



Comments on CNR's report for the Government of Laos on the Xayaburi Dam June 2012

In April 2011, the four governments of the Mekong River Commission (MRC)—Cambodia, Laos, Thailand, and Vietnam—met to discuss the proposed Xayaburi Dam in Laos on the Mekong River.¹ At this meeting, the governments of Cambodia, Thailand, and Vietnam expressed concerns with the transboundary impacts of the project and requested that further studies be conducted. Over one year later, Laos has still not met these requests.

Instead, the Government of Laos commissioned two desk studies that do not reflect the requests made by the other governments. In May 2011, Laos commissioned Swiss company Pöyry Energy AG to evaluate the Xayaburi Dam's compliance with the dam design requirements set by the Mekong River Commission. Pöyry completed the study in August 2011 and recommended that construction on the dam proceed despite identifying significant gaps in scientific knowledge about the impacts of the dam. The Pöyry report was widely criticized throughout the region for its technical shortcomings.²

In response to this criticism, Laos hired French dam builder Compagnie Nationale du Rhône (CNR) in January 2012 to conduct an independent review of the Pöyry report. In April 2012, the Lao government published the CNR report on its "Powering Progress" website.³ Like the Pöyry report, the CNR report has neither produced new knowledge on the Xayaburi Dam's impacts nor has it responded to the concerns raised by the MRC governments in April 2011.

The CNR report covers only three topics.

In May 2012, Lao Vice Minister of Energy and Mines Viraponh Viravong told *Radio Free Asia* that the CNR report "confirms that if the Lao government wants to let the dam be redesigned, there will be no impact on the environment."⁴ However, the full extent of the Xayaburi Dam's impacts has not yet been studied. The CNR report only covers three topics—hydrology, sediment flows, and navigation. The report itself states that it "does not tackle fish migration issues and other environmental impacts." (p. 13) Many of the concerns raised by Cambodia, Thailand, and Vietnam around the transboundary impacts of the Xayaburi Dam remain unaddressed.

¹ MRC Special Joint Committee Meeting, 19 April 2011.

² Please see International Rivers' review of the Pöyry report at <http://www.internationalrivers.org/resources/review-of-the-p%C3%B6yry-report-on-the-xayaburi-dam-3929>.

³ CNR, Peer Review of the Compliance Report made by Pöyry, 25 April 2012, <http://www.poweringprogress.com/download/Reports/2012/April/Final-report-V1.pdf>.

⁴ Radio Free Asia, "Xayaburi Dam Redesign Mullied," 16 May 2012, <http://www.rfa.org/english/news/laos/xayaburi-05162012180613.html>.

The CNR report does not respond to the primary concerns of MRC governments.

Under the 1995 Mekong Agreement, Laos is supposed to cooperate in good faith and meet the other MRC governments' requests for information.⁵ At the April 2011 MRC Special Joint Committee meeting, the governments of Cambodia, Thailand, and Vietnam raised a number of concerns about the impacts of the Xayaburi project.⁶ Most of these information gaps are not addressed in the CNR report. For example, the three governments requested further studies on:

- Transboundary impacts (Cambodia, Thailand, Vietnam)
- Impacts on fisheries (Cambodia, Thailand, Vietnam)
- Impacts on agriculture (Cambodia, Vietnam)
- Impacts on biodiversity (Cambodia, Thailand, Vietnam)
- Impacts on local livelihoods (Cambodia, Thailand, Vietnam)
- Impacts on sediment flows and erosion (Cambodia, Thailand, Vietnam)
- Measures for benefit sharing with affected countries (Cambodia, Thailand)
- Cumulative impacts of the proposed Mekong dams (Cambodia, Vietnam)

All three governments also noted that more time is needed for public consultation before a decision could be made. The governments stated that more information should be distributed to local people in advance, and the consultations should include wider participation because millions of people would be affected by the Xayaburi project and other mainstream dams.

The CNR report does not assess transboundary impacts.

