



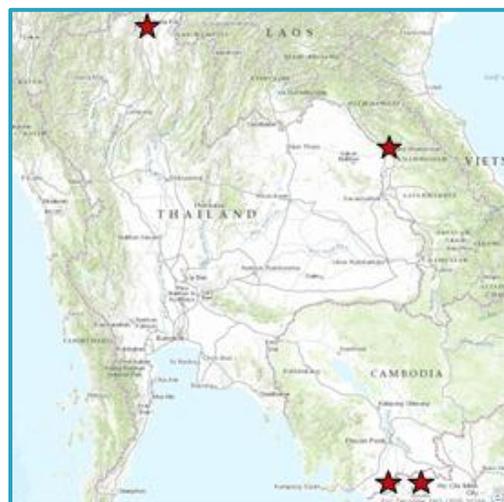
# Climate-Sensitive Flood Risk Mitigation in the Lower Mekong Basin

**Pilot projects to assess and reduce village-level vulnerability to floods**

## Background

The Lower Mekong Basin (LMB) is highly dependent on flooding. However, extreme events, whose recurrence and intensity are influenced by climate change, can have disastrous consequences. On behalf of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), GIZ supported the former Flood Management and Mitigation Programme (FMMP) of the Mekong River Commission (MRC) to undertake an assessment of flood vulnerability at the community/village scale, incorporating the effects of climate change into the analysis.

The vulnerability assessment was then used to identify appropriate adaptation measures for a local level pilot project located in each of the four member countries. The projects required extensive collaboration with decentralized authorities and stewardship by a national working group set up in each country to oversee the planning and



*Location of pilot projects*

## Project Overview



**Time frame:** August 2014-February 2016

**Budget:** 393,000 Euro

**Objective:** The project aims at reducing current and future flood vulnerability of communities in hotspot areas with the cooperation of decentralized authorities of the national ministries, National Mekong Committees (NMCs), provincial/local stakeholders, and the MRCS.

**Four Locations:** The four pilots are in the flood prone areas of (i) Khammouane province in Laos, (ii) Takeo province in Cambodia, (iii) Dong Thap Province in Vietnam and (iv) Chiang Rai Province in Thailand.

**Impact:** 2,300 direct beneficiaries in Cambodia, Lao PDR, Viet Nam, and Thailand

implementation of the project. The overall aim of the pilot projects is to reduce local communities' current and future flood vulnerability and inform climate change planning at higher administrative levels.

## *Management structure of the pilots*

Each pilot project was overseen by each member country's national working group. The working group was chaired by the respective National Mekong Committee and brought together government representatives of the relevant line agencies at the national, provincial and district levels.

National independent experts were contracted in each country to implement the pilot projects and were supported by FMMP and GIZ staff as well as an international independent expert.

## *A comprehensive and innovative approach*

A four step approach was used to assess flood vulnerability and identify appropriate adaptation measures:

**Step 1- Identification of existing flood behavior under climate change scenarios:** Existing flood behavior was determined through hydrodynamic modelling for each pilot location. These models were subjected to various climate change scenarios (based on IPCC 5) to assess changes in flood vulnerabilities. These changes include increases in the recurrence of extreme flood events and flood levels.

**Step 2- Assessment of economic and environmental vulnerability:** Past economic losses due to flooding (in agriculture, housing and infrastructure) were collated. The annual average damages were estimated and changes in these averages due to climate change were assessed using the results of the hydrodynamic modelling with selected climate change scenarios. The monetary change in the annual average damage due to climate changes was used as a surrogate for the changes in economic and environmental vulnerability.

**Step 3- Assessment of social and gender vulnerability:** Social vulnerability was derived from an expert assessment of flood exposure, sensitivity and adaptive capacity. These aspects were determined by conducting extensive community consultations, household surveys, and analysis. Sex disaggregated data was collected and analyzed to understand the variations in vulnerability for women, men and other social groups.

**Step 4- Selection of appropriate adaptation measures:** After combining the results of the economic/environmental and social vulnerability assessments, a list of candidate adaptation measures appropriate for each pilot location was developed. This process involved extensive consultation at local and administrative levels to identify the potential economic and environmental benefits of each

## *Implementation of flood risk mitigation measures*

The candidate measures were prioritized, taking into account their urgency, potential for upscaling, technical feasibility, financial feasibility, gender sensitivity, interest of communities, and sustainability. Selected measures cover a wide range of sectors and include non-structural measures

and low-cost structural measures. For example, the project conducted trainings on integrating flood risk management into socio-economic development plans, early warning systems, and promoting markets for ecological agriculture. Other implemented measures include community pond rehabilitation, procurement of water supply tanks and filters, and ecosystem-based adaptation through tree planting and integrated crop diversification and management. More details can be found in individual fact sheets for each pilot location.

## Overall process and learning

The process of the pilot projects has led to a better understanding of the following topics: How to assess vulnerability to floods and select appropriate adaptation measures; when and how to engage local communities; how to incorporate considerations of gender into adaptation planning; the time frame, management structure, data, and budget necessary to carry out vulnerability assessments and various flood risk mitigation measures. It is hoped that the lessons learned from this process will inform future vulnerability assessments and adaptation planning at the local level in the LMB.

Following the conclusion of four pilot projects, a regional workshop was held in Cambodia to discuss lessons learned from the implementation of these projects. The two-day workshop brought together about 35 participants who were involved in the planning and/or implementation of these and similar projects. Participants included representatives from the MRC Secretariat and the four member countries' National Mekong Committees, government officials at the national, provincial, and district levels, consultants, and representatives from the MRC-GIZ Cooperation Programme.

The following key insights were derived from the series of discussions that took place at the regional workshop:

- **Vulnerability Assessment Methodology:** The project's approach for the vulnerability assessment is an innovative methodology that provides practical and adapted steps for the inclusion of economic, social and gender dimensions in the assessment at an adequate spatial scale for local planning. However, it is also a demanding methodology which relies on the availability of an important amount of historical flood data and on the possibility to conduct comprehensive social surveys.
- **Project Implementation:** Sufficient time, community engagement, partnership with government agencies at different levels, and continuous communication amongst key stakeholders are important factors influencing the successful implementation of the project.
- **Sustainability of Implemented Measures:** Establishment of a sound mechanism for community based groups to co-manage the common property is essential for the sustainability of structural adaptation measures. To be functional and sustainable, the pilots' early warning systems will need strong collaboration with the authorities/line agencies. Integration of this project's approach into local and national development planning would be a positive step in the region.
- **Potential for Upscaling Aspects of the Project:** There is likely potential for replication of some of the implemented adaptation measures in other parts of the Lower Mekong Basin, including improvement of flood early warning systems and trainings in community-based disaster risk management. However, before upscaling or replicating any given adaptation measure, it is important to understand how the project at the community or village level fits in with other plans at the district, provincial, or national levels.