



INITIATIVES POUR L'AVENIR
DES GRANDS FLEUVES
INITIATIVES FOR THE FUTURE
OF GREAT RIVERS

Synopsis sheets

Rivers of the World

THE MEKONG

The Mekong

From the Himalayas, in the province of Qinghai (China), the Mekong flows into the South China Sea after having crossed six states and more than 4,000 km, of which half is in China. Although the basin of the Greater Mekong Subregion is populated by 250 million people who depend on the river for food, transport and energy, the management of this strategic resource remains tributary to the intergovernmental relations that fluctuate between cooperation and balances of power.

The Mekong: the backbone of Southeast Asia

The origins

Of the world's longest rivers, the Mekong has long remained one of the last great unexploited watercourses. The cradle of numerous civilisations, it was explored by Europeans at the end of the 19th century, although it wasn't until the 1950s that studies were carried out, backed by the UN, via the Mekong Committee which brought together Laos, Thailand, Vietnam and Cambodia. However, this committee rapidly fell into disuse due to war and the installation of authoritarian regimes in the region.

In 1986, China built the first dam on the Mekong. During the following years a large number of hydroelectric development schemes were built, and new international impetus for cooperation was fostered around the river, driven by the convergence of economic interests and growing environmental concerns.



Technical sheet

Discharge

15,000 m³/s at its mouth
(23,000 m³/s rainy season
3,200m³/s dry season)

Length

4 350 km

Watershed

795,000 km²

Countries crossed

China, Myanmar, Thailand,
Laos, Cambodia, Vietnam

Section	Characteristics
Upper Mekong (China)	This section is called Lancang Jiang, "turbulent river". Its source lies at altitude of about 5,000 m. Gorges and precipices; steep slope.
From Chiang Saen (border between China-Laos) to Vientiane	Mountainous region, forests, slash and burn agriculture, Controversial development projects: Xayaburi, Luang Prabang.
Vientiane-Paksé	Large hydropower and agricultural projects on the tributaries (Nam Theun, Nam Ngumn Nam Hinbun),
Paksé-Kratié	Development projects on the river (Cambodia) and its tributaries (Laos).
Kratié- Phnom Penh	Mekong, the alluvial plain of Cambodia and Tonlé Sap (one of the world's largest areas of freshwater fishing),
Phnom Penh-Delta	A flow increasingly dependent on infrastructures (dikes and road embankments),

Myriad uses

Irrigation and rice growing

Agriculture is the most important economic activity in the subregion of the Lower Mekong and is the means of subsistence for 60% of its population. The river water is above all used for irrigation. The total irrigated surface area is about 4 million hectares and the irrigated land covers an increasingly large area in every country of the region. Intensive farming is mainly practised in northeast Thailand and the Vietnam delta.

The Mekong delta, the rice granary of Vietnam

With a surface area of 5.5 million hectares (2.6 in Cambodia and 3.9 in Vietnam), the delta is the most densely populated and developed region, in terms of farming, of the Mekong. It provides 50% of the Vietnam's food production, 95% of its rice exports, 65% of aquatic production and 70% of fruit production.

Hydroelectricity production

Interest in hydroelectricity production has increased strongly over the last few years. It is a means for the region's governments to reduce poverty, lower national debt, attain energy security and economic prosperity. It is estimated that 10% of the hydroelectricity potential of the Lower Mekong basin has been developed up to now (source: MRC). The integrated management of the hydroelectricity development of the Mekong basin is one of the major challenges that must be dealt with in the years to come.

Fishing

More than two millions tons of fish are caught in the Mekong basin every year, which it represents the first inland fishing area in the world. Fishing accounts for 12% of Cambodia's GDP and contributes more to the country's economy than rice production. In Laos, it represents 7% of GDP. Although the proportion is lower than in Thailand and Vietnam, fishing nonetheless contributes about \$750 million a year to its GDP. Aquaculture has undergone remarkable growth: in 2008, it reached 1.9 million tons (i.e. a five-fold increase since 2000), mainly taken from the Mekong Delta. Irrigation, drinking water supply, and industrial use come into conflict with the fisheries.

