



SEI/Roengchai Kongmuang

Discussion Brief

In pursuit of effective flood risk management in the Mekong Region

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Introduction

The history of human settlement in the Mekong Region, the importance of flood waters to local cultures and livelihoods, and the long record of flood disturbances in riparian and coastal zones means that flood risk management has concerned people in the region for centuries (Ng et al. 2015). In the context of climate change and the future socioeconomic development of the region, it is essential to pursue more effective and holistic flood risk management to maximize the benefits that seasonal flooding brings while also limiting the negative impacts of flood disasters. This brief presents the key findings and recommendations of a review of the literature that seeks to understand the current state of scientific knowledge relevant to flood risk management and governance in the Mekong Region, with the purpose of identifying gaps and potential future research areas.

Floods in the Mekong Region

Flood waters are a part of the economic, cultural, social and environmental fabric of the Mekong Region nations of Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam. Seasonal monsoon floods replenish groundwater and bring rich nutrients to soils in the Mekong Delta, which acts as the ‘rice bowl’ of Southeast Asia (Mainuddin et al. 2011; Manuta and Lebel 2005). Annual inundation feeds the freshwater ecosystems and inland fisheries of Tonle Sap Lake and the tributaries of the Mekong River, making the Lower Mekong Basin (LMB) the largest freshwater capture fishery in the world (Dudgeon 2011; Hortle 2007). These important cycles of flooding position the Mekong River among the most biodiverse and species-rich rivers in the world.

Traditional knowledge and experience of the normal, anticipated monsoon cycle in the Mekong Region enable communities to live with and benefit from the seasonal ebb and flow of floods that define the tropical wet climate zone covering the vast majority of the region (Danh and Mushtaq 2011; Peel et al. 2007). However, destructive flood disasters are also on

the rise, adversely affecting people’s and natural ecosystem’s adaptive capacity and resilience.¹ Climate observations in the LMB over the past 50 years include an increase in wet season rainfall and an intensification of flood events (ICEM 2010). According to the Emergency Events Database (www.emdat.be), between 1970 and 2017, 225 flood disasters occurred in the Mekong Region that led to almost 12,000 deaths, over 100 million lives disrupted and more than US\$50 billion in economic damages (Figure 1) (CREG and Guha-Sapir 2017). The more notable flood disasters in recent decades include the 2000-2001 and 2011 Mekong Delta floods, the 2011 Central Thailand floods and the 2015 Myanmar floods. Climate change is expected to further increase the frequency and intensity of floods in the region in the coming decades (IPCC 2012).

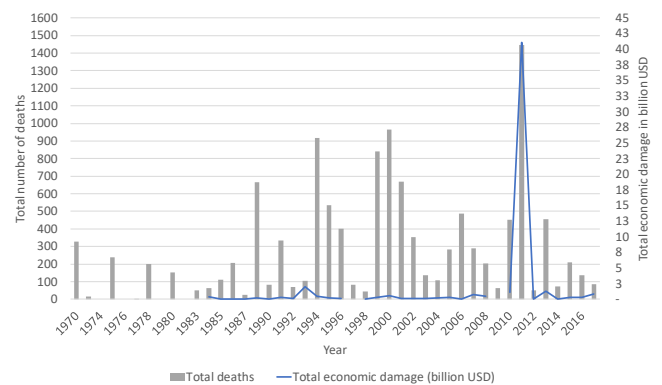


Figure 1 - Number of deaths and total economic damage resulting from floods in the Mekong Region countries, 1970-2017. Data source: CREG and Guha-Sapir (2017).

¹ Flood disasters are hydrological hazards that involve the “overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas that are not normally submerged” (Intergovernmental Panel on Climate Change, IPCC, 2012; p. 559), triggered by the occurrence, movement and distribution of surface or sub-surface fresh- or salt-water (CREG and Guha-Sapir, 2017). Floods vary in type (i.e. fluvial, pluvial, coastal, or flash), onset (i.e. slow or rapid), and duration (from a matter of hours to many months).

