

# LAO CAI

VIETNAM



TRADITIONAL GARDENS LINE ONE SIDE OF A RIVER IN LAO CAI WHILE URBAN DEVELOPMENT IS OVERTAKING THE OTHER

Photo Credit: Richard Friend, ISET-International

## Mekong - Building Climate Resilience in Asian Cities (M-BRACE)

*Lao Cai is an emerging city along the Chinese border in northern Vietnam. Historically a small mountain town that was home to many different ethnic groups, economic development in Vietnam and China and increased prospects for trade and travel between the two countries has raised the profile of this city as a prominent trading post. New mining activity in the mountains surrounding Lao Cai has further spurred economic development in and around the city. As a result, urbanization, including new roads, new industry, and new housing is occurring rapidly and the city is quickly expanding into traditionally agricultural lands. This growth has led to an increase in vulnerability to a range of climate conditions such as floods and droughts, impacts that will be further exacerbated by climate change. Changes in living conditions and livelihoods are also contributing to the challenges faced by the city's most poor and vulnerable. As Lao Cai expects further growth in the near future, it has been working with the Mekong - Building Climate Resilience in Asian Cities (M-BRACE) initiative to better understand the impacts of urbanization and climate change and chart a path towards more resilient development.*

## M-BRACE

Mekong - Building Climate Resilience in Asian Cities (M-BRACE) is a four-year initiative funded by the US Agency for International Development (USAID) and implemented by the Institute for Social and Environmental Transition (ISET) in partnership with Thailand Environment Institute (TEI) and the Vietnam National Institute for Science and Technology Policy and Strategy Studies (NISTPASS). M-BRACE works in four cities in Vietnam and Thailand to develop and apply practical methods for building resilience in cities experiencing rapid urbanization and climate change. In Lao Cai, M-BRACE worked with local stakeholders from government, the private sector, and civil society to conduct a vulnerability assessment focused on urbanization and climate change, implement a number of individual resilience-building projects, and design and adopt a formal Climate Resilience Action Plan for the city.

## CLIMATE VULNERABILITY IN LAO CAI

Until recently, Lao Cai experienced climate-related disasters infrequently. The Red River, which runs through the center of the city, had been known to flood, but the city traditionally had sufficient natural protection to minimize flood damage. Indeed, annual cycles of flooding and recession contributed to the productivity of riverbank vegetable gardens in Lao Cai. However, with recent urbanization and growth in the mining industry, things are changing. The urban area has overtaken land that traditionally served as environmental buffers, constraining traditional floodways and resulting in more frequent and intense flooding. Much of the riverbank gardens have been filled in and the riverbanks lined with concrete. At the same time, increasing demand and threats of pollution from mining to key water sources raises the possibility of water shortages. People in the city are experiencing rapid shifts in livelihoods as they move or are forced out of agriculture into urban and mining jobs, and in the transition many families are being exposed to new risks. Rapid economic growth, changes in lives and livelihoods, changes in vulnerability to climate events, and climate change are all converging to increase the likelihood and frequency of climate related hazards.



**Rapid urbanization is vastly altering the kinds and severity of hazards in Lao Cai.** Landscape changes associated with urbanization are strongly associated with increasing hazards. Development in the floodplain is located in places that previously served as floodways, the infilling of lakes has eliminated natural flood buffers, and the construction of new roads has altered the natural hydrology, displacing floodwaters towards new locations. The construction of a highway that will link Hanoi to China via Lao Cai has resulted in increasingly severe and frequent inundation, flash flooding, and landslides. Along the Red River, recent floods have seen houses inundated for seven to ten days at a time, with flood levels at times rising in matters of minutes. Dangerous flash floods have occurred following heavy rains, leading to serious financial losses for low-income communities in the area. On the edges of the city, mining and deforestation have created small pockets of severe inundation by increasing the quantity of soil flowing downstream and inhibiting water flow. At the same time, this urban growth also raises the possibility of water constraints. A growing population and an expanding urban area will require increased water, while some new economic developments, particularly in mining and industry, necessitate better management to protect existing water sources from pollution and degradation. With an annual dry season and growing demand, there is real concern that water shortages may soon constrain development or city activity during certain parts of the year.

