

# The Mekong Basin

Discuss an example of an international conflict related to freshwater

By The British Geographer adapted from:

CHINA IN THE MEKONG RIVER BASIN: THE REGIONAL SECURITY IMPLICATIONS OF RESOURCE DEVELOPMENT ON THE LANCANG JIANG

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## Situation

Starting at an elevation of over 5,000 m in the Tanghla Shan Mountains on the Tibetan plateau, the Mekong flows south, cutting through southern China to the common Myanmar (Burma)- Laos and Thailand boundary. It then flows a further 2,400 km to the ocean. In terms of river flow, the Mekong Basin has two almost distinct parts: the upper parts in China and Myanmar account for 16 percent and 2 percent of the flow, respectively; and the lower part covering the other four riparian catchments accounts for 82 percent of the Mekong flow. This can be seen in figure 1.

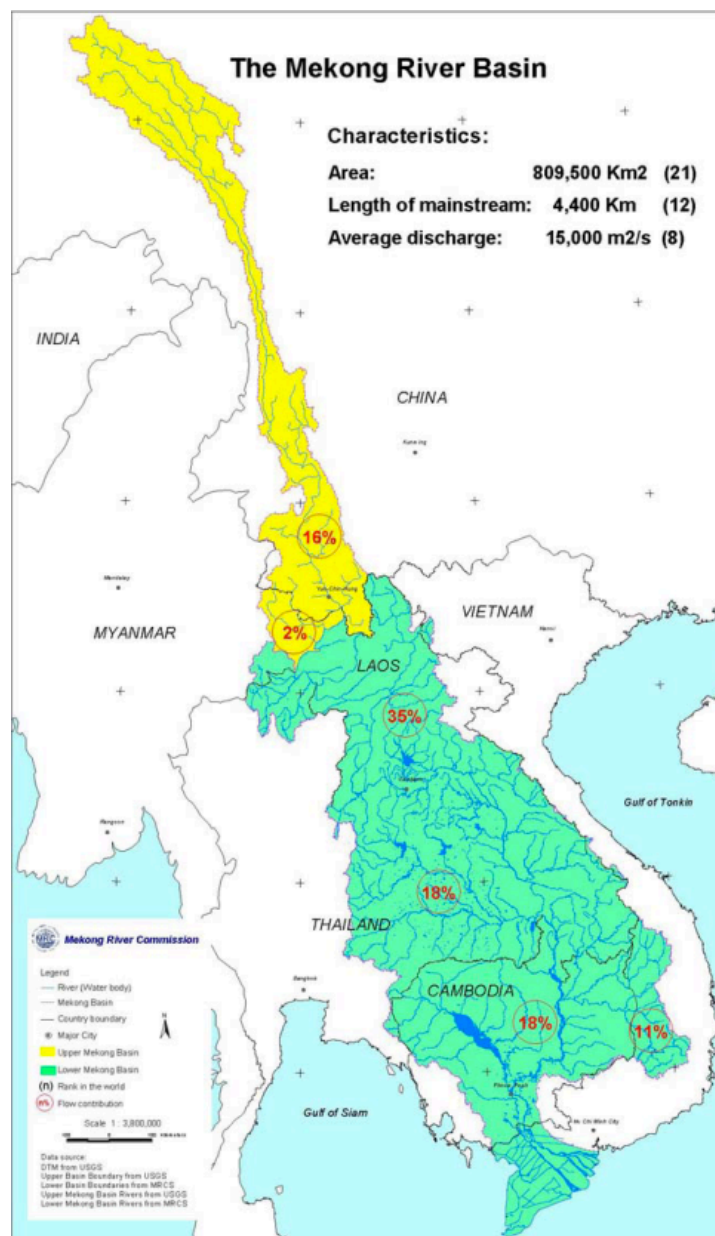


Figure 1

In the upper basin (yellow), the Mekong is known as the Lancang River, which passes through the Hengduan Mountains ranges, with Kawagarbo the highest mountain in Yunnan at 6,740 meters. The river flows south from Kawagarbo, through a series of gorges, fixed by mountain ranges, before changing direction along its southeastward course and then south into its valley in Yunnan. The Yunnan valley extends to the Myanmar border and has ranges of 1,100 to 1,400 meters on both banks, and gorges of 300 to 500 meters. The upper basin has a total catchment area of about 200,000 km<sup>2</sup>. The climate of this region is primarily influenced by the Indian monsoon, and its mountains were once covered with lush rainforest. In addition to cultivated tropical crops such as fruits, rubber, aromatics, and tea, the native flora of the upper basin has been preserved in networks of deep, zigzagging valleys.

