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**The Mekong:  
Governance Challenges**

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**SESSION: BALANCING THE DEMANDS FOR  
AGRICULTURE AND THE ENVIRONMENT:  
WORLD BEST PRACTICES OR DISASTERS?**

## **The Mekong: Governance Challenges**

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The Mekong Basin is rich in water and other resources, and the six countries that share it include some of the world's poorest on a per capita income basis. They also include some of the world's fastest growing economies. Two of the countries also have fast growing rural populations.

The Mekong is a shared resource. It is shared across borders, among more than 60 million people who live in the basin, between those who live in the basin and others who draw on its resources, between farmers, fishers, power producers, consumers and many others.

Water appropriation for human use is currently only about 12 per cent of total flow. Although dams currently regulate only five per cent of the waters in the basin, many large hydropower dams have been proposed or are under construction.

Environmental issues include the need to maintain the seasonal water flows that underpin the ecology of Tonle Sap (Great Lake) in Cambodia, the management of flooding, acid sulphate soils and salt-water intrusion in the delta, and the need to control logging and deforestation throughout the basin.

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Infrastructure projects that isolate the river from its floodplain are of particular concern.

The Mekong River Commission, established in 1995, provides a mechanism for shared management of the water resources of the Mekong River. Water is also used and managed at other levels within each riparian country. Governance of water in the Mekong Basin is a key challenge.

This paper describes the current and potential uses of water in the Mekong Basin for irrigated agriculture, fish production, the generation of hydropower and environmental services. It examines the effects of current and proposed dams on the natural environment and on the sustainability of agriculture and fisheries. The paper also considers the effectiveness of the Mekong River Commission as an organisation enabling shared management of the basin's water resources, looking particularly at governance challenges in a transboundary river basin that is subject to heavy development pressures.

### **The Mekong River and its basin**

**'The world's atlases no longer tell the truth'<sup>5</sup>**

Maps of the Mekong River and its tributaries do not yet lie — unlike the maps of many international basins whose rivers only intermittently complete their route to the sea. The Mekong, it seems, has plenty of water — but does it, and for how long?

<sup>5</sup> Fred Pearce, 'Growing thirst of an arid earth', *The Australian*, 22–23 July 2006, p. 25. This article was abstracted from Pearce (2006).

The Mekong River drains a basin area of 795 000 km<sup>2</sup>. The Mekong Basin is home to close to 70 million people, most of whom live in rural areas. Farming, fishing and forest use continue to sustain livelihoods, while urban growth, industrialisation and regional integration mark the sharp end of the wider economy. The basin is culturally diverse, with multiple ethnic groups practising agriculture and depending on natural resource-based livelihoods in ways adapted both to exigencies of the physical environment and to the pressures and opportunities presented by social, political and economic change.

Diversity and dynamism thus characterise the basin. They also shape its challenges.

Bio-physically, the Mekong is an extraordinary river in a number of respects. With 1300 endogenous fish species known and several hundred likely yet to be discovered, the Mekong is the second most ichthyofaunally bio-diverse river system in the world, after the Amazon. This biodiversity is important in its own right, but it also supports the world's largest freshwater fishery, one whose catch of two to three million tonnes per annum provides 40–80% of the animal protein consumed by the region's poor. The climate of the basin is largely monsoonal, resulting in monthly mainstream flow regimes in the wet season some 15–20 times those of the dry season. Seasonal flow variations of many tributaries are even greater. Reverse flows in the Tonle Sap River feeding the Great Lake in Cambodia represent a peculiar hydrological phenomenon and also provide the basis for subsistence of a significant part of the Cambodian population.

The Mekong River is one of the less developed of the world's major rivers, nowhere near 'closure' in the sense of having most of its water committed (Molle *et al.* 2007). Only about 12% of its water is physically regulated or extracted, and less than 5% of its hydro-electric energy potential is exploited. The Mekong is also home to some of the world's cash-poorest people, with provincial per capita annual GDP typically at the US\$200 level in central parts of the basin. Not surprisingly, the river faces significant development pressures.

## The Mekong as a shared resource

The 4800-km long Mekong River is a shared resource. It is shared across the borders of six countries — China, Burma, Laos, Thailand, Cambodia and Vietnam. It is shared among a population some 35 times that of the Murray–Darling Basin on a smaller territory. It is shared between those who live in the basin and others who draw on its resources, both virtually and physically. It is shared between different types of resource users — farmers, fishers, power producers and consumers, and many others.

