

CLIMATE CHANGE ADAPTATION IN POST-DISASTER RECOVERY - POLICY BRIEF 3

SEASONAL LIVELIHOODS AND ADAPTATION STRATEGIES FOR AN UNCERTAIN ENVIRONMENTAL FUTURE: RESULTS FROM PARTICIPATORY APPROACHES IN PREK PRASOP DISTRICT, KRATIE PROVINCE, CAMBODIA

This policy brief presents insights on the resilience and adaptive capacity of flood-affected communities in Prek Prasop District, Kratie province, Cambodia. It highlights the strategies used by communities, and particularly women, to adapt their livelihoods to withstand extreme events and seasonal environmental change. The brief presents combined results from nine workshops conducted in four villages in two communes, using focus group discussions with women and men to develop seasonal calendars and activity diaries. Local knowledge is as valuable as scientific scholarship, and incorporates nuanced details of agricultural and climate change knowledge that scientific tools such as modelling of crop productivity, river discharge and rainfall cannot capture.

KEY MESSAGES

- ◆ Cambodia will experience increased extreme floods and drought, and decreased predictability in wet season rainfall and river flow under climate projections. Recently, rural areas have experienced severe drought (2015-2017) and floods (2013, 2018). Using participatory approaches and a focus on women's experiences to inform policies and plans can facilitate adaptation and gender mainstreaming.
- ◆ A combination of community-based focus group discussions, development of seasonal calendars, and compilation of individuals' daily activities across the year can provide valuable insights into seasonal and annual changes in environmental conditions and the realities faced by women in preparing for, and coping with, extreme events. An understanding of key temporal 'pressure points' can highlight when current agricultural practices may be vulnerable to environmental change.
- ◆ In response to high annual and seasonal variability in the availability of water and occurrence of drought and/or flood, communities have developed complex, intricate adaptive responses to reduce the risk of crop damage and draw on a diverse range of produce and strategies to maintain their livelihoods.

CONTEXT

The livelihoods and food security of the lower Mekong basin are closely tied to the river through agriculture, fisheries, hydropower and more. In Cambodia, 85% of the total arable land is cultivated to rice, most of which is rain-fed. In recent years, attaining food security has challenged many rural communities due to increased seasonal variability and severity of droughts and floods. Cambodia was affected by severe drought from 2015 to 2017, and experienced damaging flooding in 2011, 2013 and 2018. Current projections for future climate change highlight the vulnerability of rain-fed rice agriculture in the lower Mekong basin, with increased seasonal variability set to continue. Models tend to predict reduced early wet season rainfall, increasing frequency and magnitude of major floods along the Mekong, increased average temperature, and longer dry spells during the rainy season. In response to these threats, the Cambodian government has introduced a Climate Change Strategic Plan for 2014-2023. The mission of this plan is to establish “a national framework for engaging...stakeholders in a participatory process” and “capitalize on... local knowledge...” with regards to climate change responses. The Strategic Plan also highlights the importance of mainstreaming gender in climate change planning, as rural women are among the groups most affected by climate change. The research highlighted here, with a focus on local knowledge, adaptation, and gender-specific impacts of environmental change, has direct relevance for Cambodia’s Climate Change Strategic Plan.

SEASONAL LIVELIHOODS AND ADAPTATION STRATEGIES

Participatory workshops were conducted in four villages in the Prek Prasop district of Kratie province. The four villages present a cross-section of rural livelihoods along the lower Mekong River, ranging from villages situated at various elevations on the natural levee of the Mekong, to a community on an island. The main focus of the workshops was to develop seasonal livelihood calendars. Figure 1 presents a seasonal calendar compiled from two workshops in one example village, with one workshop primarily informed by women, and the other predominantly by men participants.

	January	February	March	April	May	June	July	August	September	October	November	December
Major hydrometeorological events												
Rainfall			Little Rainfall	---	---	---	Heavy Rainfall					
Flood								Flood				
Drought		Drought										Drought
Important livelihood activities and vulnerabilities												
Dry season rice		Caring	Harvest		Drying						Preparation and Sowing	
Dry season maize		Caring	Harvest								Preparation and Sowing	
Wet season rice					Preparation, Sowing		Caring		Harvest		Drying	
Wet season maize					Prep., Sowing		Harvest					
Cassava	Drying			Preparation, Sowing				Caring				Harvest
Soy	Caring	Harvest										Preparation
Cashew		Fruit										
Mango			Fruit						Flower			
Off-season mango									Flower			Fruit
Bamboo shoots					Harvest							
Fish		Regular fishing			Good fishing		Regular fishing		Best Fishing		Fishing	
Pig								Vulnerable to illness				
Livestock, cattle								Move to higher ground				

Figure 1: An example of a seasonal calendar highlighting the typical timing of important meteorological events and key livelihood activities. Villagers noted that the timing of livelihood activities can vary from year to year, based on rainfall and flooding patterns. The calendar presented above shows the timing of various activities relevant to long-standing rainfall and flooding seasons in one study village. For example, if early season rainfall does not eventuate, farmers might decide not to sow rice for the wet season, or they might choose to plant a variety of rice that can be planted in July and takes less time to produce a crop. Not shown are crops that can be grown and consumed by the family year round, such as coconut and banana, nor home garden vegetable crops.

Although the details of livelihood activities differed among the four villages, the example shown in Figure 1 exemplifies some key commonalities within the study area. The harvesting times (shown in dark green in Figure 1) for different economically important activities are spread throughout the calendar year, and are also spread across space. For example, wet season rice is rainfed and grown at higher elevations to reduce the risk of flood damage, while dry season rice is grown in lower elevation areas as floods recede, and may be supplemented by irrigation. Important tree crops include cashew and mango, with income from higher-priced off-season mango available to some communities.