The Lower Mekong Basin catchment area exceeds 600,000 km<sup>2</sup> and comprises almost all of Cambodia and the Lao People's Democratic Republic (PDR), one-third of Thailand (its northeastern region and part of its northern region), and one fifth of Vietnam (the Central Highlands and the Delta). It is estimated that some 62 million people live in the Lower Mekong Basin area, more than 40 percent of the total population of these countries.

### **The Mekong – A Shared Resource**

More than 80 million people (90% of the riparian population) depend upon the Mekong River for resources ranging from drinking water, fish, transport, and irrigation water to the fertile land and forest products of its catchment area. Mainly agriculturalists rely on the wild freshwater fish as a key source of protein in their diets. The river's largest development potential though, lies in hydropower and large-scale irrigation projects. These potential resources have been relatively undeveloped until now because of civil strife and wars, but the relative peace and subsequent economic development drive in the region since 1990 has boosted a number of national, bilateral and multilateral plans for building dams on the mainstream and major tributaries of the Mekong to provide electricity and irrigation water. However, the experience of other large-scale dam projects suggest the implications will have far reaching impacts on the people that live and rely on the riparian habits of the Lower Mekong.

### **China – A Controlling Stakeholder**

Chinese developments on the upper Mekong basin are a critical issue. China has begun large-scale exploitation of the Lancang's massive hydropower potential. It has completed the first two in a series of seven planned hydropower stations designed to tap 60% of the flow of the river. Together, the entire cascade will have a combined installed capacity of 15.55 million kw (15,550 MW), and will generate 74.1 billion kwh of electricity per year.

Table 1 shows details of the five key dams, which have been planned.

According to proponents of the dams, the potential basin wide benefits include the development of a renewable energy course; help with flood control in the wet season; and increased water supply downstream during the dry season for irrigation and navigation. The last will be the major consequence of the Chinese dams as the wet season impacts are expected to be less dramatic.

Estimates suggest a range from a 40% increase overall during the dry season.

**Table 1.** Existing and planned hydropower stations and dams on Lancang Jiang.

Power station	Status	Generating capacity (million kw)	Estimated cost	Storage capacity (100 cubic millimetres)	Size of dam	Estimated numbers to be resettled
Manwan	Completed in 1993, operational in June 1995	1.25	200 million yuan	9.2	126m high dam wall	3,000
Dachaoshan	First generator opened December 2001, operational June 2003	1.35	US\$800 million (transmission lines funded by Asian Development Bank)	8.9	110m	5,200
Xiaowan	2012-2017	4.2	25 billion yuan (US\$3 billion) – Chinese bank loans	150	169km long reservoir, dam wall 292m (one of highest in world)	33,000 (will flood 90 sq km)
Jinghong	2004	1.5	US\$1 billion 70% investment from Thailand (electricity buyer)	12.3	Dam wall 118m	1,700
Nuozhadu	2006	5.5	US\$3.6 billion	227.4	Reservoir length 226km,	14,800

<sup>7</sup> MDRN, op. cit.; 'Proposed Mekong Dam Scheme in China Threatens Millions in Downstream Countries', *World Rivers Review* (June 2001), p.5.

<sup>8</sup> *Ibid.*, p.4.

China has developed its hydropower plans for the Lancang in isolation, and has declined to become a member of regional institutions such as the Mekong River Basin Commission, which is responsible for coordinating environmental issues. In fact the lower Mekong states didn't even know of China's hydropower plans until the early 1990s. With China being the most rapidly developing economy and strongest political power in the region they could well push forward with their ambitious plans for the Lancang, to the detriment of its downstream neighbours.

### Water Impoundment

Large dams are often dangerous because of the increased frequency and magnitude of landslides and earthquakes caused by construction, the weight of the impounded water, and water seepage into fault lines in the reservoir area. In this instance, a big landslide (150,000 cubic metres of soil) occurred

during the construction of Manwan dam on 7 January 1987, and the Xiaowan dam is planned very near an earthquake-prone zone.