At the April 2011 meeting, Cambodia, Thailand, and Vietnam all raised concerns about the transboundary impacts of the Xayaburi Dam. Similarly, the MRC's technical review of the project in March 2011 determined that: "transboundary impacts and possible cumulative effects that may result from hydropower or other infrastructure projects need to be considered in the context of the overall river basin. Implications of impacts are therefore shown for both local and basin-wide scales so the relevance of any individual proposed project is reflected for all riparian

⁵ In 1995, the governments of Cambodia, Lao PDR, Thailand, and Vietnam signed the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin (the 1995 Mekong Agreement). Under international law, Laos has committed to cooperate in good faith in implementing this treaty. Laos has also committed to "make every effort to avoid, minimize and mitigate" any harmful effects on the Mekong Mainstream that result from any development projects on the river (art. 7). Furthermore, as part of the "Procedures for Notification, Prior Consultation and Agreement" (PNPCA) process, member governments have a right to "request additional information...in order to evaluate the possible impacts of the proposed use and any other affects on their rights and to facilitate the aim of reaching an agreement by the MRC [Joint Committee]." The notifying government must provide this information if requested. (See MRC (2005), PNPCA procedures, para. 5.4.2 and footnote 8). For more discussion about Laos' legal obligations under the 1995 Mekong Agreement and international law, please visit International Rivers' review of the Pöyry report at <http://www.internationalrivers.org/resources/review-of-the-p%C3%B6ry-report-on-the-xayaburi-dam-3929>.

⁶ Please see the Reply Forms from Notified Countries on the MRC webpage for the Xayaburi Dam prior consultation, <http://www.mrcmekong.org/news-and-events/consultations/proposed-xayaburi-hydropower-project-prior-consultation-process>.

countries.”⁷ Such information, the MRC notes, is necessary to develop a “realistic assessment and formulation” of mitigation measures.⁸

Furthermore, under international law, “[i]t may now be considered a requirement...to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource.”⁹ Lao PDR is obliged under several other treaties and conventions to assess and mitigate transboundary impacts.¹⁰

So far, no such transboundary impact assessment has been undertaken. As a desk study, the CNR report does not gather the additional baseline data required to make such an assessment.

The CNR report makes “heroic assumptions” about sediment transports.

The CNR report examines ways to mitigate the impacts of the Xayaburi Dam on sediment transport in the Mekong River. The report concludes that under ideal conditions, the Xayaburi Dam could be redesigned as a “transparent” dam, where all sediments are transported past the dam. Laos has not indicated if such a redesign might take place.

The CNR report makes recommendations that are based largely on theory and one case study located in France. To transport sediment through a hydropower project in France, CNR has used a “friendly flushing” system where it drains the river and transports sediment once every three years. In the case of the Xayaburi Dam, CNR recommends designing a similar system but notes that flushing would need to take place every year (pp. 66-69). This would require annual stoppage of operations at the dam site for an extended period of time. CNR notes that flushing is an expensive procedure, which implies that the Xayaburi dam developers would need to modify the project’s design and recalculate costs associated with the project.

As CNR acknowledges, its report is only a “desk study.” CNR states, for example, “There is a lack of data about present solid transportation along the Mekong River upstream Xayaburi dam (material size, solid discharge). Thus, data collection on sediment yield and sediment sources is necessary.” (p. 60) Previous studies by the MRC and its donors have highlighted additional information gaps in the areas of hydrology, sediment flows, and navigation (see Annex). Without this additional information, it is too early to determine if CNR’s recommendations on sediment transport are feasible for the Xayaburi Dam.

⁷ MRC technical review of Xayaburi Dam, p. 7.

⁸ MRC technical review of Xayaburi Dam, p. 34: “Trans-boundary baseline and impact information on socioeconomics and livelihoods were not really considered in the EIA report. This information is needed to develop a realistic assessment and formulation of (1) effective mitigation measures, (2) a practical and scientific standardized monitoring programme, and (3) an environmental management plan to minimize negative impacts and gain positive impacts from the Xayaburi mainstream hydropower project.”

⁹ International Court of Justice, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, at 60-61, para. 204 (20 April 2010), available at <http://www.icj-cij.org/docket/files/135/15877.pdf>.

¹⁰ This includes, for example, UN Convention on Biological Diversity (art. 14, art. 3), UN Conference on Environment and Development, 1992 Rio Declaration on Environment and Development (principle 17), Treaty of Amity and Cooperation in Southeast Asia (art. 10).

Conclusion.

