

# “Assessing the Impact of Low Water Flow on the Mekong Riverine and Tonle Sap Lake Communities”

## POLICY BRIEF

### Key policy messages

The Tonle Sap Lake and the Mekong River sustain 86 percent of Cambodia’s territory, and the land around these waterways are home to much of Cambodia’s population, along with animal and marine life. The communities around them depend on agriculture as a main source of living, with incomes supplemented by fishing and collection of aquatic resources. The Tonle Sap Lake has also been regionally and internationally recognised as an important space for biodiversity conservation.

Hydrological alteration in the Mekong has affected water flow both downstream in that waterway and in the Tonle Sap Lake. Water levels in 2019 and 2020 in both dropped below their long-term average levels and even close to their record minimums, impacting agricultural production and fish yields, with flow-on consequences for the livelihoods of river dependent communities. If these circumstances continue, the future of the Tonle Sap Lake and livelihoods of communities will be jeopardised. Collective actions at regional and national levels, with the inclusion of local communities and civil society groups, is needed to address these concerns and to ensure that the water flow of the Mekong and Tonle Sap Lake are not falling below the critical minimum levels. This escalating hydrological hazard requires a coherent approach guided institutionally by one entity that provides consistent information on various stages of drought through meteorological, agricultural and hydrological measurements. Without this, there is a high risk that opportunities for proactive mitigation or adaptation will be lost.

### Introduction

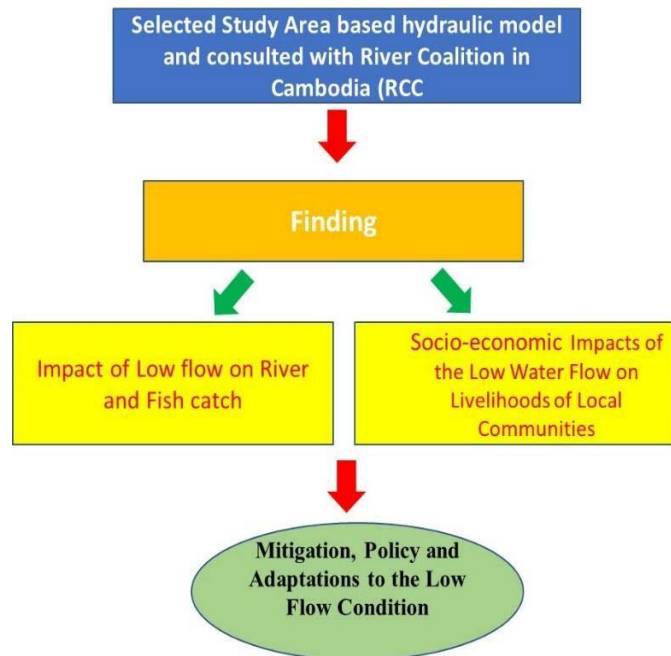
Water levels in the Mekong and Tonle Sap Lake dropped below the long-term average levels in 2019 and 2020. In response, the River Coalition in Cambodia (RCC) of the NGO Forum on Cambodia, with funding support from Oxfam, commissioned a study in 2021 to assess the low water flow’s impact on the Mekong Riverine and Tonle Sap Lake communities. The main objective of this study was to assess the impacts of rice production and fish yields at selected study areas along the Mekong floodplain, connected to the Tonle Sap Lake. This study concentrated on the socioeconomic and livelihood impacts on various groups, including women, indigenous peoples, and the marginalized at the community level. The study analyzes the hydrological changes in the Mekong and Tonle Sap Lake, using data from Mekong River Commission (MRC), and examines its impacts on fisheries, agriculture and livelihoods of river dependent communities in various sites - two in Tonle Sap Lake (Battambang and Kampong Thom provinces) and two sites along the Mekong River (Kampong Cham and Kratie provinces). Some 175 households from 12 villages were interviewed, focusing on the impacts of low water flows in the Mekong River and Tonle Sap Lake on fisheries, agriculture, incomes, and food security. Due to the Covid-19 pandemic, some interviews were conducted online, limiting the scope of research. Secondary data were collected to support the analysis, but access to some data from concerned government agencies was limited by formal procedures and the need for official approval.

The impacts of low water flow and drought are largely non-structural and generally cover a large geographical area. This makes it difficult to assess the effects of drought and to unambiguously link cause and effect. This study did not go into the details of the overall impact of climate change on community livelihoods, rice production and fish yields.

## Key Findings

The Tonle Sap Lake has been significantly affected by low flow of water from the Mekong and tributaries, as well as low rainfall from surrounding sub-catchments. The following analyses have identified the consequences of the low-flow and drought situation in Cambodia:

- Due to unevenly distributed rainfall, too little rainfall and the late onset of the rainy season, a drought situation existed in some areas from the end of 2019 until 2020.
- There were higher than average temperatures and lower rainfall in 2019 and 2020.
- Due to water levels in the Mekong below the long-term average, flows to the Tonle Sap have been very low.



The impact of low flows on rice and fishery production indicates that people in the target areas cannot rely solely on agriculture and fishing for their living. This has forced farmers, fishermen, women and other vulnerable groups to abandon agriculture and fishing in order to support their families. Other relevant parties in the target areas, such as local authorities, fishing communities, and farmers groups, recognize that the decline of agriculture and fish products is caused not only by low water flow, but also by human activities such as illegal fishing, forest fires and land encroachment.

