

Workshop Brief
Climate Change and its Impact on Fisheries

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Ron Jones, Technical Advisor, FACT

FACT convened a 2-day workshop in order to begin to address the issues of climate change (CC) and its impacts and the potential consequences on the fish and fisheries of Cambodia. The first day was an information session attended by 69 people including 26 women representing NGOs from the three regions of FACT (Coastal, Tonle Sap and Mekong) and many of the participants included a large number of Royal University of Phnom Penh students from the environmental science programs and many of their questions were timely and thought provoking. Also in attendance were people from NGOs and other resources users groups.

The First two speakers (Dr So Nam, Director of the Freshwater Research Institute/Fisheries Administration (FiA) and Mr. Sum Thy, (CC Department, Ministry of Environment (MoE) representing the RGC provided a extensive and detailed coverage of the phenomena of CC, the importance of fisheries and agriculture to Cambodia's economy, livelihoods and identity and the possible impacts that CC can have on the natural resources sectors of Cambodia. These two hours covered the ideas, concepts and potential impacts on Cambodia's aquatic resources sector, but the speakers did not really unveil the current or intended actions of the government. There was little discussion except to outline the bureaucratic structure and placement of CC oriented offices and *ad hoc* committees within the hierarchical scheme of the MoE. In the future it will be crucial for the RGC to really develop a commitment to implementing effective and equitable positions and policies to address the impacts of CC. The consequences for a severely altered rice agriculture, degraded freshwater fishery and polluted and unproductive coastal zone will mean widespread food insecurity and suffering for Cambodia's rural and urban poor. It will be imperative for the RGC especially the FiA to commit to their spirit of the federal policy of Deconcentration and Decentralization and develop effective and adaptive co-management arrangements with community fisheries in order to ensure that the fisheries contribution to local food security is maximized and also to prevent their further degradation of aquatic ecosystems.

Other speakers included a representative from KNED, Battambang who spoke on the need to really make a serious attempt at reducing solid wastes as land fill generates methane and along with pesticides and fertilizer runoff creates serious water pollution problems at the village level. Deforestation is loss of Carbon sinks and reduces toxic gas transformations. He warned of

the dangers of Mercury toxicity from coal burning and the continual production of GHG from the over use of coal.

Ron Jones, Technical Advisor, FACT, next spoke on the inherent changing nature of fisheries and the need to understand the proximate and ultimate drivers of change in these systems. These are first steps in order to begin to understand the concept of *resilience* in order to better deal with the multiple and cross scale interactions and the cumulative impacts CC will bring upon fishing communities. Resilience is the ability to cope with, adapt to and shape change in order for people and their communities to learn to live with surprise. He then answered a diverse range on questions from the participants including clarification of fish adaptation to CC as well as the impact of extinction on changing local fisheries as system responses to CC. Freshwater fish adaptation will depend on the availability of corridors for those species to be able to move across the landscape to seek better habitats. Warm water species should do better as temperature increases while cold or cool species will need to move to deeper pools. It is this disruption of corridors by agriculture developments such as dams and irrigation that will impact Cambodian fisheries as they prevent the movement of fish species across the rice field landscape. Other questions included concerns about the consequences of invasive species such as the spread of *Mimosa sp.*

Yin Dara of Forum Syd spoke on the overall mechanisms of CC and how this will work to increase weather-induced mortality not only from increased frequency and intensity of storm events but also many diseases will increase due to increased temperature and/or increased rainfall resulting in more standing waters and a high incidence of mosquito-borne diseases such as malaria which is responsible for 800 deaths/y (2006) with nearly 100,000 cases making it the highest fatality rate from malaria in Asia. Dara citing the 2006 Nicholas Stern Report warned of us of increased wildlife extinctions, especially tree extinctions which may prove to economically important to many communities which depend on mangroves and other species for timber and non-timber forest products. He introduced the concept of *Climate Injustice* between the Northern generators of CC and the South where impacts will be severe and who should pay for mitigation and adaptation.

Earlier Sum Thy reminded us that climate change is *not an environmental problem*, although it has environmental implications. CC is a *political problem*, one derived from the cumulative impact of individual consumptive choices and the agendas behind those choices. Yet we still nest any CC office, department, secretariat or bureau in The Department/Ministry of Environment whereas in an agrarian country like Cambodia where most of the impacts will be fisheries and agriculture related perhaps a MAFF would be a better centre for locating a CC office or a National Plan of Action on CC; or maybe in an Office of Better National Planning? Now may be time for the Southern majority countries to develop their own CC adaptation framework and

not rely on imported structures and processes from Northern developed countries and donors; the primary producers of the CC crisis in the first place!