The filling of large dams can also have detrimental effects. It is estimated that the two biggest dams on the Lancang cascade (Xiaowan and Nuozhadu) will each take up to 10 years to fill, on the assumption that half the water flow is held back during the filling period. But the impoundment upstream during this period will affect areas downstream, as witnessed during the filling of the much smaller Manwan dam in the dry season of 1993, when dramatic falls in water levels downstream caused the Thai authorities in the northern province of Chiang Rai to complain to Bangkok and Beijing.

## **Flood Control**

Furthermore, the flood and drought control capacity of the Chinese dams for downstream areas is highly debatable. The main purpose of these dams is to store water for generating electricity, and so during the dry season, they are likely to withhold water; and if large floods occur, they are likely to have to release water anyway to protect the dams themselves.

Flood regulation during normal years will mean fewer seasonal floods downstream. Yet, seasonal floods deposit nutrients and sediment onto the natural flood plains, and a reduction of these deposits will cause the natural soil fertility to decline over wide areas of rice cultivation in the lower Mekong basin. Farmers will need a massive programme of artificial fertilising to cope with these changes, but they will also need to find new strains of crops to grow in the new hydrological regime. This is because many strains of crops grown in the basin are adapted to the existing conditions – for instance, 80% of the rice paddy grown in Cambodia is closely tied to annual floods.

Flood regulation will also affect agriculture and salinity in the delta areas. Salt-water intrusion is a natural phenomenon here and agriculture has adapted to it e.g. rice cultivars grown are adapted to salinity; and irrigation systems in the delta depend upon tidal hydropower pushing freshwater into the canals. At the same time, the seasonal floods serve to flush the delta areas, providing some natural constraint to salt water intrusion from the sea. Fewer and lower floods will thus increase salinity in the delta.

Conversely, higher dry season flows will flood riverbank truck gardening (common along the Mekong), a small-scale but prevalent form of supplementary agriculture, which exploits the fertile exposed floodplain land during the dry season. Along with the expected decrease in nutrient supply, this crucial livelihood strategy will see lower yields.

## **River Ecology**

Fish and other aquatic species adapted to the ecosystem will experience serious disruption in feeding habits. Also, higher water levels during the dry season that do not expose rapids in the middle section of the river, and lower water levels in the flooded forests of southern Laos and Cambodia in wet season, will diminish crucial spawning and nursing grounds for migratory fish. The decline in biodiversity will be accompanied by falling productivity in the wild-capture fisheries that are important to Mekong communities. These fisheries, which trap migratory fish, yield about 1 million tonnes annually (40%

in Cambodia) in the lower Mekong basin, where fish provides 80% of animal protein in people's diets.<sup>13</sup>

## **Sedimentation**

It is estimated that half of Mekong's annual sediment load originates in the Chinese part of the watershed. As this is mainly coarse grit rather than sand, and carried as bed load or in suspension, the contribution is difficult to measure.

The planned series of dams on the Lancang Jiang will trap a large proportion of this sediment, and greatly decrease the sediment load of the river. This will lead to significantly more erosion downstream, which will alter the channel's course, weaken structures such as bridges and increase coastal erosion in the delta. The latter might be expected to balance out or exceed the benefits of combating salt-water intrusion with higher dry season flows.

Furthermore, such rapid sedimentation rates upstream may make the Lancang cascade less cost-effective than many think. For instance, prior to construction, Manwan dam was estimated to have sufficient dead storage capacity to withstand sedimentation for 20 years, yet within three years of operation, the loss of effective storage had already reached that assumed for 15 years. Ironically, proponents of the cascade expect to deal with this problem when the Xiaowan dam is built upstream of Manwan, but this is a dubious assumption, and opponents and some ecologists now suggest that the useful lifetime of cascade is likely to be only about 30 years, rather than the 100 years as claimed by its proponents.

The most critical *political* outcome of China's hydropower development on the Lancang Jiang is that China will be able to control the quantity of water released to downstream countries. The worst affected states will be those furthest downstream, Vietnam and Cambodia. The lack of any formal agreements, even of the minimum kind found in the Mekong Agreement for the lower basin (which obliges riparian states to consult with or to inform the others in the case of any projects), means that there are no safeguards in place. Moreover, the lower Mekong countries have reason to be concerned about the potential adverse transboundary ecological impacts of China's projects upstream, as no environmental impact assessments are known to have been carried out for the Lancang cascade.

