from China and Russia on the rise. Hue is another major international tourist world destination that also attracts an Asian and increasingly Vietnamese market.

In all cities, regional development is part of the vision of city leaders. Formal economic development plans for Udon Thani and Lao Cai target further regional linkages, particularly across Vietnam and Thailand, China, Laos and Cambodia. A new highway between Hanoi and Lao Cai will link the city to emerging regional economic corridor of Kunming, China and Hai Phong. Udon Thani has also emerged as a retail and service centre for visitors from Vientiane in Laos now able to drive across the international gateway of the FriendshipBridge between Laos and Thailand.

People's occupations and livelihoods are changing, both for traditional inhabitants and new residents.

Urbanization has afforded many new economic opportunities for households and individuals. This is manifested in Hue for instance the growth of private shops, offices, guesthouses, and the re-emergence of people in marginal sectors such as cyclo drivers and petty street traders, as well as construction workers. But at the same time, expropriation of land for new uses has obliged many residents traditionally dependent on agricultural, fisheries or aquaculture to find new sources of income and/or resettle.

In Hue, the loss of traditional livelihoods is driven by state-led redevelopment of agricultural land such that farmers are displaced, compensated and/or resettled, a controversial process in Vietnam. Fishermen have also been relocated from their traditional homes, which has led to disruption in traditional way of live and income. Hydropower projects in Lao Cai also led to displacement of previous residents. These were identified as among the most vulnerable people in Lao Cai city, in recognition of the challenges they face in adapting to new lives.

SLD participants in Hue also noted that some long-term residents are moving out of the city dueto a perceived lack of opportunities.

The composition of cities is changing. While opportunities for long-term city residents are shifting, rural to urban migration within country and international migration changes the size, mobility, and composition of populations. Lao Cai participants reflected that majority Kinh ethnic people from outside of the region now outnumber the ethnic minorities who previously constituted the city's majority. Udon Thani has an increasing Chinese and Vietnamese presence, and large numbers of both Thai and Burmese migrants are working in Phuket. It is estimated that the number of Burmese migrants in Phuket is 50% higher than registered residents.

These residents are sometimes very mobile, moving between city and place of origin seasonally. Some of these groups are wediely welcomed into the community (such as the rotating student population in Hue). Stakeholders in Hue noted that female migrants from the Mekong are arriving to work in the service industry, particularly in lower paid jobs such as masseuses, an occupation that would be frowned upon by traditional Hue residents.

There is also significant foreign investment in Phuket and Udon Thani, residents noted. Such changes in the composition of the cities raises issues about who is included in the city "community."

Incomes have improved, poverty rates have declined. On the whole in all four cities, poverty rates have dropped; income, consumption, food security and health, and education have improved. In Lao Cai, participants remarked that the city's poverty rate had decreased dramatically from 70% in the 1980s to just 14% in 2012, along with sharp drops in malnutrition and illiteracy. Udon Thani residents shared that changes has also come with important new opportunities for women. In both Vietnamese cities, residents observed that some people have done particularly well, visible in the emergence of new residential homes and automobiles.

Accompanying these gains for individuals and households are improvements in some public services and infrastructure. Lao Cai residents described improvements in human

Udon Thani is ready for AEC in 2015 © ISET

services investments, especially health care and education. All city participants commented on the benefits of new physical infrastructure. In Lao Cai, they noted construction of roads, flood control infrastructure, railway expansion. Udon Thani has seen the establishment of a water supply system, center for waste disposal, commercial airport, and second bus terminal. Hue residents noted improvement in the quality water and power supply over the last ten years, that roads have been widened, and drainage systems expanded. In Phuket, basic solid waste management systems were developed 20 years ago, with a new reservoir and waste incinerator built within the last ten years. Udon Thani is building a new wastewater treatment center that is expected to be finished in 2012.

Access to these public goods is not equal. Notably, unregistered migrants in all cities lack access to human services like health care and education.