Each dimension of sharing represents, alternatively, an avenue for cooperation, for competition or for conflict over the Mekong as a shared resource. The relative abundance of water in the Mekong has, to date, meant that competition and conflict have been limited and localised. It has also meant that frameworks for cooperation have developed around notions of abundance rather than scarcity. This has resulted in institutions with a marked developmentalist orientation in their ethos and charter. Conversely, it has tended to minimise the regulatory role and potentials of such institutions.

Governing the Mekong as a shared resource is becoming increasingly challenging, as development pressures pose choices and tradeoffs. Integrated Water Resource Management principles provide an overall framework for holistic basin management. However, the IWRM framework remains poorly understood, broadly interpreted and loosely applied.

## Irrigation development and the environment

Most agriculture in the Mekong Basin remains rainfed. Irrigation development is largely limited to the delta, areas irrigated by storage dams in north-eastern Thailand, and pump irrigation along the incised tributaries of the Mekong and lower tributary floodplains in Thailand and Laos.

Overall rice production is more than sufficient to feed the basin population, so endogenous demographic growth is not a reason *per se* to expand irrigated staple grain production. However, a number of factors result in pressure for expansion of irrigation. First, agricultural production is highly uneven within the basin. In Vietnam, the delta produces about half the country's rice output, and the

surplus forms the bulk of Vietnam's exports that rank the country as the second-largest world exporter after Thailand. In Thailand, the main part of the country that lies within the basin, Isan (or the North-east), has always been the poorest and naturally driest part of the country. Geopolitical concerns in the past, and party political concerns more recently, have directed development resources to Isan, and water resource development has loomed large in this relatively dry region. Cambodia and Laos remain poor countries with local and national food security concerns. Production varies considerably between provinces. Relatively little rice is grown in the steep gorges of the Chinese section of the basin in Yunnan province, except on the low-land terraces of Xishuangbanna.

Thailand, Laos and Cambodia all have irrigation expansion on their agendas. The main drivers of irrigation development are specific to each country.

Politics have driven various large-scale schemes to 'green the North-east', from the Thai military's Isan Khiew program of the 1980s, to the Khong-Chi-Mun grand vision of the 1990s, to the so-called Water Grid network of the current decade. The latter would involve linking river basins, including importing water from the Nam Ngum and Xe Banghieng tributaries in neighbouring Laos though giant siphons under the Mekong River. The water grid vision also includes investment in pipes to replace open channels, in part to achieve efficiencies but in part also to greatly increase the irrigable area of Isan's rolling landscape.

In Laos, the major food security drive has come with investment in dry-season pump irrigation development. Subsidised diesel pumps from India were distributed around the country during the late 1990s. Dry-season farming that draws water from the incised rivers of the left bank floodplain is often uneconomic, particularly with rising costs of diesel. Nevertheless, increasing coverage of the electricity grid and relatively cheap and partly subsidised electric power costs have resulted in significant expansion of the irrigated area.

Cambodia is similarly embarking on a program to expand its irrigated area, focusing mainly on supplementary wet-season gravity-fed systems but also involving dry-season projects such as the ADB-funded Stung Chinit Project and North-west Irrigation Sector Project in the Tonle Sap catchment. These schemes include rehabilitation of dis-

astrous irrigation works of the Khmer Rouge era. Irrigation development also includes private investment in tank reservoirs that capture water in the recession areas of previously-flooded forest around Tonle Sap and release it by gravity to the newly-created surrounding rice fields.

In Vietnam, the major dry-season water competition comes from irrigation in the upper delta provinces at the expense of the coastal provinces. Intensification of rice farming through increased cropping density has exacerbated this trend. Secondary impacts include high concentrations of fertiliser and pesticide in runoff that affect fisheries and water quality throughout the delta.

The environmental implications of irrigation expansion are still poorly understood. At a basin-wide level, increased dry-season abstraction will exacerbate saline intrusion in the delta. Low water levels of tributaries such as the Sedone in southern Laos are reported by farmers and fishers and are perceived, at least, to be a result of irrigation abstractions and to contribute to fisheries decline (Bush and Hirsch 2005). In Cambodia, the clearing of flooded forests and conversion of areas previously under recession rice farming to more permanently-bunded fields have far-reaching implications for fish ecology of the Great Lake. This is even before the larger-scale impoundments are considered — most of these are primarily for hydropower, but many have a secondary purpose in irrigation development.

