

8 / Econo-political Environments of the Mekong Basin: Development and Related Transport Infrastructures

YUZO AKATSUKA and TAKASHI ASAEDA

INTRODUCTION

Objectives

Any river as a water resource, either international or domestic, has been closely interwoven with the economic, political, social and cultural activities of its riparian communities, which could include irrigation, hydro-power, flood control and drainage, fisheries, navigation, tourism and recreation, household activities and industry. As long as water is abundant, its value as a basic resource is rather limited. However, as populations of riparian communities increase, higher demands for water, not only in quality and quantity but also in ways of usage, have created conflicts among riparian communities. As the twelfth-longest river in the world, the Mekong faces complicated problems and issues, much more so because its basin involves six riparian countries and huge populations of inhabitants—currently estimated at about 50 million. Such conflicts of interest among the riparian countries, and the socio-political environment, have for many years prevented them from cooperating for the optimum utilization of their invaluable asset of water resources, excepting in a few cases such as navigation in the Mekong delta.

However, the socio-political environment in the Mekong river basin seems to be in a process of dramatic reformation from conflicts to cooperation in finding pragmatic and acceptable solutions to the long-pending issues and problems. Such a change appears to have begun with initiatives at various levels, both bilateral and multilateral, in or around 1990, since then rapidly increasing in momentum for basin-wide economic and technical cooperation. The formal agreements so far reached among the riparian countries are still limited in their scope and areas of cooperation, excepting in the case of navigation in the Mekong river. However, there

are a number of visible indications for further cooperation among the riparian countries (ADB, 1994c; UNDP, 1994).

The objective of this study is to briefly report, first, the recent developments in socio-economic cooperation among the riparian countries; second, the engineering characteristics of the Mekong river system; third, the current profile of economies and transport infrastructures in the Mekong river basin, with particular emphasis on inland navigation; and fourth, the issues and problems to be further attended to by the riparian countries as well as by international communities concerned with the development of the Mekong river basin (Figure 8.1),

In this study, each issue associated with the Mekong river basin is addressed in three sections; the Upper Mekong basin, the Lower Mekong basin and the Mekong delta. The Upper Mekong basin refers to the Mekong valley covering the area from the southern part of Yunnan plateau to the northern edge of the plain of Vientiane, including the eastern part of the Shan state in Myanmar and the northern provinces of Thailand. The Lower Mekong basin is the area covering the central to southern provinces of Lao People's Democratic Republic (Laos) and the eastern provinces of Thailand, which corresponds to the stretch from Luang Prabang to the Khone Falls. The Mekong delta is from the Khone Falls to the estuary, encompassing the entire land space of Cambodia and the southern part of Vietnam (South Vietnam). The division described above is not the one geographically and commonly accepted, but rather arbitrarily defined, reflecting the navigability of the Mekong river, which is the main focus of this study.

Background

Inland navigation has been of great economic importance in many countries of Asia. But single-sector-oriented water resources planning for either hydropower or irrigation purposes has in many instances reduced the capacity of rivers for use as means of transport (Akatsuka et al., 1994a). Historically, for example, in the People's Republic of China (China) numerous waterways provided important means of transport in many regions of the country. The length of navigable waterways (defined as those with a minimum depth of 0.3 m) peaked at about 170,000 km in 1960, but had declined to about 109,000 km in 1984, in part due to the building of dams for irrigation and/or hydropower generation. More recently, such water resource development planning as biased towards a particular usage is being reviewed. The new trend is towards multi-purpose development planning for the valuable water resources (Sun, 1994). An example may

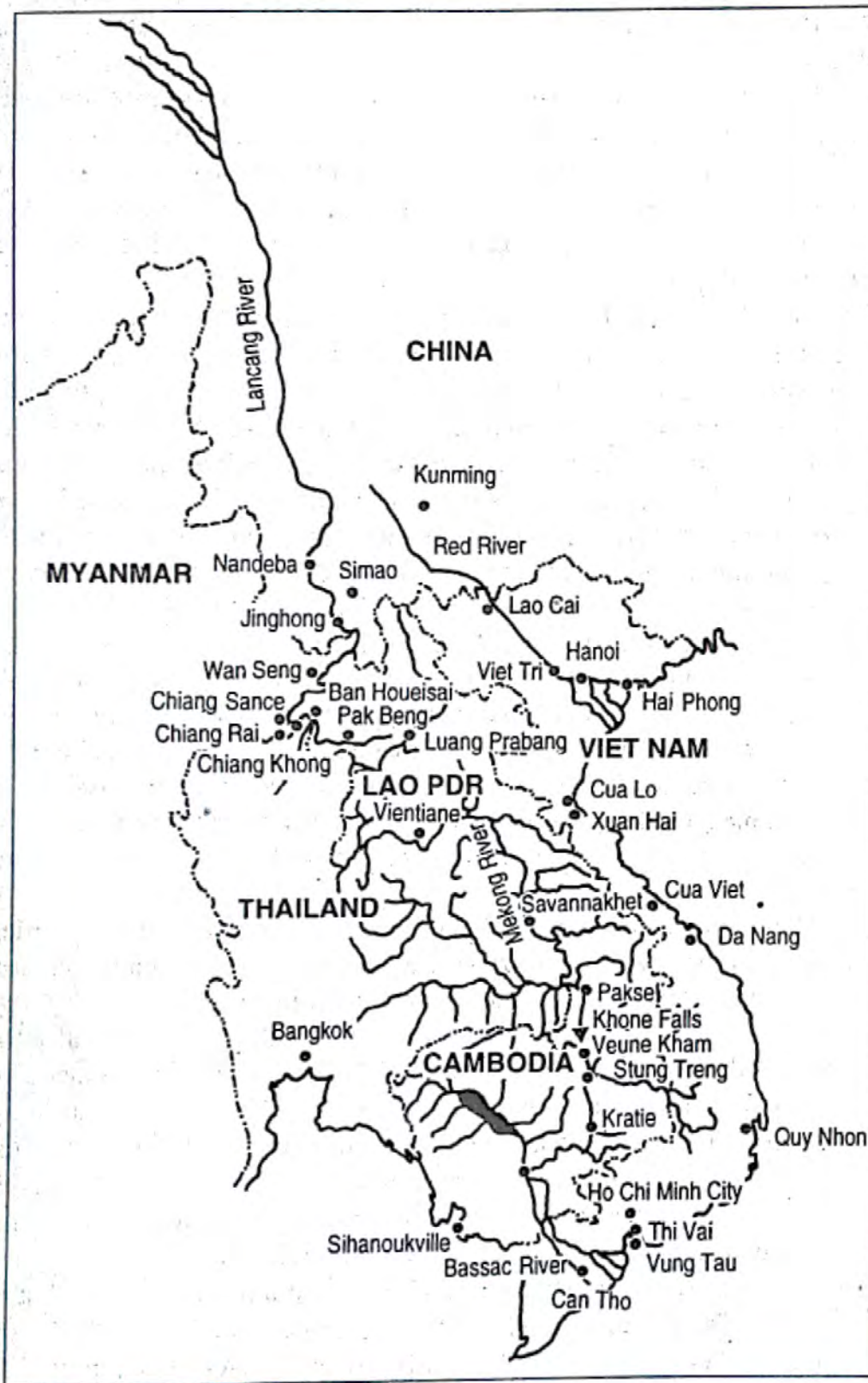


Figure 8.1. The Greater Mekong subregion.

be found in case of the Three Gorges Dam on the Chang Jiang, where devices are to be built in to allow for navigation of 10,000 dwt class vessels, in addition to other functions such as irrigation, hydropower and flood control. Hydro dams for water reservation in navigable rivers, if properly planned, designed and managed, are expected to enhance the river transport capacity through balancing seasonal changes in the water level. This strategy could also be applied in the case of the Mekong river basin development.

The Mekong river basin covers six Asian countries, with 50 million inhabitants. Its development would greatly improve their living standards, now at subsistence levels. In the early 1950s, the United Nations proposed a collaborative study for comprehensive international development in the Mekong's lower basin. Leading industrialized nations supported this proposal and launched various studies on hydropower, irrigation, fisheries and flood control. These studies were interrupted, and only resumed with the end of hostilities in the region. The studies led to the completion of several domestic dam projects (Mekong Secretariat, 1989). Meanwhile, China, located in the Upper basin, began construction of dams on the mainstream of the Mekong and its tributaries, and at the same time took the initiative for development of the Upper Mekong Navigation Project. It is now considered most appropriate to further pursue the subject of inland navigation from the perspectives of long-term and sustainable development of the entire Mekong river basin, not limited to a particular section of either the Upper Mekong, the Lower Mekong or the Mekong delta.

