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The Mekong River Under Threat

Milton Osborne

Until the 1980s the Mekong River flowed freely for 4,900 kilometres from its 5,100-metre high source in Tibet to the coast of Vietnam, where it finally poured into the South China Sea. The Mekong is the world's twelfth longest river, and the eighth or tenth largest, in terms of the 475 billion cubic metres of water it discharges annually. Then and now it passes through or by China, Burma (Myanmar), Laos, Thailand, Cambodia and Vietnam. It is Southeast Asia's longest river, but 44% of its course is in China, a fact of capital importance for its ecology and the problems associated with its governance.

The Mekong is Southeast Asia's largest river, seen here at sunset in Luang Prabang, Laos. (Photograph by Milton Osborne)

In 1980 not only were there no dams on its course, but much of the river could not be used for sizeable, long-distance navigation because of the great barrier of the Khone Falls, located just above the border between Cambodia and Laos, and the repeated rapids and obstacles that marked its course in Laos and China. Indeed, no exaggeration is involved in noting that the Mekong's overall physical configuration in 1980 was remarkably little changed from that existing when it was explored by the French Mekong Expedition that travelled painfully up the river from Vietnam's Mekong Delta to Jinghong in southern Yunnan in 1866 and 1867. This was the first European expedition to explore the Mekong from southern Vietnam into China and to produce an accurate map of its course to that point.

Since 2003, the most substantial changes to the Mekong's character below China have related to navigation. Following a major program to clear obstacles from the Mekong begun early in the present decade, a regular navigation service now exists between southern Yunnan and the northern Thai river port of Chiang Saen. It is not clear whether the Chinese, who promoted the concept of these clearances and carried out the work involved, still wish to develop navigation further down the river, as was previously their plan. To date, the environmental effects of the navigation clearances have been of a limited character.

The Mekong and its Lower Basin

The Mekong plays a vital role in the countries of the Lower Mekong Basin (LMB): Laos, Thailand, Cambodia and Vietnam. (Burma is not within the basin). In all four LMB countries the Mekong is a source of irrigation. In Vietnam's Mekong Delta the annual pattern of flood and retreat insure that this region contributes over 50% of agriculture's contribution to the country's GDP. For all four LMB countries the Mekong and its associated systems, particularly Cambodia's Great Lake (Tonle Sap), are a bountiful source of fish, with the annual value of the catch conservatively valued at US$2 billion. More than 70% of the Cambodian population's annual animal protein consumption comes from the river's fish. Eighty per cent of the Mekong's fish species are migratory, some travelling many hundreds of kilometres between spawning and reaching adulthood. Overall, eight out of 10 persons living in the LMB depend on the river for sustenance, either in terms of wild fish captured in the river or through both large and small-scale agriculture and horticulture.

Construction of dams in the Lower Mekong Basin will have devastating effects on the fish stocks that feed the populations of the region, such as these fishermen at Luang Prabang. (Photograph by Milton Osborne)

Changing character

Since the 1980s, the character of the river has been steadily transformed by China's dam-building program in Yunnan province. The important changes that had taken place on the course of the river since 1980 and up to 2004 were outlined in the Lowy Institute Paper, *River at Risk: The Mekong and the Water Politics of Southeast Asia*. In 2010 three hydroelectric dams are already in operation and two more very large dams are under construction and due for completion in 2012 and 2017. Plans exist for at least two further dams, and by 2030 there could be a 'cascade' of seven dams in Yunnan. Even before that date and with five dams commissioned China will be able to regulate the flow of the river, reducing the floods of the wet season and raising the level of the river during the dry. In building its dams, China has acted without consulting its downstream neighbours. Although until now the effects of the dams so far built have been limited, this is set to change within a decade, as discussed below.

Map of the Mekong

For despite the limited environmental costs of the dams China has so far completed, and of the river clearances to aid navigation, this state of affairs will change once China has five dams in operation. And the costs exacted by the Chinese dams will be magnified if the proposed mainstream dams below China are built.

China's Xiaowan Dam, upper reaches of the Mekong in Yunnan province, is the world's tallest at 958 feet (Photograph by International Rivers).

Chinese dams

Even if no dams are built on the mainstream below China, the cascade to which it is committed will ultimately have serious effects on the functioning of the Mekong once the dams are used to control the river's flow. This will be the case because the cascade will:

- alter the hydrology of the river and so the current 'flood pulse', the regular rise and fall of the river on an annual basis which plays an essential part in the timing of spawning and the migration pattern. This will be particularly important in relation to the Tonle Sap in Cambodia, but will have an effect throughout the river's course;

- block the flow of sediment down the river which plays a vital part both in depositing nutrients on the agricultural regions flooded by the river and also as a trigger for fish migration — at present well over 50% of the river's sediment comes from China;

- at least initially cause problems by restricting the amount of flooding that takes place most importantly in Cambodia and Vietnam; and

- lead to the erosion of river banks.