Over one year ago, the governments of Cambodia, Thailand, and Vietnam requested that Laos study the transboundary impacts of the Xayaburi Dam. This request has still not been met. Although the CNR report makes technical recommendations on a few issues such as sediment transport, it does not gather the additional baseline data needed to fully assess the environmental and social impacts of the Xayaburi Dam. (p. 25) The full extent of the dam's transboundary impacts remains unknown. Without an understanding of the project's impacts on the Mekong River Basin, the proposed mitigation measures cannot necessarily be deemed effective or sustainable.

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Annex: Recommended Further Studies on the Impacts of the Proposed Mekong Mainstream Dams

This annex highlights some of the knowledge gaps identified in previous studies. This is not intended to be a comprehensive list of knowledge gaps. Consultations with experts at the local, national, and regional levels would help to enhance this list and identify an appropriate timeframe for further studies.

We reviewed the following studies:

- 2010 Strategic Environmental Assessment of Hydropower on the Mekong Mainstream, conducted by the International Centre for Environmental Management at the request of the MRC. [Referenced as “SEA” below.]
- 2011 MRC Prior Consultation Review for Proposed Xayaburi Dam, conducted by the MRC. [Referenced as “Xayaburi review” below.]
- 2011 Planning Approaches for Water Resources Development in the Lower Mekong Basin, conducted by Portland State University and Mae Fah Luang University, funded by USAID. [Referenced as “PSU/MFL study” below.]

Examples of Further Studies Still Needed	Source
Economic considerations	
<i>Contributions of dams to region’s economies:</i> What would be the macroeconomic implications of foregoing development of the Mekong Mainstream Dams (taking into account the value of ecosystem services already provided by the river basin)?	SEA PSU/MFL study
<i>Cost-benefit analysis:</i> What would be the direct and indirect costs and benefits of the proposed dams (taking into account the value of ecosystem services already provided by the river basin)?	SEA PSU/MFL study
<i>Compensation for lost ecosystem services:</i> How would the governments compensate people for lost fisheries and other ecosystem services on a transboundary scale?	Xayaburi review PSU/MFL study
Hydrology and sediment flows	
<i>Coordination across borders:</i> What coordination mechanisms need to be in place with China and between the four MRC governments to effectively monitor hydrology and sediment flows?	SEA Xayaburi review PSU/MFL study
<i>Movement of sediments and nutrients:</i> What are the sizes, sources, types, transport, and fate of sediments and nutrients in the Mekong River? To what extent will reservoirs trap sediments and nutrients? What would be the	SEA Xayaburi review

geomorphic response to altered sediment loads? How might other development near the Mekong River affect sediment flows?	
<i>Erosion</i> : What morphological changes would take place, including impacts on bed and bank erosion? What erosion would take place within the reservoirs?	SEA Xayaburi review
<i>Impacts on the ocean</i> : How would the dams affect ocean processes and marine sediment plume, including the bio-geochemistry of fresh saltwater interactions in Vietnam?	SEA
<i>Impacts on the coasts</i> : How would the dams impact coastal erosion in Vietnam?	SEA
<i>Impacts on groundwater and the water table</i> : What are the impacts on groundwater recharge and connectivity in the Cambodian floodplains and Mekong Delta, and will they contribute to salinization and changes in arsenic levels?	SEA
<i>Impacts on the Tonle Sap system</i> : How will the dams impact the Tonle Sap system including seasonal flooded areas, flooded forest, and sediment balance in the system?	SEA
<i>Seasonal flooding</i> : How would the dams be managed during seasonal flooding, and what would be the impacts of water release during this time?	SEA
<i>Cumulative impacts</i> : What would be the cumulative impacts of the mainstream dams on sediment and nutrient flows downstream?	Xayaburi review
Terrestrial ecosystems and agriculture	
<i>Biodiversity</i> : What is the status of biodiversity in the Mekong River Basin? How is biodiversity distributed? What are the habitat requirements for endangered species? What impacts will the dams cause?	SEA
<i>Nutrients for agriculture and riverbank gardens</i> : What is the value of nutrients from the Mekong River to agricultural production? What impacts will the dams cause?	SEA PSU/MFL study
<i>Ecosystem services</i> : What are the ways that people rely on the ecosystem services provided by the Mekong River for agriculture, riverbank gardens, and other land uses? How would these be impacted?	PSU/MFL study