The rapid pace and scale of urbanization is creating strains. The pace and scale of change, institutional weaknesses, and resource constraints present a challenge to these improvements in infrastructure and services. Cities are already facing some service provision stresses on solid waste management system, wastewater, and transportation. Residents pointed to traffic congestion in Phuket, Udon Thani and Hue. Neither of the Thai cites nor Lao Cai have public transportation systems. Lao Cai and Hue stakeholders noted that the drainage system is overwhelmed and degraded. In all cities, waste management efforts are struggling.

There is also stress on water and energy resources, as cities outgrow their resources bases. Availability of water resources to serve demand is a subject of concern for both

Lao Cai and Hue. In Phuket, people remember having access to natural water sources from rivers, streams and wells, but now notice problems of water shortages. Phuket's urban areas are largely dependent on water and energy sources that come from outside of the island.

People also expressed fears about the quality of water. Industry and mining has caused water pollution in Lao Cai. In Hue, participants noted pollution from markets—as well as from run-off from graveyards positioned on nearby slopes. People are increasingly shifting to buying bottled drinking water in both of the Thai cities.

Participant from both Udon Thani and Phuket spoke of the weaknesses and limitations of urban planning, land use frameworks, and their implementation. In Phuket, planning and investment for basic infrastructure and services has not kept up with the pace of economic growth. Investments in core infrastructure were not made at the time of economic expansion, such that that now investments are now being made to help catch up. This also means that in some cases, people are acting on their own to address these challenges privately. Participants described the practice among some large hotels of extracting groundwater to meet their needs.

There are questions about quality of life and distribution of benefits.

Though they highlighted the clear benefits from rises in income and infrastructure provision, SLD participants shared as well some negative impacts from these changes. This has particular implications for social cohesion in the cities. In Lao Cai, participants expressed concern over the increasing disparities between rich and poor. Hue participants discussed that rising cost of living and the government's reluctance to revise poverty lines, such that special services designed to support the poor are often unavailable to them. Phuket participants discussed disparities in income in Phuket between those that have benefited from tourism (and associated land sales) and those who have not.

The perceived degradation of natural resources and environment also has a negative impact on quality of life. Phuket participants talked about the loss of a pristine, productive natural environment. In Hue, participants discussed the collapse of the lagoon fishery and the relocation of fishermen. Many residents expressed a loss of cultural values associated with the degradation or replacement of historical architecture with large buildings. In all cities, they noted problems with including air pollution, noise, and congestion associated with shifts from bicycle transportation to motorcycles, and increasingly cars.

Hue, Vietnam in 2012 © ISET

Changes in land value and urbanization

All in four cities, participants described immense changes in land use over the preceding decades. This is clearly associated with changes in land values and land speculation, which has strongly accelerated in the last ten years. In Phuket, beach land was once worthless, given as the inheritance for the least favored child. In the last 20 years though, beachfront property has become the most valuable land on the island.

Land speculation and investment is a significant contributor to local economies in all four cities, with ambiguities and at times conflict surrounding legal use and ownership. In Vietnam, the rise in land value has emerged as a result of reforms that make it possible to effectively buy and sell land. However, legal status of land can be unclear and inconsistent. In Phuket, in the 1970s many areas that were designated as conservation areas have since been developed. Participants talked of many cases of conflict over land title and encroachment on public land.

While foreign ownership of land is prohibited in Thailand, many foreign investors in Phuket have bought land through Thai partners and nominees but with foreign investors controlling these land-based business ventures. Stakeholders expressed concerns in Phuket that the majority of land is owned by private investors, and largely foreign.

Land prices are particularly high in Udon Thani and Phuket – now beyond the reach of many people including long-term residents. Participants also spoke of the rise of slums in both cities caused by the combination of high prices and movement of people into the city. With shifting land value, there is growing pressure to convert agricultural land to housing

and industrial development. This is occurring in all four cities. Resettlement of people in Vietnamese city is also linked to changing value of land and targeting areas for development.

Residents also associate the changes in land values with changes in the character of the city and the landscape. In Hue, they see historical architecture being replaced by modern buildings. Both Hue and Phuket place value on preserving architectural heritage of their cities.