Proposed dams below China

So China's dam-building plans are worrying enough, but the proposed new mainstream dams would pose even more serious concerns. In contrast to what has occurred in China, and until very recently, there have been no firm plans for the construction of dams on the mainstream of the Mekong below China. This situation has changed over the past three years. Memoranda of Understanding have been signed for 11 proposed dams: seven in Laos; two between Laos and Thailand; and two in Cambodia. The proposed dams are being backed by foreign private capital or Chinese state-backed firms. Government secrecy in both Cambodia and Laos means that it is difficult to judge which, if any, of these proposed dams will actually come into being. Attention and concern have focused on two sites: Don Sahong at the Khone Falls in southern Laos and Sambor in northeastern Cambodia. The reason for this attention is that if built these dams would block the fish migrations that are essential to insure the food supplies of Laos and Cambodia.

Throughout much its course in Laos the Mekong narrows to flow through sharply rising hills and so providing ideal sites for dam construction, as is the case with this section of the river above the old royal capital of Luang Prabang. (Photograph by Milton Osborne)

Those built at sites higher upstream would cause the least damage to fish stocks, but if, as currently seems possible, the most likely dams to be built would be at Don Sahong and Sambor, the costs to fish stocks could be very serious. This is because unanimous expert opinion judges that there are no ways to mitigate the blocking of fish migration that would occur if these dams are constructed. None of the suggested possible forms of mitigation — fish ladders, fish lifts, and alternative fish-passages — are feasible for the species of fish in the Mekong and the very large biomass that is involved in their migratory pattern. Fish ladders were tried and failed at the Pak Mun dam on one of the Mekong's tributaries in Thailand in the 1990s.

Why are the governments of Laos and Cambodia contemplating the construction of dams that seem certain to have a devastating effect on their populations' food security? The answers are complex and include some of the following (a) a lack of knowledge at some levels of government (b) a readiness to disregard available information on the basis that it may be inaccurate (c) a belief or conviction that fishing is 'old-fashioned' whereas the production of hydroelectricity is 'modern'. In Cambodia's case, and in particular in relation to the proposed dam at Sambor, the fact that a Chinese firm is seeking to construct the dam raises the possibility that Prime Minister Hun Sen is unready to offend the country that has become Cambodia's largest aid donor and Cambodia's 'most trusted friend'. In Laos, the proposal for a dam at Don Sahong is very much linked to the interests of the Siphandone family for whom southern Laos is a virtual fief. Of all the proposed dam sites Don Sahong is the most studied in terms of knowledge of fisheries so that it can be safely said that the planned dam would wreak havoc on a migratory system that involves fish moving through the Hou Sahong channel throughout the year, movement that takes place in both directions, upstream and downstream.

Governance and the Mekong

In the face of the threats posed by both the Chinese dams and those proposed for the downstream stretches of the river, there is no existing body able to mandate or control what individual countries choose to do on their sections of the Mekong. The agreement establishing the Mekong River Commission (MRC) in 1995 does not include China or Burma, and though the latter's absence is not important, the fact that China is not an MRC member underlines the body's weakness. In any event, the MRC members' commitment to maintaining the Mekong's sustainability has not overcome their basic commitment to national self-interest. A prime example of this is the manner in which the Lao Government has proceeded in relation to the proposed Don Sahong dam. For at least two years while the dam was under consideration there was no consultation with Cambodia. Similarly, so far as can be judged, Cambodia's consideration of a possible dam at Sambor has taken place without consultation with the governments of either Laos or Vietnam.

At the moment the best hope is that both the Cambodian and Lao Governments will abandon their plans for Sambor and Don Sahong. If they do not, the future of the Mekong as a great source of food, both through fish and agriculture, is in serious jeopardy. At the time of writing the intentions of the Lao and Cambodian governments remain uncertain.

Climate change

Concern about dams in China and the LMB is given added importance in the light of worries associated with the likely effects of climate change in the region through which the river flows. Research suggests there will be a series of challenges to the Mekong's future ecological health. Until recently concerns about the likelyimpact of climate change tended to focus on the ongoing reduction in the size of the glaciers from which its springs in the Himalayas and which feed it as the result of snow melt. But while there is no doubt that a diminishment in size of the glaciers feeding the Mekong is taking place, recent research has suggested that a more immediate serious threat to the river's health will come from sea-level changes, particularly as rising levels could begin to inundate large sections of Vietnam's Mekong Delta. To what extent the threat posed by rising sea levels will be affected by another predicted development linked to climate change — greatly increased precipitation leading to more flooding during the wet season — is not yet clearly established. But research is pointing to a greatly increased precipitation that is likely to cause major increases in flooding in the future, possibly as early as 2030.

A bleak future

Against the pessimistic views outlined in this article perhaps the best that can be hoped for is that once serious consequences begin to become apparent advice can be offered to mitigate the worst effects ofthe developments taking place. Where once it was appropriate to write ofrisks, when assessing the Mekong's future it is now time to write of fundamental threats to the river's current and vital role in all of the countriesof the Lower Mekong Basin.

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