Until quite recently, the Mekong river has been studied by the parties concerned mainly from the viewpoint of its hydropower and irrigation development potential, not much for the possibilities of river transportation of goods and passengers, for tourism, or as a source of water for household and industrial use (Hori, 1993). The recent developments in economic cooperation in the greater Mekong subregion, encompassing Cambodia, Laos, Myanmar, Thailand, Vietnam and the Yunnan province of China have drawn international attention to the urgent need for developing energy resources including hydropower. The move towards regional economic cooperation in the last several years, promoted by the initiative of multilateral and bilateral organizations, in particular that of the Asian Development Bank, is most welcome in the light of the 'miraculous' economic growth achieved by some East Asian countries. The results of such economic growth are yet to be shared by the land-locked

regions and countries, particularly the Yunnan province of China, Laos and the north-eastern provinces of Thailand. In Myanmar and Cambodia also, the inadequate provision or entire lack of transport infrastructure has been the most serious bottleneck for development. Therefore, the expansion, upgrading and improvement of the existing network of roads, railways, air services and waterways are urgent and high priority matters (Akatsuka et al., 1989; Kitauchi et al., 1991). It is also important not to take up any of the above-mentioned transport modes in isolation from others but to examine the issues of transport infrastructure with a view to building up a well-integrated network of various modes of transport to the maximum extent feasible under the given natural conditions and socio-economic and political environments. In this connection, the studies and development projects undertaken so far have tended to be individual subsector-oriented and, further, confined to the sphere of individual countries, thus lacking the perspective for developing an integrated network for the entire subregion (Akatsuka et al., 1994a).

Political Environments of International Rivers in Asia

Until quite recently, the political environments in international river basin regions of Asia, excepting in the case of the Indus river, have not been favourable for basin-wide development. This view is reflected in a report of the World Bank which is concerned with international development in the region (Fredericksen et al., 1993):

Three of Asia's great river systems have involved major international riparian issues: The Indus, Ganges/Brahmaputra and Mekong. Other rivers with less critical issues include the Amur, Red and Salween. Only for the Indus has there been a final resolution of the differences between riparians. The 1960 Indus Basin Treaty, in which the Bank played a crucial role is rightly regarded as a major achievement that clarified rights and facilitated development in both India and Pakistan. Its very simplicity has contributed importantly to its success.

A straightforward geographical division solution is ruled out in the other basins. They typically have upstream and downstream riparians that must cooperate in the storage and allocation of variable annual flows since other solutions would be inequitable. This is well illustrated by the Mekong and Ganges-Brahmaputra, the two systems with the greatest opportunities for cooperative development, but which also have the most contentious issues. There is a history of international planning for the Mekong and the Mekong Committee is an important instrument for coordinating development and resolving riparian issues in the lower basin. However, political differences have precluded signing a treaty comparable to that reached for the Indus, and riparian issues remain potentially

difficult in this still largely undeveloped basin. For the Ganges-Brahmaputra not even data are shared. Each riparian has undertaken separate and partial planning activities, and development has proceeded piecemeal.

In principle, agreements should cover data exchange, resource allocation, resource planning and real-time operations. However, such agreements will be very difficult to achieve. The Mekong involves six countries with very different characteristics (China, Myanmar, Thailand, Laos, Cambodia and Vietnam) while the Ganges/Brahmaputra not only involves five countries (China, Nepal, Bhutan, India and Bangladesh) but also numerous Indian states and territories. Moreover, it is important to understand the interests concerned. No mainstream projects on the Mekong are likely for the near future so that—apart from data exchange and planning—the current issues relate to the impacts of tributary projects.

The Mekong basin involves six riparian countries with divergent interests. Over a considerable reach the main stream marks the border between Laos and Thailand where main stream projects would require international agreement. Joint planning has been confined to the lower basin. The Mekong Committee has been forced to focus on data collection, planning and smaller tributary projects. Only one hydropower dam has been constructed under its sponsorship, Nam Ngum in Laos, with 150 MW of installed capacity from which about two thirds of the energy is exported to Thailand. However, Thailand has financed four dams on tributaries within its territory from its own resources. The possibility that China and Myanmar might join the Committee is in principle to be welcomed but might do little to improve this situation. Each country continues to undertake planning on its own behalf.

Recent Development of Subregional Economic Cooperation

While a rather pessimistic view had been expressed by the World Bank on economic cooperation for water resource development in most international water bodies, efforts have recently been made to promote economic cooperation among the riparian countries of the greater Mekong subregion. These efforts have been going on for several years, being stimulated by the end of hostilities in the region, the development of market-oriented economies in China, Laos, Myanmar and Vietnam, and also the remarkable economic growth achieved in the East Asian countries. The transformation from centrally-planned to market-oriented economies in Cambodia, Laos and Vietnam is being accelerated, involving China and Myanmar as well. Efforts for international economic cooperation among riparian countries of the Mekong have been made at various different levels; in late 1991, the Asian Development Bank (ADB) initiated consultations with the governments of Cambodia, China, Laos, Myanmar, Thailand and Vietnam on the subject. The consultations revealed common

strong interests in increased economic cooperation among the countries and led to the implementation of a series of regional studies which culminated in successful intergovernmental meetings (the first in October 1992, the second in August 1993, the third in April 1994 and the fourth in October 1994), to discuss the results of the studies and to agree upon the priorities among the projects identified by the consultants as feasible for implementation. It is to be noted that the meetings were attended by United Nations agencies (ESCAP, Mekong Secretariat, UNDP), bilateral aid agencies and embassies and the advisory group of ADB, in addition to the six riparian countries. The approach initiated by the Asian Development Bank has been pragmatic and is expected to enhance regional economic cooperation among the Mekong riparian countries (ADB, 1993a, b, 1994b, c).

The United Nations Development Programme (UNDP) took a different approach in coordinating meetings of the Mekong Working Group involving Cambodia, Laos, Thailand and Vietnam. This resulted in the initiating of the draft agreement on Cooperation for the Sustainable Development of the Lower Mekong River Basin, which became effective in early 1995. The agreement is open to entry by other two riparian countries, China and Myanmar (UNDP, 1994). This agreement is considered to have paved the way for regional projects for development of water resources in the Mekong river basin, including the construction of water storage dams and development of inland waterways for navigation in the Mekong's mainstream which have been so far prevented by the absence of consensus among the riparian countries.

A joint investigation of waterway transportation along the Upper Mekong river by the survey team of China, Laos, Myanmar and Thailand conducted in 1993 is also a noteworthy development of intergovernmental cooperation among the four Upper Mekong riparian countries. It was preceded by a trial navigation conducted by China and Thailand in 1991. Sharing of basic data and information of the water resources among all the riparian countries concerned through such endeavours is quite unique as no third party was involved in the joint effort and such multilateral cooperation has never been experienced in other international river basins (Upper Mekong Associated Survey Team, 1993). Initiatives undertaken by some donor countries (Australia, Canada, Finland, Germany, Japan, Sweden and others) for various development projects in the Mekong basin have also contributed to increased cooperation among the riparian countries. In addition, non-governmental endeavours for regional cooperation

are considered to have contributed to enhancing favourable environments for international cooperation for the development of the Mekong river basin (GIF, 1994).

Economic Environments and Transport Infrastructure

East Asia has become a major new growth centre in the world. The Mekong subregion will benefit greatly from this, especially if its ongoing economic structural reform programmes are successful. Thailand provides an example of the benefits of adopting outward-oriented trade policies, as opposed to policies of protectionism and self-sufficiency. The Thai experience has particularly encouraged the decentralization of economies that were once centrally planned, and the use of the market as a guide to policy making. While Cambodia, China, Laos, Myanmar and Vietnam have adopted different approaches to economic reform, their common objective is to improve the living standards of their people. Cross-border trade of goods has been increasing rapidly among the six countries and many infrastructure initiatives within the subregion have been designed to facilitate this development. There is a natural process of integration within the subregion as countries rise above subsistence levels and begin to benefit from rapid growth and success in trade. However, there are significant obstacles to this process. The most fundamental of these is the problem of inadequate domestic resource mobilization caused by low per capita incomes. Strong physical and regulatory infrastructure is essential for national efforts to become more productive and competitive. Much of the necessary infrastructure is purely national in scope, but vitally important components often extend across national boundaries (see Figure 8.2).