Land conversion creates and transfer flood risk.

The need for new land for urban investment has in some cases driven development onto hazardous locations, such as riverbanks and coastlines, or in floodplain eco-systems that provide critical services like flood buffers or drainage. In both Hue and Udon Thani, participants highlighted that land is being filled and used for development of housing estates and industrial developments. This include filling canals, floodways, lakes and ponds. In Hue, developers are filling, raising, and constructing new residential and commercials structures in areas that were previously paddy fields and experience regular flooding. This has transferred flood risk to surrounding areas, which are now relatively lower.

Construction of roads in all cities is linked to changes in flood profiles. Lao Cai participants for instance explained that the new highway system will running through areas that experience flooding. It is unclear what the impacts of this will be, they remarked.

Land conversion outside of the city also impacts changing risk patterns. In Lao Cai, SLD participants explained how activities outside of the city boundaries like mining and deforestation, and hydropower construction contributed to recent flash floods. In Hue, residents also discussed issues related to loss of upstream forest, but also how problems of management and coordination of upstream reservoirs, such that sudden discharges can lead to extreme downstream flooding. In contrast, Udon Thani residents acknowledged that flood infrastructure aimed at protecting urban investments contributes to more severe flooding outside of the city boundaries.

Urbanization also impacts water quality and supply

While cities have all experienced improvements in water infrastructure, participants expressed concerns about the degradation in water quality and supply. This is linked to the changing use of land and new industrial and agricultural pollution. In Lao Cai, mining activities and other industries have led to water quality degradation and health concerns among participants. Udon Thani residents likewise remarked that rainwater was no longer drinkable and that people are increasingly turning to bottled water. Stakeholders in Phuket also discussed how the rise in numbers of people on the island – including tourists – has contributed to increases in urban waste and declining water quality.

Flood in Phuket, Thailand in 2012 © ISET

The great pace of urbanization has led to substantial rises in water demand. There is growing strain on natural water sources in Udon Thani from the Huay Louang River and Nong Prajak reservoir with a combination of urbanization and more intensive agriculture in the wider basin. Hue residents are concerned about keeping up with demand for water supply in coming years.

Stakeholders recognize that something has changed about the weather in recent years.

Across the four cities, some participants were more familiar with climate change than others. But almost everyone readily shared observations about recent changes in local weather patterns. In Lao Cai participants described more variable weather, particularly long hot and cold spells. According to SLD participants, Udon Thani has had colder, shorter winter periods, hotter and longer summers, stronger storms, and variable weather during the day. People in Phuket noted stronger rainstorms, hotter summers, warmer sea water, longer dry spells, and drying up of the water reservoir.

Climate change is often seen in terms of natural disasters.

All cities have experienced dramatic events in recent years. The Indian Ocean tsunami of 2004 is extremely vivid for people living in Phuket. Hue in 1999 experienced a historical and devastating flood. Udon Thani and Lao Cai have had less devastating but still memorable floods. There is a perception that this risk/frequency has changed recently, in all cities.

People also talked about other changes that they associate with climate change, such as coral bleaching in Phuket. While Hue stakeholders are aware of climate change and familiar with its impacts, they recognize current flood risk as a result mainly of ongoing deforestation and filling of flood buffers for development.

Trajectories

Projecting what the future will bring is not an easy exercise for most people. While M-BRACE participants share concerns about negative trajectories, they also see opportunities to address these challenges and generally have confidence that improved technology and understanding will deliver better future. Until the SLD, most participants had not generally considered how the added risk of climate change would affect their city's future

Continued expansion and growth, positive opportunities

All participants expect continued high levels of economic growth and investment, especially with greater regional interconnectivity. Lao Cai and Udon Thani participants in particular foresee improvements to transportation infrastructure: more highways, widened roads, and improvements in the railway systems. Some in Lao Cai mentioned the establishment of the city's first airport.

