

Sambor dam, Kratie province, Cambodia

September 2007

The proposed Sambor hydropower project would be located on the Mekong mainstream in Sambor district, Kratie province, Cambodia, approximately 35 kilometres north of Kratie town. The Cambodian government has been eager to build the project for decades, with various designs and studies for the project dating back to at least the 1960s. However, political circumstances, difficulty raising the funds and the project's considerable environmental and social implications have prevented it from doing so until now.

In early November 2006, the China Southern Power Grid Company announced that its subsidiary, the Guangxi Power Industry Surveying and Design Institute, would conduct a new feasibility study for the Sambor hydropower project. China Southern Power Grid Company had earlier signed a Memorandum of Understanding with Cambodia's Ministry of Industry, Mines and Energy at the GMS Expo in Nan Ning in October 2006.¹

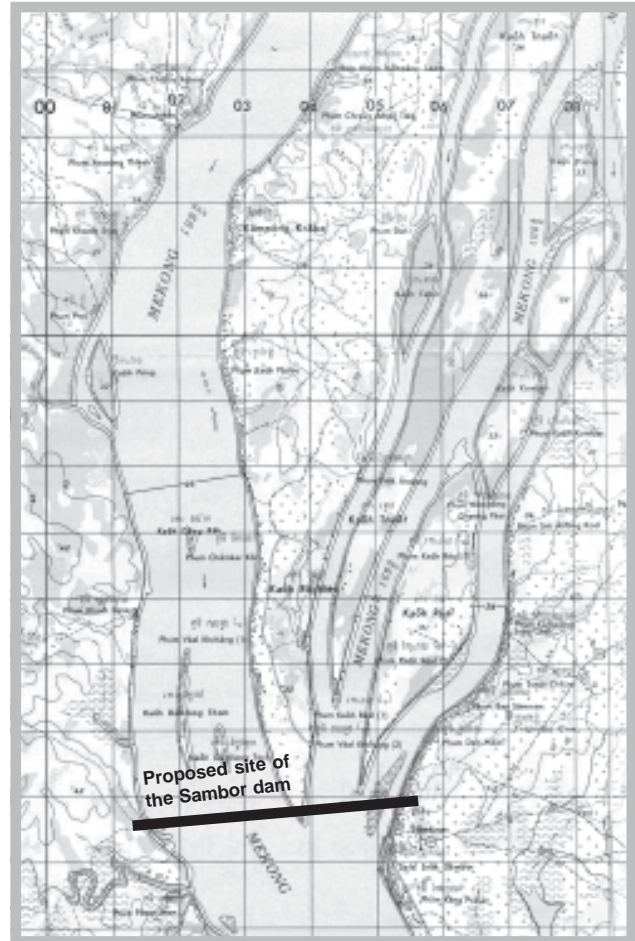
According to newspaper reports, China Southern Power Grid Company is considering two design options.² A larger scheme, proposed by the 1994 Mekong Secretariat study, would generate 3,300 megawatts of electricity and create a reservoir spanning 880 km². Alternatively, a smaller scheme would result in a reservoir of 6 km² and generate 465 megawatts of electricity.

The company has already commenced a geological survey of the proposed site. Although villagers have not yet been fully informed of the potential impacts of the project, some villagers have reportedly been told that if the project proceeds, those requiring resettlement would be relocated close to a highway 20 kilometres away. The 1994 Mekong Secretariat study of the 3,300 MW scheme indicated that approximately 5,120 people would be displaced by the Sambor dam.

Potential Impacts

While a detailed evaluation of the environmental and social impacts of the Sambor project has yet to be conducted, a number of fisheries and ecological studies, including those published by the MRC Fisheries Programme, point to the potential widespread negative impacts the Sambor project would have on fisheries and fishery-dependent livelihoods in Cambodia and beyond.

An evaluation of potential impacts of mainstream hydropower dams on Mekong fisheries, published by the Mekong Secretariat in 1994, noted that the Sambor project would block upstream and downstream migration, and the "effect of isolating fish stocks from historical spawning and rearing



areas will have effects far upstream to perhaps Pakse [in southern Laos] and beyond, and on the Great Lake fishery."³

The Tonle Sap fisheries are of vital importance to the Cambodian people and economy, contributing approximately 60 per cent of the total annual fish catch in Cambodia, which is largely comprised of migratory fish stocks. A recent policy brief by the WorldFish Center and the Cambodian National Mekong Committee points to the serious impacts dams could have on Cambodia's fisheries:⁴

Because these migratory species make up a dominant part of Cambodia's annual fish harvest, these changes caused by damming [e.g. blocking of migration, hydrological changes and degradation of habitats] could seriously impact Cambodia's fisheries. The loss of even a small percentage of this fishery represents tens of thousands of tons and millions of dollars worth of fish.