Inadequate infrastructure is a major impediment to trade and cooperation. The transportation infrastructure, despite substantial assistance from donor countries and multilateral organizations, and investments by the countries themselves, requires further major commitments before minimum standards can be satisfied. For land-locked Laos, this is particularly true; access to sea ports requires the cooperation of Thailand, Vietnam and/or Cambodia. Yunnan province is also distant from the coastal facilities; the closest major port is Haiphong harbour in northern Vietnam. Deficiencies in roads, bridges, railroads, harbours, river navigation and airports frustrate subregional development and trade opportunities. A further complication is the potential for differences among the countries concerning routes and modes of transport. For example, Thailand would like to see a bridge across the Mekong river constructed at Savannakhet in the southern part of Laos, and improvement of Highway Route 9 which

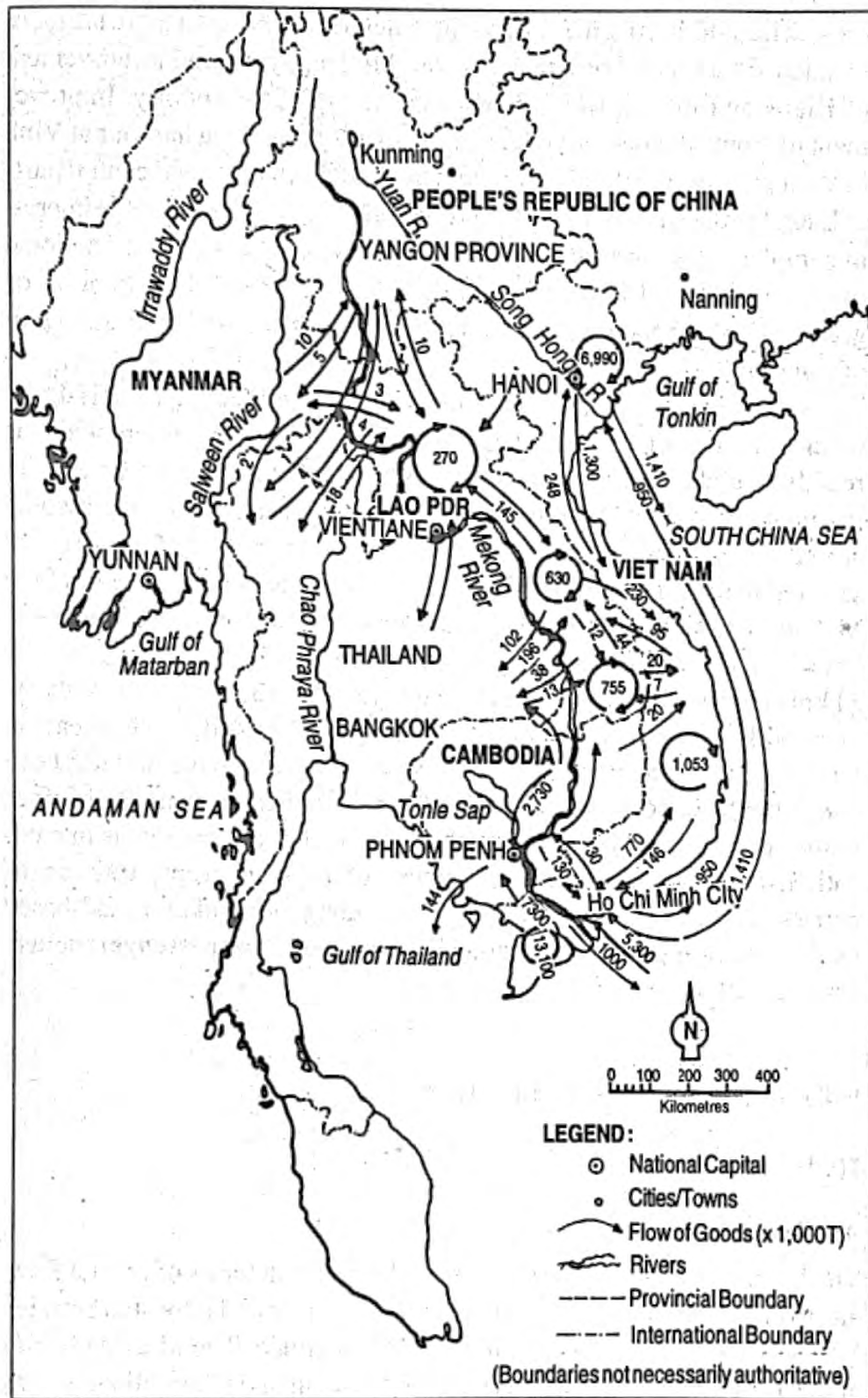


Figure 8.2. Trade flows in the Mekong subregion (ADB, 1993a).

crosses Laos to Vietnam. Laos, on the other hand, favours a more northern location for a second bridge across the Mekong river, and improvement of Highway Route 8, which crosses the centre of the country. Improvement of Route 8 would give Laos more direct access to a harbour at Vinh in Vietnam, serving the development needs of both north and central parts of Laos. On the western side of the subregion, there is considerable interest in completing sections of the Asian Highway, a network of international roads connecting 15 countries. Thus, it was proposed that attention be given to the Mae Sai-Sing section linking Myanmar and the northern part of Laos (ADB, 1994b).

Under the circumstances mentioned above, the Mekong river is drawing attention as a means of transportation within the subregion, which is readily available and whose capacity could be substantially increased with minimal investment in a rather short time, provided development works are carefully planned and integrated with other modes of transport at selected nodal points (Akatsuka et al., 1994b). There are 2130 km of the Mekong waterway within the Chinese territory, 789 km within Laos, 490 km within Cambodia and 230 km within Vietnam. The river accounts for 31 km of the border between China and Myanmar, 235 km between Myanmar and Laos, and 975 km between Laos and Thailand. Experiments in ferrying cargo between Yunnan province and Laos have already been conducted with considerable success. The commercial viability of river transportation could be substantially enhanced by improvements in navigation, dredging of shallows, blasting of rock outcrops, training of narrows and sharp bends, installation of navigation aid and land-based facilities such as ports, ferry terminals, cargo sheds, and passenger shelters (Figure 8.3).

ENGINEERING CHARACTERISTICS

Hydrology

A. General

The Mekong, the tenth-largest river in the world in terms of annual flow, and twelfth longest, covers an area of 810,000 km² and is located between 10 and 33°N latitude, and 94 and 107°E longitude. The Mekong begins at the Tanggula mountain, between the Salween and Chang Jiang rivers, in Qinghai province, on the eastern slopes of the Himalayas in China, and flows in a south-easterly direction through six countries. It cascades down

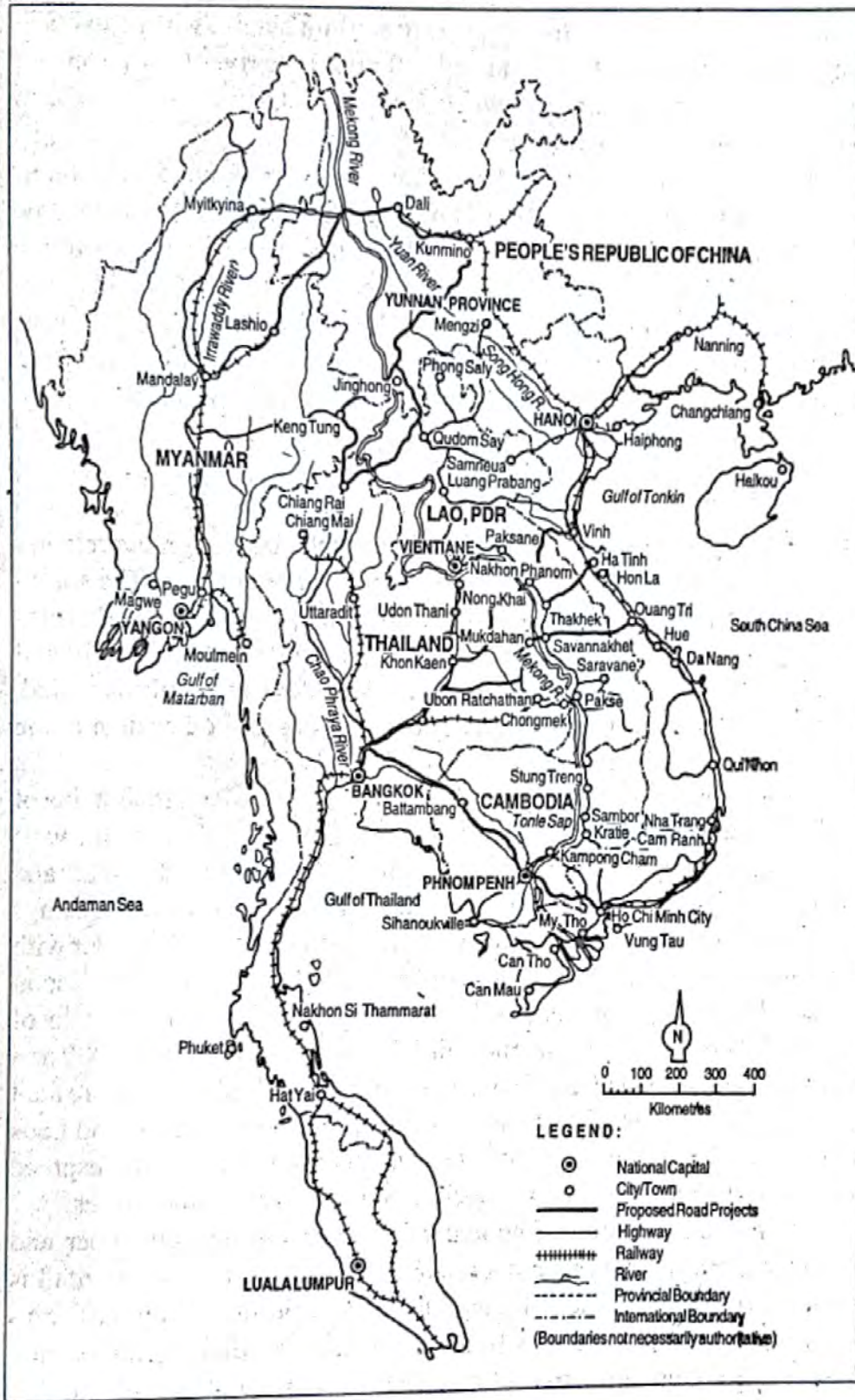


Figure 8.3. Transport network in the Mekong subregion (ADB, 1993b).

a total length of 4880 km from a 5060 m starting height, with an average longitudinal gradient of 1.04 m per 1000 m. As the river flows from the world's highest mountains to a wider, low and flat delta, the slope varies significantly from section to section.