Day Two: Climate Change Workshop

This day we had a smaller roundtable discussion of 34 people including 5 women on their personal experiences or observations relating to CC impacts. How has CC actually impacted your life/work? Where do you see the affects of CC? We began to address what concrete steps or actions can be done at different levels of social and political organization to boost awareness and increase resilience (reduce vulnerability) of communities. And third, what is FACT's role in assisting these processes? How can FACT along with other civil society partners help move vulnerable groups in to action around CC issues? The high uncertainty around specific CC impact pathways and outcomes makes organizational paralysis and thus inaction highly likely for many groups struggling how best to target limited resources. Our participants had a difficult time in first understanding CC and then obviously found it difficult to link the changes they are seeing in fisheries and other natural resources to CC. Were they really sure that these changes, seemingly weather-linked are a direct result of climate change? Good questions!

So if we assume CC impacts fisheries, how do we respond to these changes? How do we best use the National Network on CC that now exists; an upcoming Forum Syd project on building NGO capacity to access new funds for CC projects from new international funding mechanisms on CC and to harmonize some of these CC projects with existing livelihoods activities? A key will be to develop partnerships with a diverse range of groups in order to identify the best ways to develop local and cross-scale plans of CC adaptation. To assist commune council level advocacy for projects on CC and to hold Royal Government line agencies and officials responsible for working with communities on implementing the National Plan of Action (NAPA) for CC at lower levels of governance through the national policy of Decentralization and Deconcentration

Concluding Remarks

Fisheries everywhere will be impacted by multiple pathways from CC resulting in increased uncertainty in food security for rural communities. This will be especially crucial for the poorest communities, who are often fishing communities in heavily fish-dependent southern nations such as Cambodia. These pathways of change include the movement of people to already over crowd coastal and lake environments; impacts on local community infrastructure and the direct alteration of fish habitat and thus fisheries productivity. Indirect impacts resulting form migration, changing markets, demographics and ineffective cross-scale governance will have greater impacts on Cambodian fisheries in the short and mid-terms than CC. Thus it will be vitally important to understand the *cumulative* impacts of both CC and non-climate factors which are

already altering how Cambodians see and thus attempt to manage their complex fisheries. The capacity to adapt to CC will vary across Cambodian fishing communities. Their ability to adapt (to develop resilient communities) will depend not only on access to resources and the appropriate technology and infrastructure but on being effective members of social networks. It will be the ability of these networks to engage with different governance mechanisms to advocate for resources and a voice in decision making that will be key to developing resilient Cambodian fishing communities. These interactions must assist Royal Government agencies and ministries to facilitate building the adaptive capacity of fishing communities to steer change in ways that not only ensure food and livelihoods security but to build upon any unforeseen opportunities for local development. There are many ways for fishing communities to develop resilience in the face of the uncertain impacts from CC, but developing the political vision and willingness to make the hard choices for long term implementation will be difficult for governments focused on short term technology and engineering-based solutions. Real CC adaptation must involve the commune councils and the CBOs (commune based organizations) in participatory action planning and development exercises so that legitimate and effective local solutions are found, funded and implemented. Stakeholders such as FACT must be vigilant as the government trades off between economic efficiency and "national development priorities" and necessary interventions which help the poorest and build community resilience.

This workshop was just a start at getting Cambodian civil society groups, the government, students and individuals more aware and involved in some of the larger issues which are affecting Cambodian fishers. It is the mission of FACT to work with stakeholders in ensuring the sustainable livelihoods of Cambodian fishers. This will be more challenging in the face of increased future uncertainty resulting from climate change. Future FACT workshops and study sessions on CC should include a more diverse group of stakeholders including those who are working on real actions to increase community and livelihood resilience to current and anticipated changes. FACT will need to work to build bridges between our fishing coalition partners and other groups and agencies working on CC in order to have the issues related to fisheries and aquatic resources change brought to the broader CC policy dialogue. Cambodia's food security depends on a healthy rice-fish agro-ecosystem. This agro-ecosystem will be impacted by CC. It is up to civil society, private sector and the Royal Government to develop the mechanisms to ensure the sustainability of Cambodia's key food systems.

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