**Climate change is not fully incorporated into infrastructure design.** As the city grows, infrastructure will increasingly play an important role in

promoting and sustaining economic activity and providing necessary public services; however climate change has not been a priority consideration for planned new urban development. As a result, much of the new infrastructure, including roads and drainage systems, may be inadequate for increased risk under future climate change scenarios. Intense floods brought on by changing precipitation patterns and ongoing deforestation may soon exceed city flood infrastructure capacity. The river dike system, one of the city's only flood protection measures, was designed to withstand a one-in-twenty-five year-flood based on earlier climate regimes rather than future climate projections. However, multiple floods that are orders of magnitudes larger have occurred in the recent past. Moreover, only 60% of the dikes in the city are considered reliable based on government standards. Throughout the city, drainage systems in individual wards are already in critical condition and a new drainage system currently under construction is designed for floods smaller than some of the extreme events the city has already experienced.

**Changes in livelihoods and occupations are increasing the vulnerability of some residents.** Ongoing demographic and socioeconomic changes are altering livelihood patterns and occupations for residents of the city. The transition from a rural to urban economy has meant the loss of traditional livelihoods for many farming households, and some have struggled to adapt to changing economic circumstances. Many farming families are being displaced by the expansion of mining and roads, but new land allocations in resettlement areas are smaller than traditional landholdings, and



*A bridge over a river in Lao Cai where signs of flooding sit just below a number of homes*

*Photo credit: Tho Nguyen, ISET-Vietnam*

the government's standard compensation of 10 million VND per household (500 USD) is generally considered insufficient to cover even basic needs. Resettled farmers, as a result, have limited financial ability to change livelihood strategies or diversify their incomes, even while the city urbanizes around them. Further, homes in resettlement areas often lack basic amenities such as water and electricity. Despite these challenges, official development plans call for continued expropriation of farmland, so more and more households will encounter these problems in the future unless new solutions are identified.

## ACTIVITIES IN LAO CAI

As part of M-BRACE, individual projects—activities targeted at building capacity or knowledge that will aid resilience—were conducted in Lao Cai. Together, they represent diverse and complementary solutions that, when combined with others, lead to measurable improvements in the city. These projects targeted a range of issues and capacities.

### **Build the capacity of local officials to work on climate change and urbanization issues.**

Under M-BRACE, a series of workshops and trainings were conducted in partnership with government officials at the provincial, city, and ward level. These events focused on helping participants better understand climate change and how it will impact different parts of the city so that participants will be better able to incorporate concerns about climate change and urbanization into their own work. By being directly engaged in the implementation of

studies around vulnerability, and in overseeing projects, local partners have developed an improved understanding of opportunities for building resilience. These priorities have been incorporated into local planning.

### **Develop a more comprehensive understanding of water related challenges in Lao Cai.**

Water has emerged as a core issue in Lao Cai where floods and water shortages are both potential threats. Under M-BRACE, research was undertaken to better understand the water balance—both water supply and water demand—in the city. This research included a review of existing and future consumption needs and water sources.

### **Build the capacity to monitor and assess change.**

City leaders with the capacity to understand change as it occurs are able to use that knowledge to guide their response. Under M-BRACE, stakeholders have participated directly in monitoring and understanding changes by taking lead roles in conducting vulnerability assessments and in designing and implementing projects. They have also worked closely with community leaders to understand the changes being felt at that level. These new skills, to monitor, assess, and understand change as it takes place will put the city in a position to more effectively respond and plan for new directions of future development.

### **Build mechanisms to support collection, storage, and sharing of climate data and information.**

Higher quality and more accessible data can help people and organizations better understand, manage, and plan for the future. Under M-BRACE, many efforts were undertaken to create and provide access to better information about climate in Lao Cai. Flood gauges and warning signs were installed along the main river corridor in town. In addition, a central database was established in partnership with the Provincial Center for Hydro-meteorological Monitoring to store all climate and climate change related information. This database is accessible by all government agencies and includes mechanisms to support information sharing and early warning systems.