Navigation

Used for centuries as a means of transport for people and goods, the Mekong is still used by much of the population and increasingly for commercial and tourist purposes. For example, in Vietnam about 73% of goods and 27% of passengers travel on the river.

In the Lower Mekong basin, the river and its tributaries are navigable during the rainy season (8 months of the year), except for a 14 km section north of the border between Cambodia and Laos (Khone Falls), which undergoes considerable variations in water level. The river is no less a link between China and the countries downstream and the port infrastructures that have developed like Chiang Saen (located in the Golden Triangle, at the cusp of the borders between Laos, Myanmar, Thailand and Vietnam).

Trade via the river has developed substantially in recent years, stimulated in 2009, by the opening of the deep water port at Cai Mep in Vietnam, whose container terminal can receive the world's largest ships bound for Europe and the United States in particular.

Governance and international cooperation

An international management system: the Mekong River Commission

Conflicts between the region's nations have for long made cooperation impossible regarding the use of the river. This was particularly the case in the period following the Vietnam War which saw the Thai government, pushed by the United States, oppose the new communist governments in the region.

History

Shared resource management came about with the establishment of the Mekong River Commission.

1957: Thailand, Laos, Cambodia and Vietnam founded the Mekong River Commission which is dedicated to exploiting the hydroelectricity potential of the Greater Mekong Subregion (under the aegis of the UN).

1995: The four countries signed a *Cooperation Agreement for the Sustainable Development of the Mekong Basin*, which marked the birth of the Mekong River Commission. China and Myanmar have participated as observers since 1996. The MRC is responsible for sustainable development issues and the management, use and conservation of water resources.

2001: Certain funding bodies were given the status of observers within the MRC: the Asian Development Bank (ADB), the World Bank, and the International Union for the Conservation of Nature (IUCN).

2002: China and Myanmar signed an agreement to exchange hydrological data.

Composition and operation

The MRC comprises:

- A Council in which sits a member from each of the four countries. It is responsible for determining the MRC's general policies.
- A mixed committee, responsible for implementing the Council's decisions.
- A permanent secretariat, based in Vientiane (Laos).
- Four *National Mekong Committees (NMCs)* provide the link between the work done by the secretariat and the national ministries, ensuring the implementation of the MRC's regional programs.

The procedures of Notification, Consultation and Preliminary Agreement (PNPCA), impose a preliminary consultation process aimed at reaching consensus between the member countries regarding hydroelectricity projects.

The founding treaty

Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin: <http://www.mrcmekong.org/assets/Publications/policies/agreement-Apr95.pdf>

Governance and international cooperation

Examples of the programs started

The Agriculture and Irrigation Program: this aims to ensure the sustainable development of water resources for agriculture, by exploiting the different functions of rice fields, essential reserves for fish growth and sources of production for the peasants. It also seeks to improve the efficiency of irrigation by providing technical advice to water managers and national governments.

The Navigation Program: the MRC is authorised to manage the development of navigation and control water borne cross border transport. The Navigation Program is aimed at setting up the legal framework relating to navigation and increasing the opportunities for trade for the member countries, while ensuring efficient and secure river transport.

Of note: in 2009, Cambodia and Vietnam signed the Bilateral Treaty on River Transport to reduce restrictions on cross border navigation and improve standards of efficiency and security on the river.

The Basin Development Plan is aimed at ensuring that the use of water resources serves the region's sustainable economic development and reduces poverty. It requires the formulation of a series of scenarios.

The Sustainable Hydroelectricity Initiative is focused on responding to the accumulative and cross border effects of the hydropower development schemes on the river, by assisting the member countries to develop the integrated management of water resources (*Integrated Water Resources Management, IWRM*): the development of regional technical knowhow, sharing good practises, etc.

Other programs: the Integrated Capacity Building Program is an environmental program for fishing, the integrated water resources management program, the flood reduction and management program, the climate change adaptation program, and the information and knowledge management program.

Recent changes:

Since the 2000s, the governance system has tended to open out to civil society:

1999: The joint committee adopted a series of principles for the participation of civil society in the "decision, planning, implementation, control and evaluation of the MRC's projects and programs".

2009: The *Communication Strategy and Disclosure Policy* improved access to the MRC's information, made accessible on the web.