## Energy and the environment

The Mekong has been estimated to have a hydroelectric potential of 30 000 megawatts. Dams have been on the agenda for the Mekong since the inception of the Mekong Committee in 1957. A National Geographic special issue in December 1968 featured a front cover entitled 'River of Terror and Hope', the hope being the prospect of a cascade of dams that would have turned the Mekong into a set of stepped lakes from northern Laos to central Cambodia. The Mekong Committee's indicative plans in 1970 and 1987 respectively featured mainstream hydropower as their mainstay. The Indochina conflict ensured that these plans remained on paper. During this period, however, several large tributary dams were built in Isan, and the Nam Ngum dam in Laos represented the main concrete manifestation of the Committee's vision.

By the time the main conflict finished with the 1991 Paris peace accords on Cambodia, attitudes toward large dams had changed. Early attempts at the Mekong Secretariat to dust off old plans, and in particular to implement the Pa Mong project — which would flood an area of north-eastern Thailand and central Laos currently occupied by about half a million people — elicited a strong reaction from environmentalists and those affected by, or familiar with, the dams that had already been built in Thailand. A revised vision of mainstream ‘run-of-river’ dams was drawn up, but even the much smaller impoundments were increasingly recognised as potentially devastating to the river’s migratory fish and to other aspects of the river’s ecology (Hill and Hill 1994).

While the mainstream dams on the lower Mekong have more or less — though not entirely — disappeared from the agenda, a cascade of large dams is underway on the upper Mekong (the Lancang Jiang) in China. Two are completed, three more are under construction, and the building of at least another two will commence soon. Two of the structures are gigantic; the Xiaowan Dam is 300 m tall. The combined storage is sufficient to affect both dry and wet season flows significantly as far as Tonle Sap and the delta, and of course the relative effects are even greater in the middle reaches.

While no mainstream dams have been built on the lower Mekong, there has been an acceleration in construction of tributary hydropower dams. In part because of the ecopolitical obstacles to further dam construction in Thailand, but in part due to its natural advantages, Laos has staked its economic future on the export of electricity to Thailand and, at a later date, to Vietnam and possibly China. Since the 1971 opening of the Nam Ngum dam, electricity has been the country’s main or second-largest source of foreign exchange. Today’s dams are mainly financed through public-private partnerships, assisted with loans and risk guarantees by the World Bank and Asian Development Bank. Despite more thorough EIA studies, significant problems have been experienced with most of Laos’ recent tributary dams. The largest and most controversial is the World Bank-supported Nam Theun 2, which is now under construction after a 15-year period of studies and controversy.

While tributary dams have somewhat lesser individual impact on the transboundary basin than do mainstream dams, their cumulative impact would be profound if a significant number of those that

have been proposed are eventually built. Indeed, one dam has already had major transboundary impacts on fisheries, health and safety for downstream communities. The Yali Falls dam in Vietnam’s Central Highlands generates benefits for Electricity of Vietnam and the domestic and industrial consumers of Ho Chi Minh City, but at the expense of several tens of thousands of mainly ethnic minority communities living along the Sesan in Ratanakiri and Stung Treng provinces in downstream Cambodia.

The environmental and social impacts of dams have been much debated, and the Mekong was one of the focal river basins for the World Commission on Dams study (WCD 2000). Some of the key questions that arise are over the impoundment and barrier effects on longitudinal migration of fish; the impact of a changed flood regime that isolates the river from the floodplain, with impacts on productivity and lateral fish migration; the impacts on the flood regime of Tonle Sap; the direct and indirect social dislocation impacts; downstream erosion; forest inundation; and salinity impacts in Isan and Laos that result from raised water tables. Answers to these questions depend in part on the scale of impact under discussion. Given the relatively open nature of the Mekong compared to river basins with much higher levels of existing abstraction, the incremental impact of tributary dams — or even the medium-sized Chinese dams on the mainstream — may not be great on a system-wide basis. However, as the examples of Theun-Hinboun, Pak Mun and Yali Falls have shown in Laos, Thailand and Vietnam/Cambodia respectively, tributary dam impacts are considerable at a more localised level.