The climatic conditions of the Mekong basin are governed by monsoons consisting of steady winds of low to moderate intensity, which blow alternatively from the northeast and the south-east, each for about six months of the year. The south-west monsoon begins in May and continues until late September. After being followed by a brief period of instability, it is replaced by a reverse air stream, the north-east monsoon, from November to mid-March. During March and April, the winds once again become lighter and variable.

Rainfall Regime

The rainfall pattern in the Mekong basin depends largely on the relation between the monsoon pattern and the geographic orientation. The south-west monsoon is heavily laden with moisture acquired at sea, and brings torrential rainfall to the riparian countries, especially to their hilly and mountainous regions. The north-east monsoon, blowing mainly over land, is on the other hand, relatively dry and carries no rain other than to the coastal slopes of Vietnam.

The Tenasserim mountains of Myanmar and the coastal mountains of Thailand and Cambodia, lying directly across the path of the south-west monsoon, are exposed to heavy rainfall on their seaward flanks and shield the interior to a considerable extent. The monsoon finally brings about heavy rainfall in the Annam highlands along Vietnam's border with Laos and Cambodia. In a similar manner, during the north-east monsoon period, the Annam highlands shield the basin and the central plain of Thailand. Thus, the normal annual rainfall ranges from less than 1000 mm at Khon Kaen located on Korat plateau in northern Thailand, to more than 4000 mm in the basin of mountainous fringes between Vietnam and Laos or Cambodia (Figure 8.4). In addition, occasional more widespread rainfall of longer duration may occur due to cyclonic disturbances.

Heavy rainfall is quite frequently observed during September and may cause massive inundation associated with flooding. This rainfall is probably restricted to the delta and the eastern portion of the basin, although the winds occasionally blow across the heart of the mainland and subject many more areas to prolonged heavy rain. Rainfall is plentiful in the Mekong delta; however, it is so unevenly distributed seasonally that many localities experience drought each year with varying intensity and

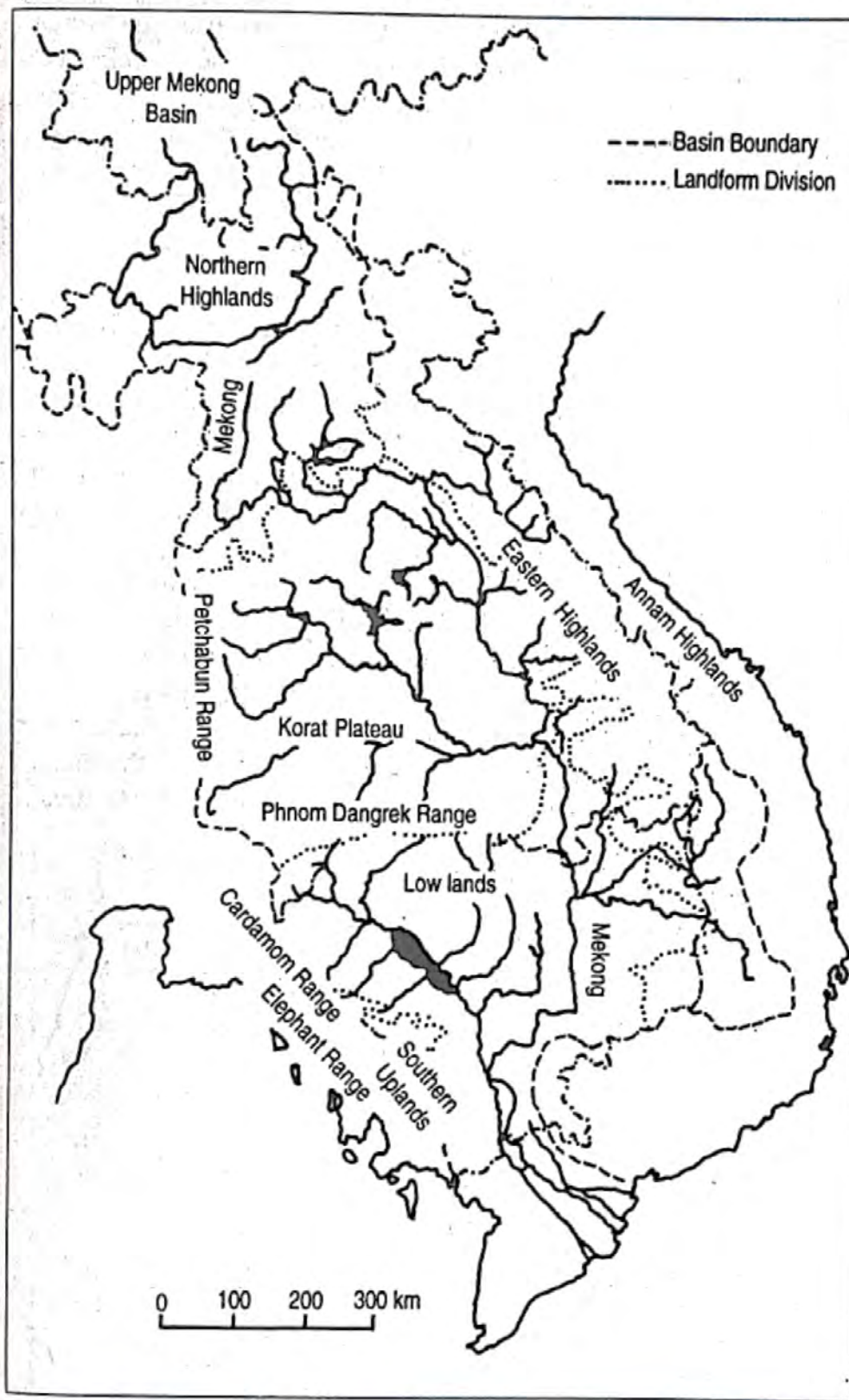


Figure 8.4. Mekong basin (Mekong Committee, 1988).

duration. Mean annual rainfall over the basin and its distribution over the year are shown in Table 8.1. About 88 per cent of the annual precipitation falls between May and October. The average number of wet days varies from less than once a month in December and January to more than twenty days a month in August and September.

Drainage Characteristics and Run-off Distribution

Since the flow in the Lower Mekong basin derives mainly from rainfall, its local run-off largely reflects the rainfall pattern (Figure 8.5). The total drainage area of the Mekong basin is 795,000 km², of which 24 per cent or 186,000 km² lies in Chinese territory, and the remaining 76 per cent or 609,000 km² covers the four riparian countries of Laos, Thailand, Cambodia and Vietnam. Within the basin, there are several principal landforms, each of which has distinctive geological and hydrological environments (Mekong Committee, 1988; see Figure 8.4).

(1) *Upper Mekong Basin*: Originating in the Tanggula mountains, the Mekong flows a length of 2130 km in inland China, where it is called the Lancang. The next section of 31 km forms a part of the China-Myanmar border, and then for 234 km the Laos-Myanmar border, before reaching Chiang Saen in Thailand. Most of this section, until Nandeba, 230 km upstream from the China-Myanmar border or 1840 km from the source, is called the Upper Mekong and is extremely mountainous. Downstream

Table 8.1. Mean rainfall in the Lower Mekong Basin

Month	Rainfall in mm (%)
January	8 (0.5)
February	15 (0.9)
March	40 (2.4)
April	77 (4.6)
May	198 (11.8)
June	241 (14.4)
July	269 (16.1)
August	292 (17.5)
September	299 (17.9)
October	165 (9.9)
November	54 (3.2)
December	14 (0.8)
Annual	1672 (100.0)

Source: Mekong Committee (1988).