Furthermore, cooperation with China and Myanmar was strengthened within the MRC to exchange and share data for hydrometeorological forecasts and manage extreme events.

Governance and international cooperation

Ambiguous international relations

The interests of China in the region

For China, the Mekong is a crucial element in the framework of its policy of developing the region of Yunnan as a "door open to Southeast Asia. The region benefits from huge subsidies from Beijing aimed at – through the development of dams on the river – reducing flood risks, developing agricultural potential, commercial shipping and producing renewable energy. Little inclined to participate in the international management of the river, it privileges bilateral relations with the countries situated downstream, in particular through financial and technical aid for dam building.

Responsiveness to Chinese bilateral initiatives

Laos sees Chinese financial aid (more than \$1 billion in 2010) as a means of breaking out of its economic isolation and building beneficial hydropower installations on the river, since it has the highest hydropower potential on the Mekong (13,000MW).

Thailand has a strong Chinese community and has forged lasting relations with China. Thai Chinese make up 10% of the population but about 80% of market capitalisation, and in 2009, Chinese investments rose by 181%.

In Cambodia, massive Chinese investments for building dams and bridges, associated with many incentives from the Chinese government intended to favour the settlement of populations in Cambodia, should allow China to forge a privileged partnership with the country to gain access to the South China Sea.

In Vietnam, the country furthest downstream and where a quarter of the population lives directly from the river, Chinese ambitions are viewed with more circumspection, given that 20% of the Mekong's water depends on China and that in winter, the flow of the river is ensured only by the glaciers of Tibet. In addition to the fall in water levels and pollution linked to the industrial growth of Yunnan, it also harbours geopolitical fears since improving access to navigation could make the river a major military corridor.

Another regional initiative: Lancang-Mekong Cooperation

The Lancang-Mekong Cooperation was set up in 2014. It brings together five countries crossed by the Mekong (Cambodia, Myanmar, Vietnam, Thailand, Laos) and China. This cooperation is a sort of alternative system to the MRC that serves Chinese foreign policy in the region. A five-year plan (2018-2022) was proposed to share the management of the water and reduce poverty.

The MRC: more a tool of technical expertise than a regulatory body?

Vietnam, the country that has most to gain from the establishment of genuine international management, is hindered by the sometimes contradictory interests of the other member states, which profit from the rather lax nature of the MRC (Thailand), even though they show interest in the tools and data made available by the MRC (Laos). The Commission's principle of operation is not based on a right of veto but on a "strong obligation for preliminary information" that leaves the door open to interpretation.

Governance and international cooperation

Ambiguous international relations

Indeed, the establishment of the MRC was achieved without any loss of sovereignty of its member States over the river: the Commission has no real decision-making capacity regarding the management of the entire basin and its efficiency is hindered by the variation between the discourses of the different governments and the decisions they take. The construction of the Xayaburi dam by Laos, despite the absence of consensus within the MRC is emblematic of these shortcomings.

The international funding bodies have also taken an ambiguous approach. In the 2000s, the Asian Development Bank supported a Chinese navigability project on the Mekong without taking into account the MRC's warnings about biodiversity, the ecosystem and the local economy.

Installations

Installation management

In China

China has its own organisation responsible, like the MRC for the lower basin, for managing issues related to rivers. The *China Institute of Water Resources and Hydropower Research (IWHR)*, is responsible for the development, use and management of water resources, flood control, technologies designed to ensure high agricultural yield, and all issues related to dams.

The actual operation of the dams is the responsibility of private companies like Huaneng Power International Ltd, which holds the build, own and operate concession for the many dams on the Chinese course of the Mekong, and Yunnan Dachaoshan Hydropower Co., Ltd for the operation of the Dachaoshan dam.

The lower part of the basin

The construction, ownership and operation of hydropower plants in the lower basin is most usually taken in charge by public and private companies and consortiums. For example: Electricity Generating Public Company Limited (EGCO), Lao Holding State Enterprise (LHSE), Electricity Generating Authority of Thailand (EGAT), Nam Theun 2 Power Company (NTPC), a consortium owned by EDF: 40%; Electricity Generating Public Company Limited (EGCO, the leading independent Thai electricity producer): 35%, and Lao Holding State Enterprise (LHSE): 25%.