## **A Power Differential**

Unfortunately, the channels of communication on this issue between China and the lower Mekong states are poor. Downstream states, especially Cambodia and Vietnam, have serious concerns about the impacts of Chinese plans, but they have no forum in which to voice them. There are no formal or regular multilateral meetings to exchange information, to consult, or to coordinate projects. There have only been two recent regional agreements relating to the Mekong basin: a 2002/3 agreement on hydrological data sharing, and the ADB GMS projects on the power grid and navigation.

Here the existing power differential within the Lancang/Mekong system comes into play: downstream states do not feel that they are in a position to challenge China directly, partly because of its relative power, but also because of growing Chinese influence in the region. For example, increasing Chinese aid and investment in Cambodia in recent years – especially in the form of infrastructural investment in roads, bridges, sewerage systems, the Sambor hydropower station, and the Senate and National Assembly buildings – obliges Phnom Penh to tread carefully when expressing concerns about the impacts it might suffer from Lancang Jiang developments

### **Environmental and Human Security Cost**

The negative impacts of the dam appear to be describing externalities. I dislike this economic term because it reflects a weakened position; it reflects a negative consequence of something more important or powerful. In the case of the dam cascade in Lancang Jiang, economic priorities are seen as more important and the term externality isn't found within the context of a thorough cost-benefit assessment. The conflict that develops here is an environmental one.

The environmental conflict draws links between environmental degradation and national security in terms of the effects of social dislocation – especially migration and inter-community tensions – on political stability.

Such effects are not confined to cross-border conflicts but they occur within states as well, especially where dislocation causes politically embarrassing protest campaigns from affected communities.

An important focus in China will be the effectiveness of resettlement programmes for affected communities, and the effectiveness of compensation procedures and retraining for lost livelihoods. This has become a high profile issue in the region because of the precedent of the Pak Mun dam in Thailand, where, because of the better opportunities and channels for civil organization, 3,000 affected villages have staged a long public campaign demanding compensation from the Thai government and the World Bank for lost fisheries.

In recent years though, Yunnan province authorities have paid some attention to environmental protection in the watershed. For instance, after bad floods in 1998, the government banned logging completely in Xishuanbanna prefecture in the Lancang basin; there are 111 established protected areas of various types (5.1% up to 6% of the total land area); new afforestation initiatives (33% of total land area); attempts to strengthen the regulatory framework on a variety of fronts; and to control industrial pollution and waste treatment in 'Green Mountain and Clean Water Trans-Century Green Engineering Plan'.

### **Conclusion**

This case study is not an overarching fact find on all the countries along the Mekong Basin but rather a critique of the dominant role of China and its imbalanced power differential in regard to Myanmar, Laos, Thailand, Cambodia and Vietnam. China is not a member of the Mekong River Basin Commission and so effectively there is no forum for conflict between these stakeholders. These countries can only respond through penned letters of

complaint to Beijing. China's enormous economic might over the region and political superpower status numbs their Mekong Basin neighbours into a sort of passive submission.

It seems that the only voice that Beijing may need to listen to is that of its own people in the villages that become dislocated. However, with the channels and capacity of communication much more restricted in China it is unlikely that this voice will be heard or listened to in any great regard.

Therefore, the conflict lies perhaps in an international political context, between western governments based on the issues human rights and China's global responsibility. Now that China has reached the dizzy heights of super power status, western governments argue that China has an increasingly important need and role to mature as a global leader. With this, comes an important social and environmental role.

NGOs and civic society groups also have a part to play. Through their increasingly savvy use of global media networks and prolific use of social media their voice is increasingly loud and popular. They have had successes too. In many ways they have shaped the recent growth in corporate ethical consciousness. They have successfully lobbied western governments to strengthen social and environmental laws and policies and have prominent roles at international conferences. I am certain that these civic society groups will also maintain a very public pressure on China to manage the Upper Mekong in a responsible way in the future. Whether China responds to such pressure is yet to be seen. There does seem an untouchable quality with China!