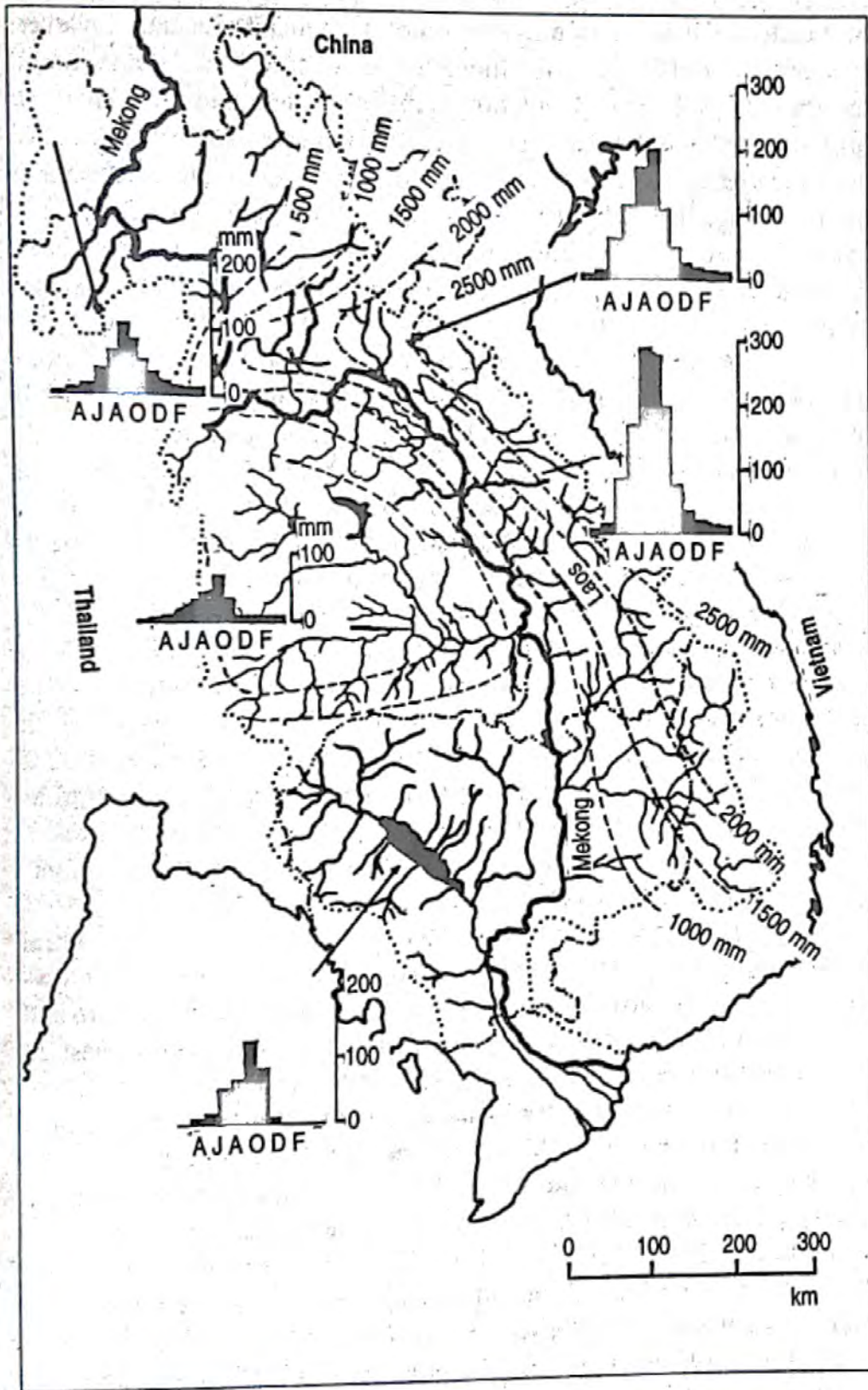


Figure 8.5. Mean annual run-off isolines (Mekong Committee, 1988).

of Nandeba the Mekong basin becomes a highland plateau. However, the border river basin is again mountainous with curved mountains and narrow valleys. Human population in the basin is high inside China, but relatively low in the border river basin. In the boundary section, the natural evergreen forest has been significantly cleared mainly due to slash and burn farming. In the Upper Mekong basin, there are plans for fifteen hydroelectric dam construction projects, some of which have already been initiated. The hydrological impacts of these projects are likely to be significant.

(2) *Northern Highlands*: The Upper Mekong basin makes a smooth transition into the Lower Mekong basin, the upper region of which is still mountainous, called the Northern Highlands. This area is relatively wet, receiving an annual precipitation of 2000–2800 mm. Crest elevations in this area are generally more than 600 m above the adjacent valley bottoms, which provide substantial potential for hydroelectric power development, while the irrigation potential is less compared with other basins in the Lower Mekong. The highly curved complexes and dissected relief in this region limit the agriculture of a relatively low human population to lowland rice cultivation in the narrow valley bottoms and the transition to cultivation of upland rice and other crops on the slopes. As a result of slash and burn farming practised on the slopes, this formerly forested area is now deforested. This has created a serious erosion problem and probably a reduction in the water-retention capacity during the dry season. Recently, reforestation has been undertaken in many places with commercially viable tree crops, such as rubber, pineapple and tea.

(3) *Korat Plateau*: The Korat plateau is separated from the central plain of Thailand by the hills of the Petchabun range, and from the lowlands of the Tonle Sap basin by the Phom Dangrek range. The eastern and the northern edge of the plateau is bounded by the foothills of the eastern and the northern highlands respectively. The Mekong river flows closely along the northern and eastern boundary of the plateau. As noted in the previous section, being shielded from monsoonal rainfall, this basin is relatively dry, with annual rainfall of 1000–1600 mm. More than half the Korat plateau is drained by the Nam Mun and the Nam Chi which, together with the Nam Songkhran and the Nam Kam, provide a gentle profile for the basin, allowing for widespread agriculture, although the area suffers from frequent drought, salinization and floods.

(4) *Eastern Highlands*: The Eastern Highlands, 50 to 300 km wide, cover the area along the Annam mountain range between Vietnam and Laos or Cambodia. This area is comprised of mountainous areas of complex relief, presenting a steep slope to the east and to the west more gently

sloping down to the Mekong stream. With its heavy annual rainfall of 2000–3200 mm, the northern half is suitable for hydroelectric power development. The human population density is low in this area, but the agricultural potential is also rather limited. Thus, forestry and slash and burn farming are the main economic activities, which, associated with deforestation of formerly dense rain forest, have resulted in considerable erosion and soil degradation.

(5) *Lowlands*: Included in this area are most of Cambodia and the Mekong delta in Vietnam. Apart from the Khone Falls and the following rapids downstream, the Mekong is characterized by high natural levees and a broad flood plain in this part of its basin. In the central part is the Tonle Sap lake (which drains the western part of Cambodia), the Mekong-Tonle Sap confluence, and an alluvial flat delta, which is frequently inundated during the monsoon, although most of the area is rather dry due to the rainshadow effect. In the delta more than half of the land is affected by acid-sulphate soil conditions, whereas most of the soils near the coastline have problems with salinity intrusion. The delta area is the most densely populated part of the basin and has associated high economic activities.

(6) *Southern Uplands*: The Cardamom and Elephant ranges in Cambodia separate the Lower Mekong lowlands from the Gulf of Thailand. The south-westerly monsoon brings about a very high rainfall, annually over 4000 mm in some areas. With low population density and limited agriculture, the basin is covered with dense forest.

(7) *Drainage Distribution*: More than 475,000 million m³ of water are discharged annually from the entire basin. Of this total flow, 20 per cent comes from the upper basin covering 24 per cent of the total drainage area. In the lower basin, annual run-off largely occurs along the Annam highlands, accounting for about 55 per cent of discharge from the left bank of the tributaries in Laos and Cambodia, while representing only 28 per cent of the total drainage area. This high amount of discharge is contributed by several rivers shown in Figure 8.6.

Northern Thailand or the Korat plateau accounts for only 10 per cent of the discharge, although it covers 19 per cent of the drainage area. A major contribution in this area is the Nam Mun Chi, having the largest drainage area of 119,570 km² or 15 per cent of the total, while its contribution to the discharge is only 6 per cent. Kratie is the most downstream point of the total drainage area of 646,000 km² where flood discharges can be measured with accuracy. It is apparent from the figure that tributaries from the left bank have a higher rate of discharge than those from the right bank.