The Chinese Electric Power Technology Import and Export Corporation has rebuilt and operates the Kiriom 1 dam in Cambodia.

Installations

The main installations in China and in the lower Mekong basin

1) On the **Upper Mekong**, in China, the dams are located on the main stem of the river, since this stretch has no large tributary. These existing and projected hydropower projects are mostly run-of-the-river structures on the lower part of the Upper Mekong. China has nonetheless begun the construction of six other dams upstream dedicated in particular to irrigation.

Main installations	Characteristics
Manwan (China)	Start of operation: 1995 Installed capacity: 1,750 MW
Dachaoshan (China)	Start of operation: 2003 Installed capacity: 1 350 MW
Jinghong (China)	Start of operation: 2008 Installed capacity: 1,750 MW
Xiaowan (China)	Rank: highest dam in the world (292m) Start of operation: 2010 Installed capacity: 4,200 MW
Gonguoqiao (China)	Start of operation: 2011 Installed capacity: 750MW
Nuozhadu (China)	Start of operation: 2012 Installed capacity: 5,500 MW
Miaowei (China)	Start of operation: 2016 Installed capacity: 1,400 MW
Dahuaqiao (China)	Start of operation: 2015 Installed capacity: 900 MW
Huangdeng (China)	Start of operation(planned): June 2019 Installed capacity: 1,900 MW
Wunonglong (China)	Start of operation (planned): 2019 Installed capacity: 900 MW

2) On the **Lower Mekong**, there were 16 development schemes in 2014, and 25 development schemes today, all located on tributaries of the river:

Main installations	Characteristics
Nam Theun 2 (Laos)	Start of operation: 2009 (brought onstream) Localisation: Nam Theun, tributary of the Mekong Installed capacity: 1,070 MW
Pak Mun (Thailand)	Start of operation: 1994 Localisation: River Mun Installed capacity: 136 MW
Kirirom 1 (Cambodia)	Built in 1968, rebuilt in 2002
Pak Beng (Laos)	Start of operation(planned): 2019 Installed capacity: 912 MW
Xayaburi (Laos)	Start of operation: 2019 Installed capacity: 1,285 MW

Installations

Other development schemes are planned on the main stem of the Lower Mekong:

Main installations	Characteristics
Luang Prabang (Laos)	Suspended, studies are in progress Installed capacity: 1,410 MW
Pak lay (Laos)	Mega-dam/3 rd largest hydropower project on the Mekong Construction will start in 2022 Start of operation (planned): 2029 Installed capacity: 1,320 MW
Sanakham (Laos)	Planned Start of construction: Unknown Installed capacity: 700 MW
Pak Chom (Thailand)	Planned Start of construction: NC Installed capacity: 1,079 MW
Ban Khoum (Laos)	Planned Start of construction: NC Installed capacity: 1,872 MW
Don Sahong (Laos)	Construction began in 2016. May 2017: 25% of the construction was completed Start of operation (planned): 2020 Installed capacity: 400 MW
Stung Treng (Cambodia)	Prefeasibility study completed Installed capacity: 900 MW
Lower Sesan 2 (Cambodia)	Start of operation: 2018 Installed capacity: 400 MW
Sambor (Cambodia)	Start of operation (planned): Unknown Installed capacity: 2,600 MW

Source: the
CGIAR
Research
Program on
Water, Land
and
Ecosystems
(WLE), 2017



The hydroelectricity policy of Laos

Xayaburi dam (Laos)

Localisation	1 st dam planned on the main stem of the lower part of the river.
Start of operation	2019
Installed capacity	1,285 MW
Number of generating units	8
Actors involved	Studies: Pöyry; CNR Engineering Funding bodies: Thai banks The Thai company Ch. Karnchang is supervising the construction of the installation Xayaburi Power Company: operation
Utilisation	The supply of Thai industry via the Thai national electricity distribution company

A project symptomatic of the problems of regional governance

September 2010- December 2011: At the end of a tender selection process lasting more than a year in the MRC, including the technical studies, analyses and public participation, the institution concluded on the need for additional studies on the impacts of the main hydropower development projects on the Mekong.