Women are among the vulnerable groups, particularly those who are household heads. In addition to farming and fishing, medium-income women reported engaging in small-scale business at homes, farming work and migration. (Of the women surveyed, 10 percent were classed as well-off, 71 percent as medium-income and 19 percent as poor, roughly consistent with the broader interview sample.)

## Mitigation, Policy and Adaptation

Coping strategies for riverine communities are of crucial importance. Policy recommendations for short, medium and long-term solutions to mitigate the loss of livelihoods and economic opportunities are needed for riverine communities.

A lack of water during the rainy season impacted the agricultural sector in Cambodia. The situation underlines the need for people to find alternatives to rice cultivation in the short-term and focus on crops that require less water.

It is necessary to generate awareness and prior warning to the public of low water flows, droughts and flooding in a timely manner.

Agriculture also needs modernization and an increased focus on water security through the development of irrigation systems and natural pond storage.

Also necessary is the development and utilization of water resources, water conservation, protection and management of agricultural resources, and improvements in agricultural production, to promote sustainable development.

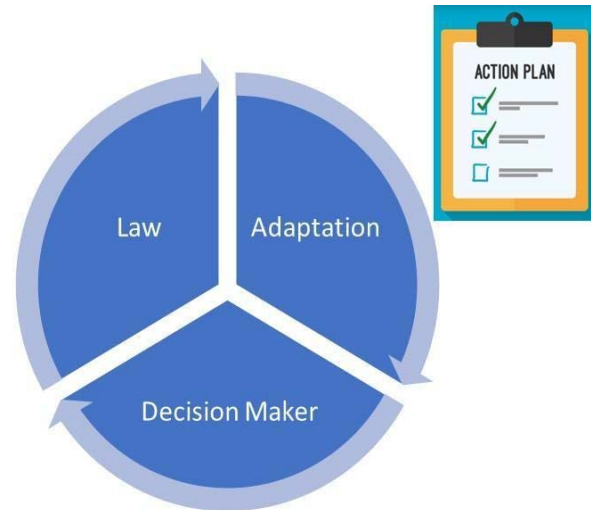
## Conclusion

The years 2019 and 2020 revealed that predictions of rainfall and flow runoff are not sufficient. Dam operations have the potential to render river flow forecasts useless if they remain unconsidered. Increased temperatures, low water flows, droughts, and changes in seasonal rainfall patterns, combined with extensive damming for hydropower throughout the Mekong Basin, pose a threat to food security and human health by reducing freshwater availability and, as a result, agricultural and fishery production.

Farmers' groups have expressed grave concerns about the effects of low water flows in the Mekong River, Tonle Sap Lake, and other tributaries on which they rely for irrigated water for their crops. The main impacts on crop production, according to them, are changes in water flow and a more prolonged drought period. They added that the rice production in their communities had dropped by around 50-60 percent during the drought years of 2019 and 2020.

## Recommendations

- ❖ Decision makers at the provincial and community levels can address their medium and long-term adaptation needs. An Adaptation Plan process, based on various studies to explore further improvements, should be used by relevant sectors to:
  - ✓ Consolidate overall adaptation activities and embark on a coherent and strategic adaptation approach.
  - ✓ Ensure continuity and learning in planning and implementing adaptation, and to communicate progress through iterative outputs.



- ✓ Fully integrate adaptation into existing planning systems and prioritize activities that prevent negative climate impacts on development.
  - ✓ Identify the level of climate risk which can be addressed, given economic, social and ecological constraints.
  - ✓ Encourage the provision of adequate and predictable support which takes into account the comprehensive, continuous and iterative nature of the National Adaptation Planning process.
  - ✓ Create confidence in agencies to support local water using communities that require action beyond the implementation of projects.
  - ✓ Contribute to learning about how to manage multiple stress factors that combine in complex ways across the Tonle Sap Lake area.
  - ✓ Promote streamlining of adaptation approaches under the convention agreed to by national and sub-national stakeholders.
- ❖ On possible actions to minimize impacts at the community level, the following actions should be considered:
- ✓ Warn water users at the community level if the water levels during the coming flood season do not improve significantly.
  - ✓ Request irrigation operators to make changes and ready for their current operations if water levels during this flood season do not improve significantly.
  - ✓ Water use management policy for low flow and drought based on the National Assessment Plan and be ready to take actions and the implementation.
  - ✓ Information sharing and awareness building in targeted communities living along the Mekong and Tonle Sap Lake to make them aware of the causes and forecasts of the low water flows, drought, along with actions to increase their climate resilience.
  - ✓ Seeking alternative water sources (like groundwater sources) to ensure water supplies for supplementary or emergency use.
  - ✓ The impacts of a potential shift in timing of the rainy season on rice production are uncertain, but such a phenomenon could have substantial adverse impacts without adaptation measures.
  - ✓ Increased seasonal variability in rainfall, with wetter wet seasons, which may boost inland fish production, and drier dry seasons, which may threaten fish stocks, make it increasingly difficult for fishing communities to effectively adapt.
- ❖ Conduct Climate Change Assessment within adaptation for the short and medium-term.
- ❖ Improve rice protection by developing water storage infrastructure and improving irrigation systems.
- ❖ Enhance capacity building in water resource management and water scarcity.