In imaging the growth of their cities in the coming decades, many stakeholders shared optimistic ideas about "modern cities." This generally reflected continued economic growth, paired with rising technology that would provide solutions for current problems. In Hue, participants described a larger, more modern city, with more bridges, high building, larger roads, highways, parks and other public facilities. Along with this, they envisioned more green spaces, more public than private transportation. In Lao Cai, participants expect that agriculture will decline as an economic sector but more become more productive as a result of agro-technology. Mining will increasingly take place outside of the city, replaced by refining activities within the city boundaries. Both Lao Cai and Hue participants referred to their cities becoming "green cities." Udon Thani participants shared the expectation that greater ASEAN influx would generate more income and lead to better human resources and capacity, such as medical centers. Some in Phuket predict more tourists and most participants expressed confidence that the tourism industry can be well sustained.

Current problems can be tackled, according to these perspectives. Better management will improve current stresses on resources and infrastructure. In Phuket, stakeholders felt that more and improved infrastructure provided by the central government could ease traffic problems: for instance, new roads and road tunnel and monorail or underground linking the airport to popular tourist areas. The city is considering desalinization plants and bringing water from the mainland reservoirs through water pipes, to ease water supply stress. Lao Cai participants likewise believe that shifting mining to outside the city will improve water quality within. Some also expressed that former forest areas could re-grow to their former size. Hue residents described that there will be better management of water drainage so that there are no more serious floods in the city, and a high quality and stable water supply despite risks of river salinization.

Despite optimism, people recognize that there are looming challenges

Still, participants see many current trends as worrisome. In all cities, they are concerned that natural resources are under enormous pressures, facing limited supply, degradation, and a fast pace of development that infrastructure systems have not been able to match. Lao Cai participants worry that resources, especially forest and mineral resources, will be depleted if not managed in a more sustainable manner. In Phuket where natural resources like fisheries were once abundant, people acknowledge that these may never return to their former state.

People also expressed concern that there may be greater stress on social relationships. Lao Cai residents discussed loss of social cohesion due to economic inequalities and linked this to a possible rise in problems like crime and drug use. In Hue, they spoke of farmers and fisherman losing homes and livelihood in continuing urban development projects. People also worry about the decline of the traditional fine customs and manners that they hold in high esteem.

For Thai cities in particular, SLD participants contemplated whether based on the current development trend, the cities would be worse places to live in 20 years than they were today. In Udon Thani, participants envisioned increasing land prices, less agricultural area, worse traffic congestion, more pollution, and increasing natural resource depletion. Phuket people voiced concern over more pollution and waste with increasing population and tourism, and a higher cost of living.

Climate change is a new topic and new concern for most participants, although many (particularly in Hue) have some previous understanding of climate impacts. Lao Cai residents were worried about the impact of high temperatures on the health of its population, especially children and the elderly. This was a vivid concern for many people, given the intense heat wave the city was experiencing at the time of the SLD itself. They also discussed fears of more flash flooding anderosion, leading to landslides. Hue people considered the impact of changing precipitation patterns, contemplating what more rain might mean for tourists' preferences and the protection of historical structures.

Final Discussion

The first round of SLDs in M-BRACE is the beginning of a longer shared learning process. Next, members of city working groups will work with experts to develop vulnerability assessments based on key areas of concern identified during the SLDs. In all cities, the interaction of water, land-use, and climate will be a central theme for the assessment.

From these early interactions, we can understand more about the kinds of challenges facing the four cities. Fast and recent development has significant impacts for populations, livelihoods, landscapes and resources. There are strong linkages between vulnerable water resources and changing land use. People see benefits in these changes, but are also worried – worried about loss of their key resources about how quality of life in their city may decline in coming years. We can also see that development impacts people differently, bringing both benefits and that are now being redistributed among city residents and between the city and its outskirts.

Underpinning these dynamics of urbanization—expanding populations, changing livelihoods, increasing inequalities, and strains on services and natural resources— is a process of land conversation and development. This leads to expansion that is largely driven by short-term private interests, rather than long terms strategic planning. Current systems for planning, service delivery and resource management have not been able to keep up with the great pace of change. Land use planning and environmental monitoring and regulations are under particularly great pressure, where they exist at all.