January - April 2012: Laos called on international consultancies to study the project: Pöyry (Finnish multinational); CNR Engineering (report available on <http://www.poweringprogress.org/download/Reports/2012/April/Final-report-V1.pdf>, focused on the study of navigation and sediment transport). The report concluded that additional studies were necessary.

March 2012: Laos started the construction the dam. Cambodia and Vietnam sent a letter to the Laotian government to ask it to stop the works.

April 2012: Representatives from more than 130 associations from civil society published a report presenting arguments relating to the non-necessity for Thailand to use the electricity produced by the dam.

July 2012: The Laotian Ministry of Energy and Mines declared that the decisions of the MRC Council "should not be a decisional factor for determining whether the Xayaburi dam should be built or not".

August 2012: Thai villages took out lawsuits against the Thai government for ignoring their constitutional rights to be consulted regarding the purchase of electricity produced by the dam. The Administrative Tribunal decided in favour of the government in February 2013.

December 2012: The Laotian parliament approved the dam.

January 2013: Angry debates took place at the MRC Council meeting, with Cambodia and Vietnam demanding the immediate halting of the works and studies.

February 2013: The Laotian government promised to share the details of the new plans with the MRC.

March 2014: 30% of the dam was completed.

May 2017: 70% of the dam was completed.

2019: the works ended and the dam was commissioned.

What is the outlook for Laos?

The aim to become the "battery" of Southeast Asia

Laos is a small country hemmed in by mountains. 97% of its territory is covered by the Mekong basin. Thus it has a remarkable hydropower potential.

The country has launched a large scale hydropower development policy, to make the country the region's "electric battery", especially for Thailand and Vietnam. A large number of hydroelectricity projects are planned or under construction. At present, 25 hydroelectricity installations are already in operation (6,093 MW), 10 are being built and sixty are in the planning phase or subject to feasibility studies, meaning a potential additional total of 22,000 MW.

Many environmental associations are concerned about the number of installations being built which appear beyond the capacity of the country to control them. However, for this poor country, the dams are synonymous with future income; most of the contracts stipulate that the dams operated by foreign companies shall be transferred to the Laotian government in 20 to 30 years. But for the moment, the energy produced does not benefit the local populations, and no financial compensation mechanism has been set up.

The collapse of a dam under construction

On 23 July 2018, a dike of the hydroelectricity scheme of Xe Pian-Xe Namnoy, under construction on a tributary of the Mekong, collapsed. 500 million tons of water were released, causing the death of a hundred people, and the displacement of 6,000. The collapse of the dam also caused serious flooding that even reached the neighbouring country of Cambodia.

This dam belonged to a network of dams along the border between Laos, Cambodia and Vietnam. Following this tragedy, the Laotian government announced that all the hydroelectricity projects on standby for authorisation to start works would be suspended until further notice. The dams in the process of construction were also the subject of a report to assess the solidity of their constructions. Whatever the case, a few months after this decision by the government, the works on the dams being built were resumed.

China's hydroelectricity policy

Nuozhadu dam (China)

Localisation	China , province of Yunnan (Pu'er City)
Start of operation	2012 (completed in June 2014)
Installed capacity	5,850 MW (4 th largest in China)
Number of generating units	9
Actors involved	China Huaneng Group, leading investor (state owned public company)
Utilisation	Hydroelectricity production, flood control, navigation

An element of an overall strategy on the Lancang

The construction of Nuozhadu dam must be seen in the framework of the Chinese government's strategy to develop the hydroelectricity potential of Yunnan province, to export energy for the benefit of neighbouring regions in China and abroad. A priority of China's internal policy, the Mekong and Yunnan are also key elements in Chinese and Southeast Asian integration.

The **13th five-year plan** launched by the Chinese government (2016-2020), highlighted the harnessing of new energies as a strategic industry. China intends to accelerate its energy transition and increase the share of renewable energies.

The construction of dams on the Mekong is also a commercial challenge for China, since they improve navigability and make the river a transport corridor between the six neighbouring countries.

What river for tomorrow?