Aquatic ecosystems	
<i>Aquatic habitats:</i> What aquatic habitats exist along the Mekong River? Where are the biodiversity hotspots? What key stretches of river and tributaries need to be prioritized to maintain ecosystem integrity? What impacts will the dams cause?	SEA
<i>Wetlands:</i> What is the ecological importance and productivity of seasonally exposed in-channel wetlands? What impacts will the dams cause?	SEA PSU/MFL study
Fisheries	
<i>Value of fisheries:</i> To what extent do people depend on the Mekong River Basin's fisheries? What are the contributions to local economies?	Xayaburi review PSU/MFL study
<i>Impacts on migratory fish species:</i> What is the number and biomass of migratory fish species in the Mekong River? What are the migration patterns of these species? What are the hydro-dynamics of fish migration, including their ability to pass through dams and reservoirs? How would fish migrations be affected by the proposed dams?	SEA Xayaburi review PSU/MFL study
<i>Impacts on fish habitats:</i> How would the creation of reservoirs and changes to river hydrology and sediment flows affect fish habitats and fish populations?	Xayaburi review
<i>Fish passages:</i> How would fish passages perform in the Mekong River, given that fish passages have never been used effectively for the levels of diversity of species and large biomass of Mekong fish migrations?	SEA Xayaburi review PSU/MFL study
<i>Impacts of first dam:</i> To what extent will impacts on migratory fish species be attributable to the first dam built?	Xayaburi review
<i>Feasibility of alternatives to fisheries:</i> To what extent can aquaculture and reservoir fisheries replace lost value of the Mekong's capture fisheries?	PSU/MFL study
Social systems	
<i>Food security:</i> How would the proposed dams impact food security, access to water, and nutrition in the Mekong River Basin?	SEA Xayaburi review PSU/MFL study
<i>Dependence on the Mekong River Basin:</i> How do people's livelihoods depend on the river's fisheries and ecosystem services? How would the proposed dams impact people's livelihoods?	SEA Xayaburi review PSU/MFL study
<i>Downstream impacts:</i> What would be the cumulative downstream impacts in Vietnam due to altered river flows and sediments reduction? Who would be responsible for compensating affected people?	SEA

<i>Distribution of impacts:</i> How would the proposed dams impact different stakeholder groups (geographical, cultural, gender, professions, etc.)? Would certain groups bear a disproportionate burden of harm or receive disproportionate benefits?	PSU/MFL study
<i>Cultural ecosystem services:</i> What cultural ecosystem services are associated with the Mekong River Basin and what is their value? What would be the impacts on these services, such as knowledge of traditional fish-catching techniques?	SEA PSU/MFL study
<i>Tourism industry:</i> What is the status of the river based tourism industry, and what would be the impacts of dams?	SEA
Navigation	
<i>Impacts on small users:</i> How would the proposed dams impact small users of the Mekong River?	SEA
Dam safety	
<i>Coordination of multiple dams:</i> What systems would need to be in place to coordinate Mekong River water flows with multiple dams and other development projects in place? How would emergency responses and dam safety be coordinated?	SEA PSU/MFL study
<i>Risk of earthquakes:</i> To what extent would the dams be vulnerable to, and contribute to, earthquakes in the region?	Xayaburi review
<i>Extreme events:</i> What would be the implications of a dam failure or breakage, extreme floods, earthquakes or other emergencies? What coordination mechanisms need to be in place for such an event?	SEA Xayaburi review
Power and energy alternatives	
<i>Impacts of Chinese dams:</i> How would the existing projects in the Upper Mekong / Lancang impact the operation of the Mekong Mainstream Dams and exacerbate the environmental and social impacts of the dams?	SEA
<i>Energy alternatives:</i> What alternatives exist to meet energy demand without the Mekong Mainstream Dams?	SEA PSU/MFL study
<i>Revenue alternatives:</i> What alternatives exist for Laos to obtain revenue for national development purposes while foregoing mainstream dam development, such as a “payment for ecosystem services” model?	PSU/MFL study

Climate change	
<i>Impacts due to climate change:</i> How will climate change impact the river's hydrology? How would the impacts of the dams be exacerbated due to climate change risks?	SEA Xayaburi review
<i>Greenhouse gas emission reductions:</i> Would the projects contribute to greenhouse gas emission reductions in Lao PDR and Cambodia?	SEA