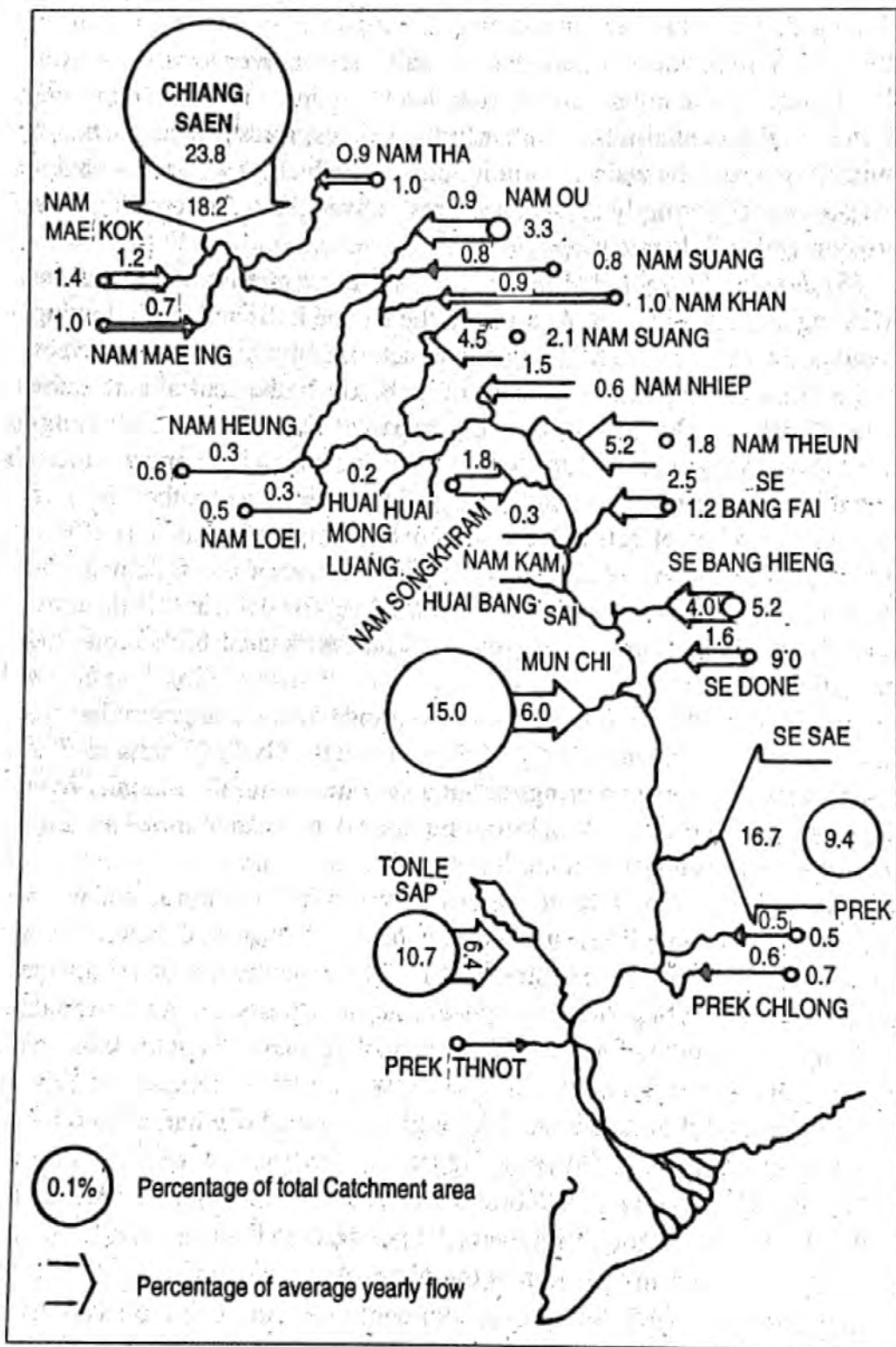


Figure 8.6. Contribution of main rivers to Mekong flow (NEDECO, 1991).

Downstream of this point, the Mekong receives the waters of its unique major tributary in this basin, the Tonle Sap, at Phnom Penh: about 6.4 per cent of the total discharge as an annual average, from 10.7 per cent of the

drainage area. Downstream of Phnom Penh, the river becomes progressively tidal, at least in the dry season. Average annual flow at Kratie is about 93 per cent of the total Mekong river run-off which is ultimately discharged into the sea. If a wet year is defined as one in which the flow is more than 110 per cent of the mean flow, then, a dry year may be defined as one in which the flow is under 90 per cent of the mean flow. The distribution between the wet, medium and dry years is approximately 25, 50 and 25 per cent for Vietnam, and 20, 60 and 20 per cent of Kratie, respectively. More than 40 years of past records in Vietnam and Kratie show that there have been three periods of two to three consecutive dry years.

D. Seasonal Pattern

Since the flow in the Lower Mekong basin comes from rainfall, its discharge, in turn, characterizes the pattern of rainfall distribution during the year. As the torrential south-west monsoon covers the Lower Mekong basin on an annual basis, the main stage hydrographs and the range between high and low waters vary a little from year to year. The water level in the Mekong begins to increase just after the onset of the monsoon, in May or June, and reaches its peak in August or September for the upper basin and September or October for the lower basin. It cascades down rapidly until December, and afterwards recedes gently during the dry period of the year to reach its lowest level in late April, just before the advent of the monsoon.

E. Peak Flow

Table 8.2 depicts the recorded maximum flows of the Mekong up to 1970. The maximum peak discharge at Vientiane was recorded at 26,000 m³/sec in 1966 while the minimum peak discharge was 11,300 m³/sec in 1957. During the same period, the maximum peak discharge at Kratie was observed as 66,700 m³/sec in 1939, whereas the minimum peak discharge was 39,800 m³/sec in 1965. In terms of the ratio of the highest peak to the lowest, based on the above data, it amounts to 2.3 for Vientiane and 1.7 for Kratie. Table 8.2 distinctively shows the increase in peak discharge between the upstream and the downstream in such a manner that the maximum at Kratie is 2.6 times the maximum at Vientiane. This increase is found to be mainly due to the flood run-off of the intervening area on the left bank.

Downstream of Kratie, the Mekong joins its delta by flooding the plain on both its banks in quite complicated patterns as its flow rises more than 7 m above sea level. The overflow on the right then enters the Tonle Sap

Table 8.2. General hydrology of the Mekong river up to 1970

Gauging station	Drainage area (km ²)	Discharge (m ³ /sec) (Year)		Average (no. of years)	Average annual run-off (10 ⁹ m ³)
		Max.	Min.		
Chiang Saen	189,800	23,500 (1966)	543 (1969)	2970 (10)	94
Luang Prabang	268,000	25,200 (1966)	652 (1956)	3717 (21)	117
Vientiane	299,000	26,000 (1966)	701 (1956, 58)	4600 (58)	145
Thakhek	373,000	32,900 (1948)	915 (1969)	7710 (47)	244
Pakse	545,000	46,200 (1939)	1,060 (1932, 33)	10,295 (46)	325
Kratie	646,000	66,700 (1939)	1,250 (1960)	13,974 (45)	441

Source: Mekong Committee (1988).

and the Great Lake. The Mekong's main channel also contributes its flow to the Great Lake through the Ronle Sap at Phnom Penh Quatre-Bras, which acts as an inlet-outlet for the Great Lake. The Mekong level starts to rise between April and June and progresses until the flood has fully receded in October when the reverse flow starts as the Tonle Sap drains the water from the Great Lake to the Mekong tributaries. The flow is, therefore, regulated mainly by the storage within the inundated areas, the storage is the Great Lake and the tidal effect which is strongly felt in the Lower Mekong areas.

Just below Phnom Penh, the Mekong is bisected. The Mekong itself continues to the east, while the Bassac flows to the west, routing about 80 and 20 per cent of the annual flow to the sea, respectively. When the Mekong flow at Phnom Penh rises above 15,000 m³ sec, its flow not only runs into the Great Lake, but also spills into overflow channels towards the lowlands around the Bassac and the Mekong. A considerable fraction of about 20,000 million m³ of overflow comes back into the main branches as return flow each year. Then, the river level rises gently at a rate of a few centimetres per day and the flood may consequently propagate and last for several month. About 50 km below the Cambodia-Vietnam border, there exists a connecting channel, the Vam Nao Pass, through which about 40 per cent of the flow of the Mekong branch turns into the Bassac during high stages. The reduced flow in the Mekong is, then, equalized with that of the Bassac below the connecting point (Mekong Committee, 1988).

F. Dry Season Flow

The minimum recorded discharges in the mainstream are clearly shown in Table 8.2. In the delta, during the dry season a substantial amount of

flow is needed to prevent saline intrusion into the Mekong river. According to the conditions prevailing in 1988, the isohaline of 4 g NaCl per litre varied between about 50 km from the mouth at the end of the dry season to 15 km at the end of the flood season. A drastic reduction of dry season flow would increase the salinity intrusion, with all its consequences for planned and existing downstream abstraction points.