Demographic growth and climate change: the vulnerability of the Delta

Increasing urbanisation and rapid demographic growth in the region have subjected the river to numerous constraints. These phenomena, combined with the absence of treatment of the wastewater discharged by industry, leads to pollution that threatens the Mekong delta. It is one of the world's regions most vulnerable to the effects of climate change. Among the impacts studied are higher temperatures, forecast to increase by 3°C to 5°C from now to 2100, and an increase in annual rainfall in the region of 200 mm. The recurrence of extreme climatic events such as typhoons make the basin more susceptible to floods and droughts, with dramatic impacts on the population and agricultural yields.

The rise in the sea level – 28 to 33 cm from now to 2050 and 65 to 100 cm from now to 2100 – exacerbates the intrusion of seawater in the delta and affects farming, aquaculture and fishing. Its aggravation could also lead to the displacement of millions of the delta's inhabitants.

Biodiversity in danger

The Mekong basin is one of the world's richest areas of biodiversity, and has 20,000 species of plants, 430 species of mammals, 1,200 species of birds, 800 species of reptiles and amphibians and 850 species of fish. Despite its abundance, this biodiversity is threatened. Numerous bird habitats suffer from the drainage of wetlands, overgrazing, pesticide use and the modification of farming practises.

The modification the river's flow regime linked to the construction of development schemes also leads to fears of impacts on certain reserves of biodiversity such as Lake Tonlé Sap in Cambodia, listed as a UNESCO world heritage site. A report published in 2009 by the United Nations Environment Program (UNEP) and the Asian Institute of Technology (AIT) highlighted the potential impacts of building the Chinese dams. Submersions of forest areas caused by floods in the rainy season currently generate a huge breeding area for aquatic species, but these are threatened by reservoirs upstream. The Chinese dams also block the passage of silt, rich in nutrients and necessary for rice-growing in the delta. There is also a risk of aggravating the problem of saltwater intrusion in the delta region. For example, in 1990, the river carried a load of 160 million tons of sediments to its mouth. In 2014, this figure fell to 75 million. Thus the scarcity of sediments depletes the soil and accelerates the erosion of the banks. The multiplication of reservoirs has also reduced the discharge of the river, and the populations are faced with the problem of ever scarcer freshwater.

Effects on the fish fauna also give rise for concern. At least 35% of fish production in the Mekong is composed of species that require migrations of over a thousand kilometres for their reproduction. However, the dams threaten the aquatic habitat and disturb fish migrations. In April 2018, the Mekong Commission estimated that fish stocks could fall by 40%, due to the plethora of hydroelectricity projects. The fall in the quantity and diversity of fish may have considerable socioeconomic impacts on fluvial communities.

What river for tomorrow?

Growing awareness: NGOs, civil society and national governments

NGOs are very active in the Mekong basin. Some are influential like the World Wildlife Fund and the Red Cross. National initiatives are also present, especially in Thailand, where political and ecological activism is tolerated: TERRA (Toward Ecological Recovery and Regional Alliance). In Myanmar and Laos, community initiatives are more common, sometimes supported by the UN (in particular UN-Habitat).

Many associations have grouped around the "Save the Mekong" coalition.

The International Rivers network, founded in 1985 to protect rivers and defend the rights of communities that depend on them, combats the construction of dams and works for sustainable hydraulic and energy solutions. It is based in South America, Africa, Asia, and carries out studies and research on which it communicates online.

However, in this region of the world undergoing exponential growth in its energy needs, concern above all appears to manifest itself in the complex interplay of alliances and rivalries at sub-regional and international level, to control energy resources.

Confronted by the inadequacies of the current system of governance, will new international alliances emerge?

Inciting international cooperation regarding the Mekong's management is difficult due to the inadequacies inherent to the MRC. On the one hand this institution is rendered less efficient due to the fact that China, the politically dominant country upstream, is not a member and tends to implement a unilateral policy based on placing economic pressure on its neighbours. On the other hand, the MRC depends on the goodwill of its members in order to apply its program.

Failing a readjustment of the balance of power between China and the countries downstream, a new system of regional, economic and military alliances could emerge around the Mekong basin, making the outlook for the Mekong's future uncertain.