Box 1 - Key findings on the trends in flood risk management and governance research in the Mekong Region

I. Focus country

- Significant focus on Viet Nam (43%) and Thailand (39%)
- Limited studies in Cambodia (9%), Myanmar (5%), and Lao PDR (1%)

II. Scale of study

- Significant focus on subnational (state, province, city) (49%) and local (district, village, household) (33%) levels
- Limited studies at national (15%) and Mekong regional (3%) levels

III. Flood event (including seasonal flooding and climate change)

- Mixed focus on major recent flood events: Central Thailand 2011 (22%), Mekong Delta 2011 (3%) and Myanmar 2015 (2%)
- Focus on seasonal flooding and regime shifts in the Mekong Delta (13%)
- 34% of studies attribute flood events to climate change

IV. Flood risk management approach (disaster and climate risk management)

- DRR perspective studies focus on flood assessment/observation (40%) and response (15%) phases, while there is limited study of flood prevention (12%), recovery (5%) and preparedness (4%)
- 24% of studies take a holistic DRR cycle (multiphase) approach
- Climate risk perspective studies focus on adaptation (66%) and resilience (22%), while there is limited focus on sustainability approaches (12%)

V. Development sector

- 71% of studies have a clear sectoral focus on at least one of ten sectors: agriculture, business, ecosystems, fisheries and aquaculture, health, ICT, land, rural poverty and livelihoods, urban, and water
- Significant focus on urban (24%), agriculture (16%), and water (15%) sectors
- Very limited focus on ecosystems (4%), land (4%), and ICT (2%) sectors

[Figures refer to the percentage of reviewed papers (n. 161)]

Key findings

Trends in the scientific literature

The literature review shows that flood risk management is an important objective of governments, institutions and researchers at various scales in the Mekong Region. Flood risk management and governance are highly diverse in perspectives used and approaches taken along the spectrum of disaster risk reduction (DRR) and climate change adaptation, as well as in integrating these approaches with sustainable development sectors.

Results from a literature review of 161 peer-reviewed scientific publications (Boyland, 2018) are analysed using five categories to highlight trends in the current state of knowledge and to identify potential knowledge gaps: I) focus country, II) study scale, III) flood event, IV) flood risk management approach, and V) development sector. Box 1 presents trends that were uncovered in this analysis.

Framing flood risk management and governance

This section details how a particular set of framings and arrangements inform and control the status of flood risk management and governance in the Mekong Region, using the events leading up to and after the 2011 Central Thailand floods as an example. Figure 2 below summarizes five drivers of this status quo.

At the global level, flood risk management and governance has two main broad framings: DRR, which is articulated by the Sendai Framework for DRR, and adaptation, articulated by the Paris Agreement on climate change. In the Mekong Region, flood risk governance and policy is largely a matter of water resources management (WRM), orchestrated at the national level. Key institutions mandated for WRM include irrigation departments, departments of water resources and water resource councils/committees. However, disaster management and climate change governance is typically separate from WRM, leading to fragmented and uncoordinated flood risk governance across several sector agencies and actors. In Thailand, since 2002 reforms were initiated, incomplete decentralization and broad administrative fragmentation have increased flood risk and likely contributed to the impacts of the 2011 flood event (Marks and Lebel 2016). As a result, the established flood risk and water resources governance structure was unable to prepare for, manage or respond effectively to the disaster, due to weak capacity and inadequate resources (Marks and Thomalla 2017; Ng 2016).

Institutions with authority and power may frame floods as 'natural phenomena' as a way to divert attention away from the inadequate management of the disaster or from the socioeconomic drivers of risk and vulnerability that those institutions influence such as poverty, inequality, and unplanned or poorly designed housing and infrastructure. For example, the Thai Government regularly blamed climate change and above-average rainfall levels for the flood event in 2011 (Marks and Thomalla 2017). Similarly, the Vietnamese Government often blames sea level rise and changes in Mekong Delta flood regimes on climate change, choosing to ignore the human-made factors such as groundwater extraction and dyke construction for triple

rice-cropping, which have been shown to be more influential on flood risk levels (Chapman and Darby 2016; Erban et al. 2014; Minderhoud et al. 2017).

Framing floods as natural disasters and overlooking the societal contribution to flood risk has direct implications for risk management approaches. Across much of the region, governments pursue technocratic responses for managing the natural hazard of rain and the overburdened water drainage system to physically protect people and assets. Several studies suggest this strategy has proven inadequate by the recurrence of various flood events, but little has changed in the way of policy (Lebel et al. 2009; Ziegler et al. 2012). Structural flood defences – such as improving drainage, constructing dykes and raising roads – may bring some localized protection but often give a false sense of security, and when implemented in only a small area they tend to redistribute risk within and across localities and administrative boundaries (Limthongsakul et al. 2017; Marks and Thomalla 2017). Further, physical defences have transformed what was once welcome cyclic seasonal flooding into disruptive events occurring at irregular intervals (Colten and Sumpter 2009).