NAVIGATIONAL CHARACTERISTICS

Hydrological Problems

(1) The Upper Mekong

Unlike other transportation modes, waterborne transport mainly depends on the hydrodynamic characteristics of the river. Thus, the above described hydrological processes and the eventual river characteristics are essential factors in the navigation of almost the entire section of the Mekong, except for the Mekong delta. As pointed out in the previous section, the Mekong river basin receives extremely different precipitation between the rainy season, from May to October, and the dry season, from December to April. Thus, its run-off varies within a wide range, which eventually leads to significant change in the depth of the river. This is eventually reflected in the maximum amount of payload of vessels. In most segments, the channel depth reaches more than 10 m during the rainy season, while in the dry season it falls to just 1 m. Therefore, although there are relatively less constraints for navigation during the rainy season, navigation in the dry season is extremely restricted. Thus, the cargo volume increases year by year during the rainy season, while in the dry season it is almost fixed due to the inadequate depth of the channel. As seen in this example, the navigability of channels during the dry season is the most important concern in waterborne transport. The cargo volume handled at Laksi port in Laos over three years is shown in Figure 8.7.

This low channel depth problem is especially serious in some sections of the upper and middle reaches of the river where rock outcrops are located within the channel. Characteristics of the alluvial meandering channel are observed between rocky channels. The water becomes too shallow due to shoals, where the flow disperses over wider areas. These are the main hazards in the upper reaches. In a wide variation of the water depth between the rainy and the dry season, rock outcrops and shallows become hazardous obstruction for navigation, especially during the dry season. Recently, the Mekong basin has been substantially deforested, and such deforestation eventually reduces the discharge during the dry season.

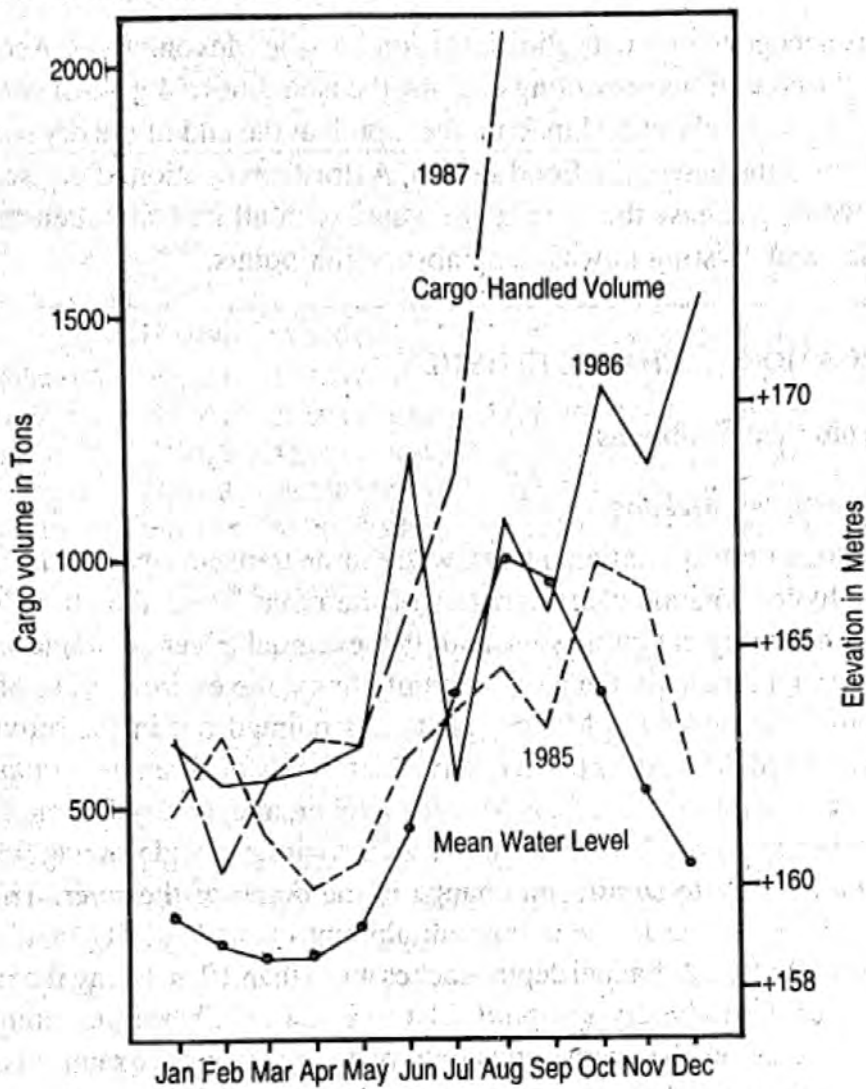


Figure 8.7. Volume of cargo handled at Laksi Port.

In the rocky channel, traffic is obstructed by submerged or exposed rock outcrops. Since the number of obstructive rocks are limited, rock blasting is often the most effective measure in this area.

In general, river training works such as the installation of groynes, dikes, or bottom panels are carried out for stabilizing the channel pattern (thalweg line—the line joining the deepest point of each section) and maintaining an adequate depth, along with dredging. Since river training works are a measure which regulates the whole pattern of the channel, dredging is also necessary for local shallows. However, several problems still remain with regard to this matter. Removal of reefs, rocks, or sandbars reduces the flow resistance in the channel, which eventually decreases the depth in the entire section, and hence the expected depth is not always obtained. Subsequent effects of these treatments cannot last long. It is normally considered that the river bed topography changes with the

annual highest discharge. If so, dredging will most likely be necessary every year after the rainy season. For a quantitative analysis, however, a more detailed study is required.

It is unanimously considered that increasing the discharge is the most effective way to deal with the low water level during the dry season. One method is the construction of dams upstream to reserve the water during the rainy season for release during the dry season. For this purpose, huge reservoirs are reportedly planned along the Lancang and its tributaries inside China as twenty-first-century projects to maintain a sufficient volume of water throughout the dry season (Table 8.3).

(2) The Lower Mekong

Similar to the Upper Mekong reach, the water level in the Lower Mekong also varies between the dry and rainy seasons. Therefore, the navigability is relatively better during the rainy season with a water level of about 10 m; however, during the dry season navigation is seriously hampered. Therefore, the main concern is to increase the degree of navigability during the dry season, from November to May.

Table 8.3. Salient features of projects planned on the Mekong river basin in China

Dams	Features				
	Catchment area (km ²)	Mean annual inflow (m ³ /s)	Gross storage inflow (MCM)	Net storage (MCM)	Low flow increase (m ³ /s)
Liuteng Jiang	83,000	650	500	170	11
Tiabi	84,000	675	320	90	06
Wunanglong	85,500	714	980	340	22
Tuoba	88,000	791	5150	3400	219
Huangdeng	92,000	880	2290	1100	71
Tiemenban	93,400	916	2150	960	62
Congguogiao	97,200	985	510	120	08
Xiaowan	113,300	1210	15,650	11,500	565
Manwan	114,500	1230	1110	410	26
Dachaoshan	121,000	1342	940	240	15
Sijiacun	123,000	1380	550	140	09
Nuozhadu	144,700	1771	7300	300	212
Yinghong	149,100	1850	97	220	14
Gualanha	151,800	1984	—	—	—
Nunahukuu	160,000	1985	—	—	—
Total			38,240	22,000	1230

Stretches with considerable obstructions exist between Luang Prabang and Vientiane, including the 55-km section from Luang Prabang to Pakkhone, and the 133-km section between Sanakham and Vientiane, where 39 km of rapids and rocky passages are located. The overall channel conditions are most suitable for navigation in Laos between Vientiane and Savannakhet, except for some stretches. The stretch from Vientiane to Paksane is characterized by passages with obstructions where rocks and shoals are frequently found, particularly between Pak Kading and Thakhek. The approach to Keng Kabao is hindered by rocky passages, and navigation on the Keng Kabao–Savannakhet section is also hampered by rapids in Ban Pong Kham. The Khemarat and Kanheup rapids obstruct navigation for 60 km of the Savannakhet–Pakse segment. The channel condition again improves between Pakse and Khinak. However, the Khone Falls, extending for 6 km, present a particularly formidable obstacle after Khinak.

Although the river is in general navigable in this reach through the alluvial plains, shoals, rapids and rocks in certain sections pose the main hindrances for navigation. River training works, dredging for the shoals and blasting of rock outcrops are considered to be the most effective measures to increase navigability. Since the discharge of suspended sediment is extremely high, the channel is unstable in this reach and a large amount of maintenance dredging is required.

The construction of dams in the upper mainstream or tributaries and the deforestation of the upper basin are anticipated to change the sediment characteristics of the river significantly, with the sediment discharge decreasing with the construction of dams, and increasing with deforestation of the basin. This eventually influences the navigability for the reach and the amount of dredging required. Furthermore, the deforestation accelerates the run-off into the river and is likely to increase the flood flow during the rainy season, and decrease the discharge during the dry season.

