

Concept Paper – Mekong River Basin Workshop on Food Security

The countries of the Mekong Basin are increasingly considering hydropower as a solution to their growing energy needs. However, construction of dams on the Mekong River may pose immediate and long-term threats to the food security and livelihoods of tens of millions of people in the Lower Mekong Basin. Food security has always been a high priority on the development agenda of the Mekong region. Discussions on food security have broadened from resource-based approaches (predominantly land and water) to a more integrated approach that links natural resource management with livelihood options and household levels of nutrition.

Under the 1995 Mekong agreement signed by the governments of Cambodia, Laos, Thailand and Vietnam the Mekong River Commission (MRC) has been able to steer regional watershed development, and has provided a framework for addressing transboundary water resources in the region. Yet the Mekong region faces strong challenges to achieve sustainable development, including the development of hydropower, which may affect fisheries; as well conversion of land from subsistence farming to commercial operations which may have profound impacts to local people's livelihoods. .

In light of the recent *Mekong to Rio: International Conference on Transboundary River Basin Management* hosted by the Royal Thai Government and held in Phuket, 1-3 May 2012, with its focus on the important Water, Energy and Food security nexus, the issue of food security has been identified as a critical area in need of further attention. As noted in the declaration from the conference, solutions to food (and energy and water) security issues are possible only when the three sectors work together. It was furthermore noted that the nexus thinking needs to be based on scientific evidence on the gains to be made by further integration of the sectors.

Workshop Proposal:

This workshop is proposed in order to provide a platform for discussing food security in the Mekong Basin from a Nexus perspective, with particular emphasis on scientific analysis and evidence as well as generating tools and appropriate responses. Prioritization will be placed on scientific analysis of the food (fisheries of prime importance) security element of the nexus and determination of how it relates to the other areas of the nexus – water and energy in the Mekong context. The workshop will also discuss how hydropower links to and can contribute to food security and how impacts on fisheries can be mitigated. Workshop facilitators will strive to ensure open exchange, transparency and participant-ownership throughout the proceedings.

Participation is anticipated from representatives from all sectors (water, energy, food but also land, finance etc.), coming from academia, civil society, government offices and agencies, regional and international organizations. Preparatory work for the workshop will be undertaken by *TBD* with a view to collate all relevant material in relation to the topic of the workshop so as to be able to pinpoint areas in need of further and complimentary research.

Workshop Structure and Methodology:

This Three-day workshop will emphasize targeted and useable knowledge of food security risks and opportunities in the Mekong basin along a range of scales, sectors and geographies. Stakeholder groups will share and build their knowledge base through breakout sessions informed by downscaled data from available scientific analysis. Local knowledge and realities will also be fed into the broader discussion through participatory mechanisms such as local mapping, scenario discussions, role play simulations and social media interactions. The introduction of similar international case studies and alternative response scenarios will allow for deeper understanding of broader lessons learned and best practices of managing the water-food security nexus.

Workshop Outcomes:

The outcome of the workshop will be an increased understanding among key stakeholders of the food security challenge in the basin and how that challenge interlinks with energy and water concerns. Program participants will also gain specialized “toolkits” and contact networks that will allow them to more effectively engage on these issues at the local and regional level. Participants and workshop partners will also gain deeper understanding of the current gaps and food security risks in the Mekong basin.

Background on fisheries in the Mekong region

The Mekong River plays an important role in ensuring food security for the region. It sustains a wide variety of food production systems and is vital for national economies. Moreover, the Mekong River is home to one of the largest freshwater fisheries in the world and comprises a rich range of interconnected ecosystems.

The river supports the world’s largest inland fishery, annually worth US\$2.2-3.9 billion at first sale. It sustains livelihoods for millions of people. Fish accounts for 47-80 percent of total animal protein consumed in the lower basin, illustrating its significance to food security (Dugan et al, 2010). Household-level research shows that even for farmers, fishing can be the primary source of income and may act as a ‘bank in the water’ to finance a large part of the household economic activities, such as seeds, fertilizers and agricultural tools (Bené and Friend, 2011). Fishing has also proved to constitute the main household strategy for dealing with fairly regular years of rice production failures (Arthur and Friend, 2011). Population growth, urbanization and economic growth has put pressure on states to provide energy, food, water and employment (Grumbine et al, 2012; Johnston). This has led to increased investment in hydropower, illustrated by the numerous hydropower plans in the region. There is a growing concern over the environmental and social costs that may come as a result, not least the impacts on fisheries (Johnston and Kumm, 2012; Kirby and Mainuddin, 2009; Ziv et al, 2012; Dugan et al, 2010; Grumbine et al, 2012).