Currently, solutions are largely framed in terms of high cost investments – notably in Phuket as desalination plants or diverting piped water from mainland reservoirs (despite increasing demand on the mainland for these same resources). The question is whether these infrastructure solutions can keep up with the pace of change and be resilient in the face of future climate change.

There are also questions of equity involved. Many of these problems are related to degradation of public goods, but under current conditions they are leading to private solutions. The case of Phuket highlights two core points: gaps in long term strategic planning for service provision and public infrastructure that have not been able to keep up with the pace of economic growth, but also that 'autonomous adaptation' is being undertaken by actors who are able to fill in these gaps independently of the state—for example, when large hotels dig their own wells to access groundwater sources. There is a risk that some adaptation actions will be uncoordinated and benefit some at the expense of others.

In the SLD process, we create a space for these issues to surface and for learning to take place. People see their cities differently. For one thing, they bring different technical knowledge about sectors, resources, vulnerabilities, and climate impacts. At SLDs, city residents can begin to see how climate change and development impacts fisheries differently than tourism, or how conversion of agricultural land might eventually impact local communities through changing flood risk. But people also bring different worldviews and values. There is not only one conception about how the city should be, so that opening conversations around city development is crucial for supporting equitable adaptation. Participants themselves recognized the value in having this space for discussion, learning, and deliberation on these topics.

Talking about the future is difficult. This is especially true when considering climate change, which is an unfamiliar topic with extremely uncertain implications. Therefore, a good place to start is the past. In reflecting on recent trends, participants often surprised themselves and each other about how much things had changed and how quickly, and this helped them think about how trends might continue to surprise them in the future.

While many of the topics that people raised were familiar problems, the SLD helped them to discuss in a new way. In Vietnam where climate change is a frequent topic of conversation and policy issue, participants were able to frame climate not in light not of physical impacts and hazards, but as linked to other types of change in their cities. From this, they could begin to see how ongoing actions contributed to increasing or reducing future vulnerabilities. Likewise, stakeholders in Thai cities could envision how climate might further exacerbate the stresses they are already facing.

In the coming year, the M-BRACE program will continue to host SLDs in the four cities. These will provide a space for sharing and deliberating on new information, such as the vulnerability assessment. It will also give stakeholders a chance to test out new ideas for solving problems through pilot projects and to prioritize and plan by developing a city resilience strategy. Importantly, the whole process is underpinned by iterative learning and deliberation.

REFERENCES

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The Mekong – Building Climate Resilient Asian Cities (M-BRACE) program is working with city stakeholders to explore the intersection of two defining trends: urbanization and climate change. All over the world, urban development has brought wealth, resources, and provided new opportunities, which can help residents buffer shocks such as climate events. But at the same time, certain types of urban development can put people and places at risk from climate change impacts, by settling vulnerable places and refashioning landscapes in ways that exacerbate natural hazards or deplete resource bases, and creating complex systems that are unable to withstand shocks and crises. With rapidly growing urban populations and increasing socioeconomic inequalities, these changes do not impact all residents equally.

Building resilience to climate change requires more adaptive, responsive, inclusive, and accountable development institutions and processes that draw on wide sources of information, and that create space for informed, critical public debate and decision-making. To help city stakeholders begin to navigate these challenges, ISET, TEI, and NISTPASS are applying a "shared learning" approach in four cities in Vietnam and Thailand through M-BRACE. Shared learning aims to foster knowledge exchange, dialogue, and deliberation in order to nurture learning, innovation, and flexibility. Shared learning provides a platform through which vulnerabilities are assessed, resilience strategies identified and implemented – and through which stakeholders are able to reflect and review in a participatory, iterative manner.

This report discusses how shared learning can address the dual challenges of climate change and urbanization. It describes the first "shared learning dialogues" (SLDs) held in the four M-BRACE cities, and synthesizes city residents' insights on past trends, trajectories, and vulnerabilities.