## LOOKING TO THE FUTURE

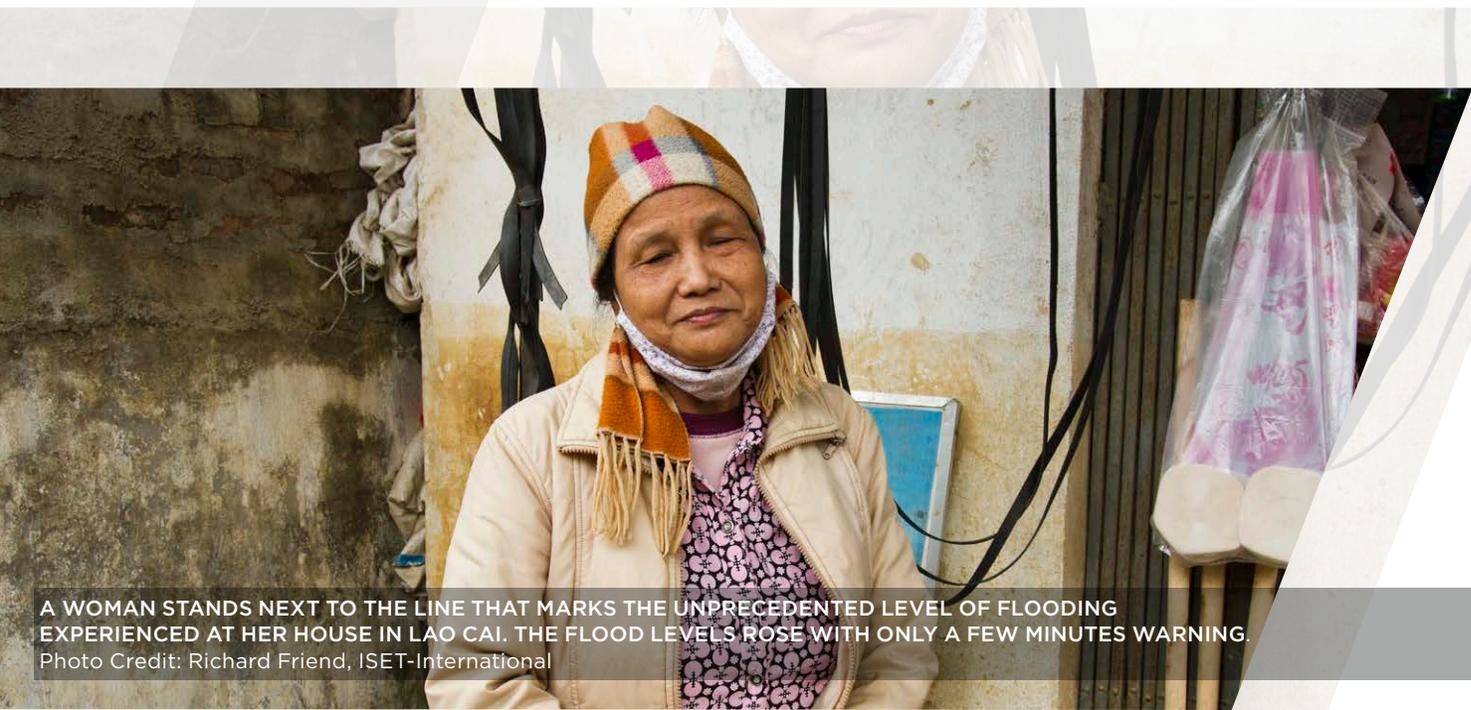
As Lao Cai looks beyond M-BRACE, it is well positioned to continue building climate resilience. A Climate Resilience Action Plan (CAP) was drafted by stakeholders in the city and approved by the Lao Cai Provincial People's Committee in July 2014. The plan identifies eleven priority actions and related activities that the city can take to help build urban climate change resilience. These actions range from ones targeting agents and institutions, such as improving the capacity of weather forecasting and disaster warning, to those that target infrastructure and ecosystems, such as investing in drainage and solid-waste processing systems. For each of the action items, the draft Climate Action Plan identifies the lead and coordinating agencies responsible for implementation as well as sources of funding, including from local, national, and external sources.

With the approval of the CAP, agencies and departments throughout the city will now work to integrate the actions in the CAP into their own one-, five-, and fifteen-year plans. The CAP also positions Lao Cai as a leader for Climate Resilience in Vietnam, an area that, most notably through the recent issuance of a national directive on urban development and climate change<sup>1</sup>, is emerging as a core area of focus in the country.

<sup>1</sup> Decision No: 2623/QĐ-TTg, 'Approval of Scheme "Urban Development of Vietnam Responding to Climate Change in the Period 2013 - 2020"'

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and Environmental Transition (ISET), Thailand Environment Institute (TEI), and Vietnam National Institute for Science and Technology Policy and Strategy Studies (NISTPASS).



A WOMAN STANDS NEXT TO THE LINE THAT MARKS THE UNPRECEDENTED LEVEL OF FLOODING EXPERIENCED AT HER HOUSE IN LAO CAI. THE FLOOD LEVELS ROSE WITH ONLY A FEW MINUTES WARNING.  
Photo Credit: Richard Friend, ISET-International