



CLIMATE CHANGE Policy Brief

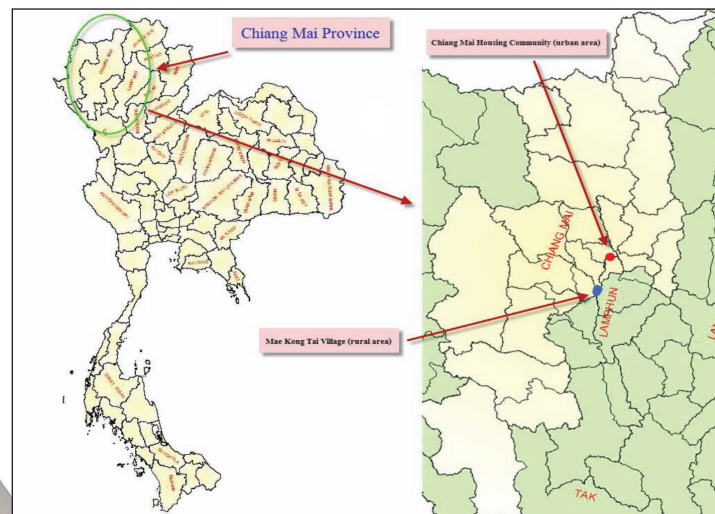
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Adapting to Floods in Chiang Mai: Confronting the Gaps

Chiang Mai Province in Thailand has had a long history of flooding since 1956 due to its bowl-like shape. Floods have occurred in rising frequency in the last decade, for instance, between 1994 and 1996, five floods hit Chiang Mai and severe floods took place in 2005.

Rawadee Jarungrattanapong from Ritsumeikan Asia Pacific University and Areeya Manasboonphempool from Kasetsart University conducted a study in 2009 on how local government units and individual households had adapted to the Chiang Mai floods of 2005. This study looked at not just the gaps in adaptive behavior, but also examined these in respect of both urban and rural communities. The Chiang Mai Housing Community (CMHC) and Mae Kong Tai (MKT) Village, two of the most impacted areas from the 2005 floods, were selected to represent urban and rural areas, respectively. Two hundred households in CMHC and 108 households in MKT were selected at random. Four government agencies that played a key role in flood responses in 2005 were also interviewed.

This study was part of the EEPSEA Cross-Country Project on Adaptation Behavior in Response to Extreme Climate Events in Southeast Asia and China which was conducted over five countries: Vietnam, Indonesia, the Philippines, Thailand and China in 2009-2010.



The two study areas in Chiang Mai province

Adaptation Gaps at the Household Level

For the first flood in 2005, the reason why some households in CMHC did nothing when they received early warnings was that they did not believe them and this was mainly due to the fact that households in this area had rarely experienced floods before.

“The surveyed households were aware but did not undertake adaptation practices due to reasons such as financial constraints and not taking heed of early warnings of the floods (as in the case of the urban communities). Further, households believed that flood mitigation was the government's responsibility and this prevented them from taking action.”

A phenomenon uncovered in the course of the study was "the effect of public flood protection". This refers to a common perception, particularly among the urban households in CMHC, that future floods will be less severe because the Municipality has completed its project on expanding and dredging the waterway of the Ping River in Chiang Mai City. This can be a dangerous perception in that people may not take the necessary precautionary measures to adapt to and mitigate the impacts of future floods due to a false sense of security in the effectiveness of public flood protection measures.

Three adaptation options were recommended by experts: flood/crop insurance, providing temporary work during the flood period, and relocation. Most of the respondents felt that insurance was not worth buying as the premium was too high and their losses might not be that great. In terms of temporary work, 60% of the households in MKT wanted this while generally, those in CMHC did not because they felt they could earn enough from their regular jobs. The communities were largely unprepared to relocate stating that they were used to living in the area and did not know where to relocate to.

Confronting Institutional Constraints

The institutional adaptive capacity of local government units (LGUs) was examined in terms of the gaps between actual and recommended adaptation options. In the main, the limitations were shortage of funds, community/public resistance to projects, and lack of authority to implement adaptation measures.

Are Structural Measures the Best Option?

Flood mitigation plans that emphasize structural measures are quite common for Thailand. The popular rationale is that the construction of dams or retention ponds upstream will effectively reduce the flow of water into cities while heightening river bank revetments will increase the carrying capacity of rivers.

“Yet, although experts have stressed that structural measures cannot be the sole method of flood protection, the authorities still fail to pay attention to alternatives like assigning floodplain zones along rivers or introducing flood insurance.”