National governments have long taken centralized, top-down approaches to flood risk management, through both large-scale infrastructure projects and broader disaster management policymaking. While structural protection plays an important role in risk management, it needs to be balanced with ‘soft’ measures that take a bottom-up approach: examples include building decision-support capacities and improving communication, collaboration and data sharing among actors (Hoang et al. 2018). An overly technical approach limits or even overlooks the role of both subnational governments and local non-government or community-based actors (Chau et al. 2014). There is a disconnect in flood risk governance between decision-making power that is centralized and first-response action that comes from local levels. In the case of the 2011 floods in Thailand, the event exposed the response-oriented, short-sighted, crisis-driven nature of flood risk management in the country, as well as the critical importance of local actors and self-organizing networks in coping with floods in the absence of effective Government support (Ng 2016).

The primary rationale for investing in flood risk management is one of national economic growth, with costs and benefits analysed in decision-making processes. While the protection of assets and large revenue-generating industries is important, these management efforts have been shown to prioritize short-term national economic outlooks over long-term resilience and sustainability for all. For example, Thailand’s national Suvarnabhumi Airport was built on land that had been designated earlier as green zones by the Bangkok Metropolitan Administration and canals built to reduce flood risks at the airport have heightened the risk to residents in close proximity to the boundaries of the airport (Lebel et al. 2009). Similarly, during the 2011 flood in Thailand, the risk to small and medium enterprises (SMEs) was driven by the actions of powerful public and private institutions seeking to protect foreign investment in larger-scale industrial parks (Marks and Thomalla 2017). In response to the disaster, supporting the quick recovery of foreign investment and assets in the manufacturing sector was prioritized over aiding local SMEs. Overall, the management of floods across the region appears largely equity-blind: It is management that ignores the uneven and intersecting vulnerabilities within and across com-

munities such as poverty, gender, age and disability.

In summary, how flood risk management and governance are arranged and framed – technical solutions for natural problems, top-down approaches for localized impacts, and the dominance of an economic-led rationale – prevents challenges to the status quo. In Thailand, there has been very little flood risk management policy learning, and governance arrangements and functions have remained largely static (Lebel and Lebel 2017). Further, flood governance policy narratives, constructed by governments and international experts, have abetted the persistence of institutional traps in Thailand’s governance regime (Lebel et al. 2010). Despite multiple flood management failures, the dominance of ‘official’ policy narratives is evidence of the power of organizational interests and professional norms, while challenges to the dominant narratives are often limited (Thomalla et al. 2017).

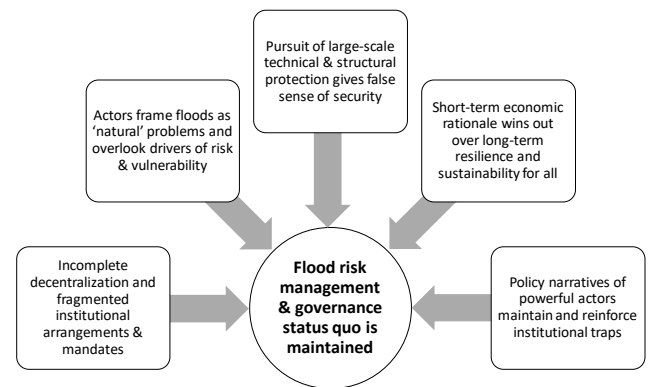


Figure 2 - Five drivers of the flood risk management and governance status quo in the Mekong Region

Research gaps and priorities

Several research gaps have emerged from analysis of the state of the knowledge on flood risk management and governance in the Mekong Region. Based on the findings, it is suggested the following six research priorities be considered by researchers, policy-makers and practitioners:

- (i) Analysis of the particular drivers of vulnerability and flood risk management measures undertaken among at-risk and marginalized sections of society, particularly women, children, the elderly, people with disabilities, indigenous people and ethnic minorities, and the poor
- (ii) Studies of the drivers, pressures, impacts and responses of flood-induced internal displacement and transboundary migration
- (iii) Investigation of the risk governance arrangements and management efforts appropriate at the rapidly growing peri-urban interface between rural and urban areas
- (iv) Evaluation of ecosystem-based adaptation and DRR options, particularly for coastal communities exposed to both increasing flood risk and sea level rise
- (v) Longitudinal studies of flood risk management processes leading up to and following major disaster events, with a view to investigating the development-oriented root causes of floods
- (vi) Exploration of the apparent barriers to scientific evidence informing and improving public policy and legislation on flood risk management and decision-making processes, from the regional to the household level.

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