## **Governing a transboundary basin: the Mekong River Commission**

The Mekong River has been ‘governed’ by a transboundary cooperation framework for nearly half a century. The Mekong Committee was established in 1957, but its main agenda was to plan dams rather than to share water or to regulate alterations to the flow regime. In some respects, the 1995 establishment of the Mekong River Commission (MRC) under the *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin* was a product of the sustainable development era, seeking to optimise eco-

nomic, social and environmental values, but within a very loose — some would say non-existent — regulatory framework. Moreover, the MRC carries some of the baggage of the Committee, and like many other international sustainability agencies its mandate is open to interpretation.

The MRC is governed by a Council at the political level and by a Joint Committee at the senior bureaucratic level, with representation from each of the four member states. Neither China nor Burma is a member. The MRC Secretariat carries out studies of fisheries, flood mitigation and other key areas to build up the requisite knowledge base for managing the river. It has also housed three key cross-cutting programs: the Environment Program, the Water Utilisation Program and the Basin Development Plan. The latter has involved a process of sub-area planning, in principle to establish a rational, equitable and participatory process of developing water resources in sub-basin areas in a sustainable manner with respect to the basin as a whole. The Water Utilisation Program is designed to provide the knowledge required to establish water-sharing procedures and rules between riparian members. The Environment Program is geared to understanding the basin as an interconnected system, so that impacts of development can be understood properly and assessed with regard to their system-wide transboundary implications. An Integrated Basin Flows Management program is currently examining environmental flow requirements in a multidisciplinary exercise that is mainly targeted at the mainstream.

National Mekong Committees are supposed to coordinate work relevant to the MRC in each riparian country. The technical and political capacity of NMCs varies considerably from one country to another. Further, the NMCs represent quite a narrow set of riparian interests in each country, in a river basin whose development agenda no longer — if it ever did — limits competition for water to a national interest level (Hirsch *et al.* 2006). Integrated Water Resources Management requires a governance framework that is more inclusive of diverse stakeholder interests and that engages with the basin communities.

River basin committees at the sub-basin level have been established in Thailand and in some parts of Vietnam. While they are stakeholder-oriented, these river basin organisations are still not functional in managing tradeoffs between agricultural,

environmental and other water requirements in their respective areas.

## Governance challenges

In conclusion, water governance in the Mekong poses significant challenges, including:

- *Moving beyond national interest.* In a shared river basin with a history of mistrust between riparian countries, questions of sovereignty loom large. The MRC remains a governed rather than governing agency. Further, national interests as represented unitarily at the MRC need to reflect the diversity of stakeholder positions and concerns over water resource management in the respective national territories.
- *Providing pathways for the knowledge base to lead to better development decisions.* A great deal of work has been done on flows modelling, building an understanding of the value of fisheries and so on. Scenarios have been developed at a basin-wide level. However, the MRC has not been proactive in putting these scenarios out for public or even policy-level consideration. The Commission has also had little role to date in assessing implications of the larger hydropower developments such as Nam Theun 2.
- *Engaging China.* China has remained largely outside the framework of water governance, despite the fact that half the river's length flows through Chinese territory and that the major dams are being built in China. There are signs that China is ready to consider more substantial engagement or even membership of the MRC. At the very least, this might open potentials for negotiating patterns of flow releases from the dams.
- *Maintaining a focus on the triple bottom line.* The MRC's mission is to promote an economically strong, environmentally sustainable and socially just river basin. The hard decisions and proactive leadership required to achieve such ends require a degree of trust, political commitment and community engagement that to date have eluded the Commission.
- *Working at multiple levels on the basis of an integrated system.* The MRC has been principally focused on the mainstream, while most of the development pressures and impacts have been on the tributaries, wetlands and floodplains. IWRM requires an approach to basin development at multiple scales and in recogni-

tion of the interconnectedness of different parts of the system.

In conclusion, governing the Mekong as a trans-boundary and integrated system is about much more than cooperative mobilisation of financial resources for water resource development. It is also about more than negotiating between sovereign riparian member countries. While these two concerns drove an earlier era of cooperative management, the sharing of water between farmers, fishers, power producers and consumers and many others requires a prior commitment to the well-being of the river as an ecosystem that supports the livelihoods and cultures of tens of millions.

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