GENDERED EXPERIENCES OF SEASONAL CHANGE AND EXTREME EVENTS

During the focus group discussions, women and men emphasised that they helped each other with livelihood activities. To supplement the seasonal calendars, a small number of 'daily activity diaries' were compiled during the research, augmented with observations and complimentary research data. Although there was variation in the income-producing activities undertaken by the women interviewed (including selling produce, running small businesses, working in their own fields, and working as hired labour), most were also responsible for household food preparation (for daily consumption, and for longer-term preservation), cleaning, childcare, tending to home gardens, providing feed and water for livestock, and collecting firewood.

In villages where seasonal flooding significantly and regularly affects homes and fields, the daily activities carried out by women can differ greatly between seasons. During floods, children are commonly sent to stay somewhere safe on higher ground (with relatives or at the pagoda), while women stay at the primary residence, prepare food for themselves and their husbands, collect and transport fodder for livestock (which are also kept on higher ground, tended to by the men, who stay with the livestock), and take fish to market, commonly travelling by boat. With more frequent extreme flooding events predicted under climate change, there may be an increase in the length of time that families are physically separated and women remain in flooded villages, doing arduous work in difficult conditions and exposed to significant risks.

INTERSECTION OF LOCAL CLIMATIC KNOWLEDGE WITH SCIENTIFIC DATA

A simple historical analysis was undertaken to determine the onset date, length, and cessation of the monsoonal rainy period, using freely available gridded data for the study area. Between 1983 and 2017, the average start date of the rainy season was the 4th of June and the average end date the 29th of October. As shown in Figure 2, there has been considerable variability in the length, start and end of the rainy season in recent years, with a particularly late start recorded in 2017 (end of July) and early onset in 2013 (mid-April).

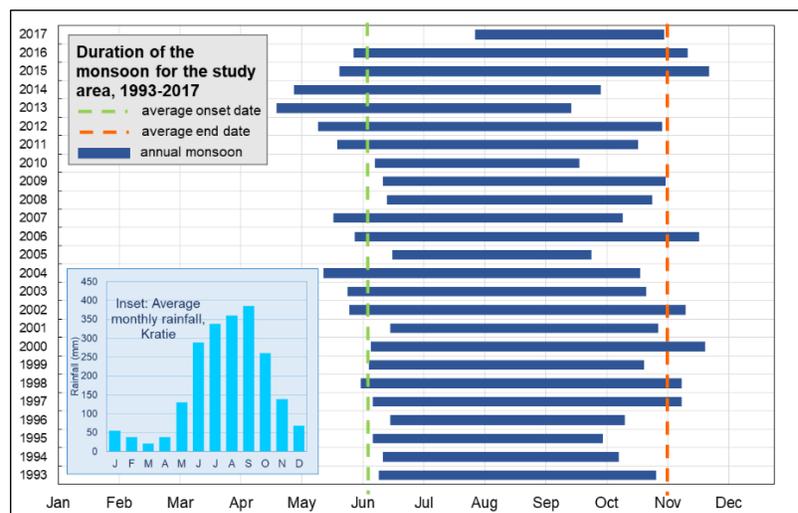


Figure 2: Recent variability in the onset, cessation and duration of the rainy season. Data were drawn from the PERSIANN-CDR dataset managed by NOAA, for a location near Kratie. The graph does not depict differences in the volume of rainfall between years, nor the availability of water.

The increased variability in the onset and cessation of rains has been noted by local communities. In one village, community members stated that once the winds start blowing from the east, there will be no more rain that wet season; and if there is no rain at all in October, they suspect the next year will be a drought. The occurrence and extent of flooding is less predictable from year to year, and even within years; in 2018, there was only a few days' warning of the oncoming flood, and some farmers lost much of their wet season rice, even at higher elevations. A few elders have local knowledge of whether the floods are likely to be small or large in extent, based on reading signs in natural phenomena such as plant growth, yet this knowledge is not widely known. Farmers and communities with the means to do so are diversifying and modifying agricultural activities to reduce their reliance on variable rainfall patterns. Excavation works (for irrigation canals, deepening ponds, and creating higher ground), tree plantations (mainly mango, cashew and rubber), and planting drought-tolerant and short maturity crops were among the adaptation strategies used.

POLICY IMPLICATIONS

- ◆ Local communities and scientific projections agree that patterns in rainfall, flooding and dry spells are becoming less predictable along the lower Mekong River in Cambodia. This has significant implications for communities drawing their main source of income from agricultural systems that have developed alongside the seasonal flood-pulse cycle of the Mekong.
- ◆ Where the means exist to do so, communities are diversifying agricultural and livelihood practices to reduce their vulnerability to frequent shocks from severe droughts and floods. Not all practices have been successful. There are high costs associated with providing year-round water supply and market access.
- ◆ In adaptation policy and planning, attention must be given to the experience of everyone in the community, particularly groups that may be more exposed and/or vulnerable during periods of floods and droughts such as women, the elderly, children, the landless and people with limited economic means.
- ◆ Drawing on communities' experiences and knowledge through participatory processes adds value to scientific scholarship and can accurately inform policy making on external interventions concerning mitigation and adaptation measures.

SOURCE

This policy brief has been prepared by Dr Natasha Pauli and Ms Savuti Henningsen, The University of Western Australia, and is based on the following material:

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