Dams bring a range of changes to the river and its habitats. Altered flow regimes will degrade fish habitats and physical barriers stops migration (Ziv et al, 2012). Predicting the effects of such massive changes is difficult because Mekong is one of the most poorly studied major rivers in the world (Vaidyanathan, 2011; Valbo-Jorgensen and Poulsen, 2000). A Strategic Environmental Assessment of hydropower development on the Mekong, estimated the potential loss in fisheries due to mainstream development. According to the study, around 35 percent (550 - 880 000 million tonnes) of the fish production basin wide is made of long-distance migratory species vulnerable to

mainstream dam development. Some fish production can be expected from reservoir fisheries. The most likely production represents no more than 10 000 tonnes of fish per year for the 1,500 km² reservoir area created by mainstream dams. If all LMB mainstream dams proceed, 55 % of the Mekong river between Chiang Saen and Kratie would be converted into reservoir shifting the environment from riverine to lacustrine. This would have major impacts not only on fish productivity but also on species composition. For example, at least 41 mainstream species out of 262 species in the ecological zone upstream of Vientiane are threatened by a severe alternation of their habitat (Baran, 2010). There are technologies and factors that can mitigate these impacts such as dam location and design, fish passes, filling schedule etc. However, the study found that the existing mitigation techniques will not address the dramatic impacts of mainstream Mekong dams on fish resources.

Dams also risk accelerating the sinking of the delta by blocking the flow of sediment that would otherwise nourish flood plains (Vaidyanathan, 2011). This sinking will make the delta even more subjected to floods and typhoons. Furthermore, the delta is the primary rice growing area of Vietnam, the world's second largest exporter of grain showing its significance for economic development and food security (Grumbine et al, 2012; Kirby and Mainuddin, 2009). Wetland uses, ranging from water, food and fiber supply to flood water control and shoreline protection, are all present in some form in the MRB. Wetland services are likely the most undervalued resources in the lower Mekong. Ringer and Cai (2006) calculated the different trade-offs between irrigation, hydropower production, municipal and industrial water uses, fish catch and direct wetland uses by using an integrated economic-hydrologic river basin model. They found that when fish catch was the favored objective, profits from hydropower generation declined to 42 percent of maximum levels. When hydropower was favored, profits from fish production declined to 88 percent and wetland benefits to 84 percent.

Dam proponents argue that hydroelectric power will help drive economic diversification and the income generated through the export of electricity will provide for other investments in the national economy.

These will provide for enterprise development in both rural and urban settings and employment for those who can no longer earn income from fishing (Dugan et al, 2010). However, international experience of dam development suggests that the probability of successful adaptation by fishing communities in the face of ecosystem degradation is low especially without first investing in diversifying and strengthening livelihoods so that the poor are better able to cope with the changes arising from dam development. This will be especially difficult for the Mekong given the limited capacity of national institutions to pursue integrated approaches to basin development and the marginal participation of poor stakeholders in political decision-making (Grumbine et al, 2012; (Dugan et al, 2010).

Although aquatic resources remain central to the diet and culture of the people living in the Mekong region, wild foods (including aquatic resources) have received little attention to date in national policy (Arthur and Friend, 2011). Fisheries rarely appear in the discourse of politicians and most water resource developers are unaware of the importance of the fisheries or the impacts of dams (Dugan et al, 2010).

As many other regions, Mekong is facing the adverse impacts of climate change. According to a study conducted by the Asian Development Bank, climate change is expected to increase maximum monthly flows in the Mekong with 16-19% compared with 1990 levels. Furthermore, sea level rise is creating saltwater intrusion, with adverse impacts on the agricultural productivity of land. Sea level risk is also threatening mangrove forests in the region. Water storing functions can provide protection against adverse impacts of climate change, such as floods and droughts if appropriate techniques are applied. Furthermore it is cleaner, more accessible and often more cost efficient than many other renewable options (Lindström et al, 2012).

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