Dredging the Ping River is a structural option that has been exercised. To be effective, dredging needs to be done every year, which is unlikely due to budget constraints. There are also other concerns. Although dredging a river to lower its bed can help water flow faster, it can also promote channel instability and impact the river's ecosystem in that flora and fauna may be destroyed. Moreover, if dredging is accompanied by a lower water level in the dry season, it will cause the groundwater table to be lower.



Externality of adaptation: Nong Saleak Weir built by the Royal Irrigation Department blocks the flow of water causing flooding in some areas

The proposal to build concrete bank revetments along the Ping River is also contentious. Such a measure failed in Sukothai Province where the revetment built by the government made the width of the river narrower causing the water level to rise higher than the revetment and overflow onto surrounding areas. Many members of the public, academicians, and NGOs argue that revetments are a weak strategy as no one knows what the highest water level will be.

Being Mindful of Social Dimensions

“Public opinion in the early stages of flood mitigation projects plays an important role in successful implementation. For example, the Royal Irrigation Department has proposed a change from traditional weirs to modern dams, claiming that the new dams will improve the speed of flood drainage. This argument is extremely controversial from scientific, cultural and rights viewpoints. Local communities, academics, and NGOs have expressed skepticism and campaigned against this project, considering it a state intrusion into community-managed water diversion systems which are a cultural legacy of the northern people. This shows that in order for disaster adaptation/mitigation projects to be successfully implemented, government institutions should be mindful that social considerations are just as important as technical ones.”



A collective action in MKT led by the headman to build the community sandbag dike.

Effective Disaster Risk Management

In 2002, scattered disaster-related agencies were consolidated to form the Department of Disaster Prevention and Mitigation (DDPM) under the Ministry of Interior to serve as a national disaster management organization. Its main duties consist of formulating disaster management policies; conducting research on disaster prevention; establishing early warning systems; building public awareness of disaster prevention; providing assistance to victims; rehabilitating devastated areas; and coordinating assistance activities among flood relief organizations. In practice, however, this mandate exceeds the capacities of the organization. Through interviews, the researchers found that the DDPM was really operating more as a coordination agency; it did not have an emergency budget for flood rehabilitation and needed approval to assess funds to provide assistance to flood victims.



Broadcasting speaker in MKT was used to disseminate early warning of flood.

Budget and Technological Considerations

The flood early warning system in Chiang Mai Province is well-developed, especially the flood map for the city of Chiang Mai, which was developed and is maintained by the Hydrology and Water Management Center (HWMC) for the Upper Northern Region. This map indicates the flood risks of each area and has been used by the Municipality to prepare flood protection measures as well as to guide it on where to provide assistance to first. It has also been disseminated to residents to inform them of flood risks. According to the Director of HWMC, increasing the number of rainfall measurement stations and telemeter systems in the Upper Ping River watershed and along the Ping River is required to provide more accurate rainfall statistics, but the problem is budget limitations.

Closing the Gaps

In view of the glaring shortfalls in its adaptive capacity, how can Thailand rise to the challenge and strengthen its resilience to climate disasters?

“One priority would be to ensure community and public involvement in disaster adaptation and mitigation projects at all stages right from the planning phase.”

This is related to the very important aspects of the public's right to full information on disaster-related issues and plans and the government's commitment to ensure clear and timely communication to all sectors. This would also address the gaps in household adaptation behavior caused by lack of knowledge and understanding of climate change and disasters. Information campaigns should also address the phenomenon of "the effect of public flood protection" by informing communities that it is unrealistic to rely solely on the government to protect them from floods (or other disasters) and that they have to assume some responsibility for their own safety and well-being. Therefore, the formation of community organizations needs to be encouraged to draw upon the powerful potential of collective action and innovation.

Projects especially structural ones should be carefully evaluated beforehand in terms of social, technological, and economic considerations including the cost of possible negative externalities. Risk reduction strategies such as flood insurance and gazetted floodplain zones should also be considered. Climate disaster and risk management should be mainstreamed into all development planning to ensure an integrated policy approach.

At the same time, government disaster management agencies should be given the necessary resources and authority to take appropriate measures promptly especially in times of emergency without bureaucratic obstacles. Furthermore, the government should invest in proper technical support to ensure efficient early warning, monitoring, and communication systems as well as provide loans or subsidies to poor and vulnerable households for structural improvements such as elevating houses.

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