A Technical Paper published in 2002 by the MRC's Fisheries Programme estimates that at least 75 per cent of the total catch from the Tonle Sap *dai* fishery depends on deep pool habitats in northern Cambodia (i.e. the

stretch of the Mekong between Kratie and Khone Falls; and the Sesan, Srepok and Sekong catchments.)⁵ The paper goes on to note that the Sambor rapids and associated deep pools are important fish habitats, particularly for spawning and refuge purposes, and as such construction of the Sambor dam would have “significant” impacts on migratory fish stocks because:⁶

- the dam would change the hydrology and water levels for a significant distance upstream and downstream of the proposed dam site, including the deep pool stretch between Kratie and Stung Treng. This would eventually lead to deep pool refuge habitats filling up with sediment and disappearing.
- the dam would cut, or significantly impair, migration corridors between floodplain habitats in the south and refuge habitats in the north.
- the dam would interfere with the larval drift system, causing increased direct mortality as well as indirect mortality due to the fact that changed hydrological patterns would prevent larvae from reaching their “intended” destination.

A paper presented at the 6th Technical Symposium on Mekong Fisheries in 2003 was more up-front in its analysis of the dam’s potential impacts on fisheries, stating “Any dam on the Mekong mainstream in this part of Cambodia could be disastrous for fisheries, but this site [Sambor] is the worst possible location from this perspective.”⁷ The paper, which interviewed local fishers from 25 villages along the Mekong from Lao-Cambodia border to Kratie to identify the locations and characteristics of deep pools, also notes that according to local fishers, the critically endangered Mekong giant catfish still lives in the deep pools in Sambor district. “Fishers from three villages (Kos Dam Bong, Pontachea and Outok) recorded this species [giant catfish]. All are in a relatively small area in the Sambor district of Kratie province where there is a high density of deep pools, many of which are large.”⁸

The stretch between Kratie and the Lao-Cambodia border is considered the most important in terms of deep pool

habitats in the Mekong. In addition to providing a dry-season refuge for numerous migratory fish species, deep pools also provide critical habitat to the endangered Irrawaddy dolphin. It is no coincidence that the distribution of dolphins are largely confined to this stretch of the Mekong, since they “are known to spend most of their time in deep pools, from where they frequently undertake ‘hunting’ migrations following groups of migratory fishes.”⁹ The World Conservation Union – IUCN identifies Sambor as a serious threat to the habitat and movements of the Irrawaddy dolphin and its prey.¹⁰ “Without deep pool habitats, and the fishes they sustain, there would be no dolphins in the Mekong River.”¹¹

Proponents of large hydropower schemes often claim that, if properly managed, negative impacts of dams can be mitigated. Commonly proposed measures to mitigate the negative impacts on fisheries in the Mekong and elsewhere include the establishment of reservoir fisheries and the construction of fish passes to facilitate fish migration past the dams. A recent report examining the influence of built structures on the Tonle Sap fisheries, however, “found no examples of positive long-term impacts of dams on fisheries, nor any effective mitigation measures in the Mekong Basin.” The report states that reservoir fishery “usually does not compensate for the loss of downstream fisheries”, and that “there are no examples of fish passes that work in the Mekong Basin.”¹²

An earlier research published under the MRC Fisheries Programme in 2002, also noted that due to the intensity of fish migrations (e.g. at peak migration times, approximately 50,000 fish per minute pass through a given point in the Tonle Sap River):¹³

It is impossible for this quantity of fish to pass unaffected through any sort of fishway. Consequently, there is no existing fishway technology able to overcome the obstacle created by a dam or weir on the Mekong mainstream or on the lower reaches of its major tributaries. **On the mainstream, the choice therefore remains: fish or dams.** (Emphasis added)

Endnotes:

1 China Southern Power Grid to build ASEAN electricity highways, Guangxi Daily 9 November 2006 http://www.gx.xinhuanet.com/ca/2006-11/09/content_8468809.htm

2 Chinese Firm To Study Possible Mekong Dam Site, Cambodia Daily, 5-6 May, 2007

3 Mark. T Hill and Susan A. Hill, Don Chapman Consultants, 1994, Fisheries Ecology and Hydropower in the Mekong River: An Evaluation of Run-of-the-River Projects, Mekong Secretariat, Bangkok, p.80

4 CNMC and WorldFish Center, 2007, Infrastructure and Tonle Sap fisheries: How to balance infrastructure development and fisheries livelihoods? The challenge facing decision-makers in Cambodia, Policy Brief, p.3

5 MRC Technical Paper No. 8, October 2002, “Fish migrations of the Lower Mekong River Basin: implications for development, planning and environmental management”

6 *ibid.* p.55

7 Chan et al. 2003. “Using local knowledge to inventory deep pools, important fish habitats in Cambodia, in: Proceedings of the 6th Technical Symposium on Mekong Fisheries, Lao PDR 26-28 November 2003, p.65

8 *ibid.* p.63

9 Poulsen, A, et al. 2002. Deep pools as dry season fish habitats in the Mekong Basin. MRC Technical Paper No. 4, MRC, Phnom Penh. p 10.

10 <http://www.iucnredlist.org/search/details.php/44555/doc>

11 *op cit.* 9, p.10

12 Baran E., P. Starr, and Y. Kura. 2007. Influence of built structures on Tonle Sap fisheries. Cambodia National Mekong Committee and the WorldFish Center. Phnom Penh, Cambodia, p.24

13 Sverdrup-Jensen, S. 2002. Fisheries in the Lower Mekong Basin: Status and Perspectives. MRC Technical Paper No. 6, MRC, Phnom Penh, p.77