(3) The Mekong Delta

Downstream of the Khone Falls until Kratie, the channel condition is still hazardous, comprised of rocky outcrops and shallows, at least during the low and mean water periods. The most significant rapids are at Prepatang and Sambor. Vessels of 20 tons can navigate in this segment, but with a higher degree of risk. Between Kratie and Kompong Cham, the river channel condition improves considerably. Constraints include several shallow channels, the least allowable draft of 1.5 m, and a shoal of 7 km passage. Thus, regular dredging is required at two sections at Phumi

Thmei and Pong Rau. After Kompong Cham to Phnom Penh, the channel condition becomes completely alluvial, causing siltation to occur and the resulting shallow, are the main hindrance. The channel condition is relatively good from Phnom Penh up to the Mekong delta. Therefore, the amount of maintenance dredging is expected to be relatively small in this section. However, it is to be noted that there are several other factors which change the channel conditions which will particularly affect the development of this area in future.

The dry season discharge downstream of Phnom Penh is significantly affected by the flood regulation effect of the Great Lake. The discharge of the Tonle Sap river, connecting the Mekong river and the Great Lake, depends on the water levels at Phnom Penh and at the Great Lake. By the end of May, when the flood season starts, the water in the Tonle Sap river begins to flow into the lake, and gradually increases until about 7000 m³/s in August, and as the water level in the lake rises, the surrounding area is flooded. This eventually decreases the inflow into the Lake. However, it also attenuates the flood flow downstream during the rainy season. In October, with the beginning of the dry season, the Tonle Sap river begins to flow toward the Mekong river. This lasts until April even though the discharge from the upper reach is small. Therefore, the channel downstream of Phnom Penh maintains sufficient depth during the dry season, while the upper reach suffers from a low water level.

With the development of the surrounding area in the Great Lake, the flood control and regulatory function of the lake is anticipated to gradually decrease. The inherent function of the lake will be reduced in future, and the downstream channel will no longer be able to harness the effect of the lake as the buffer zone to keep the channel navigable. Frequent flooding in this reach makes the channel unstable and braided, which decreases the thalweg depth and hinders navigation during the dry season. Construction of embankments along the river is expected to stabilize the braided channel leading to a single channel, and to be effective in maintaining a maximum dry season water depth. This will substantially improve the navigability in the dry season. The development activities, either urban or agricultural, in this area may affect the navigability of the section either positively or negatively. At present, however, available data are very limited. Thus, a comprehensive study of the impacts of the future development of this area on the river channel is strongly recommended.

In the Mekong delta, on the other hand, the seasonal variation is not so prominent. The seasonal water level range is only 3 m at Tan Cho in Vietnam, compared with more than 10 m at Kratie in Cambodia and 6 to

7 m at Phnom Penh. However, the variation associated with tides becomes essential. Although this variation is much less than the seasonal variation in the upper reach, it is still significant for channels which are subject to massive siltation in this area.

Sediment Run-off and Siltation

Another problem encountered in the Mekong river is the huge amount of sediment load running into the river from the basin. It is known that the amount of sediment is rapidly increasing because of the deforestation of the riverside in the basin. The concentration of sediment in some tributaries from Thailand reaches more than 1000 ppm by weight during the rainy season. Compared with rivers in other regions of the world, such as the Japanese or European rivers, whose sediment loads are less than 10 ppm, the concentration in the Mekong is extremely high. This sediment load moves along the river channel as well as estuaries and the sea, and forms sand bars and shoals in the channel, which will eventually increase the volume and costs of maintenance dredging. It therefore directly affects the channel's condition as a waterway. It is anticipated that frequent dredging will become necessary in order to maintain the navigability of the channel. At this stage, the sediment concentration has been measured only at two points along the mainstream.

The construction of dams in the Chinese territory is expected to reduce the sediment run-off from upstream. This is likely to have significant future effects on the channel, such as the gradual deterioration of the bottom of the river, and the possible disappearance of shoals. In the rocky channel, the disappearance of a sandy or silty bed makes obstructive rocks more protrusive. In fact, this is becoming an acute problem in rivers in other regions, specially in Japan and Europe. So far, however, no study has been made on this aspect of sediment run-off, siltation and dredging in the basin. The precise mechanism of sediment transport as well as the relation between deforestation and sediment run-off are yet to be studied carefully in the basin.

PORT LOCATION AND DESIGN

The wide variation of the water level in the river channel causes problems the location of ports and the structural design of related facilities. Since the water surface shrinks significantly during the dry season, ports are normally constructed along the thalweg line from empirical considerations. The best spot is normally on the outer bank slightly downstream of a bend. As suggested by a recent theory, however, the thalweg position is

not stable, and in many places huge amounts of dredging have become necessary several years after port construction. The level of wharves must be adjustable to the water level. Thus, several types of wharf designs are available along the river. The most commonly used in Laos is the inclined wharf. This is designed parallel to the bank with a slight slope, so that vessels can move alongside and cargo can be handled regardless of the water level. The floating type is also common. This is more adjustable to the large water level fluctuation. The pontoons must be constantly adjusted for the abrupt change of water level. Double-step or multiple-step types are also successfully used in China. This is appropriate in a river with extremely large water level changes. The problem is that most of the ports and related facilities have been poorly maintained for a long time and urgent repair and improvement works are needed to meet the increasing traffic demands.

The Upper Mekong

Because of the seasonal variation in the water level, ports in the Upper Mekong need adjustable wharves. So far, multiple-step type wharves have been common in this area, although recently inclined wharves have also been adopted. Two Chinese ports, Simao and Jinghong, are designated as national ports, important gateways to Southeast Asia. These ports are planned to be expanded to meet increasing demands. Ban Houay Xai and Pakbeng in Laos and Chiang Khong in Thailand, equipped with concrete access ramps, have recently been improved. Luang Prabang is the most important among the ports of northern Laos, serving as a transshipment point for smaller feeder vessels which carry most of the traffic in the Upper Mekong. Except for these important ports, most of the existing ports are small and simple, are designed as landing piers built alongside the river, and thus are only used by country boats.

The Lower Mekong

The main navigation problem of the Lower Mekong is again the seasonal variation in the water level. Thadeua port in Laos, the largest port between Luang Prabang and Vientiane, accommodates traffic of 50,000 tons annually. The most important port in the Lower Mekong is Laksi port, located 4 km downstream of Vientiane. With its double-step berth, this port accommodates three vessels during the high-water period and two during the low-water period. Except for several ports for river ferries, Paksane, Blan Sot, Thakhek, and Keng Kabao Port in Laos, and Nakon Phanom port in Thailand function as terminals to be linked with road traffic for Vietnam. Keng Kabao rapids impose serious navigation hazards for larger

vessels during the dry season. The port has a rated capacity of 200,000 tons per year, but its annual throughput in 1992 was significantly below capacity, because of siltation. After Keng Kabao rapids, Savannakhet and Pakse port in Laos, and Mukdahan port in Thailand, are used for ferry services.

The Mekong Delta

Major ports on the Khone Falls–Phnom Penh section include Venue Kham, Kratie, Kompong Cham, and Tole Beth. Except for the recently improved Kompong Cham port, most of these need urgent rehabilitation work both in the port facilities and in navigation channels. Phnom Penh port, located in downtown Phnom Penh, on the right bank of the Tonle Sap river at the confluence with the Mekong, is the main port in Cambodia. Its capacity is already inadequate to accommodate its traffic demands. Major problems are inadequate room for expansion, lack of ancillary facilities including power supply, cargo handling equipment and navigation aids, and extremely silted berth areas and navigation channels. Generally, downstream of Phnom Penh, the most serious problem has shifted from the water level variation to the siltation at berths and in navigational channels. In the Mekong delta, many ports including Can Tho port, which is the most important port in this area, are equipped with fixed concrete piers. Their capacity and ancillary facilities are insufficient to meet the traffic demand and require rehabilitation and expansion (PCI, 1993).

ENVIRONMENTAL CONSIDERATIONS

In the Upper Mekong, increasing traffic demands and safety in navigation necessitate, amongst other things, removal of rock outcrops in the channel. In connection with this rock blasting, however, several side-effects need to be carefully examined. Firstly, the presence of rock outcrops maintains the resistance in the river channel, alternating the flood peak of the channel and delaying the arrival of the flood peak downstream. Rock blasting may cause flood damage downstream unless proper counter-measures are taken. Secondly, the removal of rock outcrops will change the flow conditions, which may increase side bank erosion. Therefore, the development works must be conducted with detailed environmental impact assessments, and should be advanced step by step with constant watch being kept on the effects. Impacts on the river aquatic and the terrestrial ecological systems are inevitable in all development works, but among various transportation modes, river navigation has the least negative impact. Since Yunnan province has been intermittently improving the

river system for the past 15 years, its valuable experiences on the impacts on ecological systems could be usefully applied. It is strongly recommended that all riparian countries disclose their information and data in this context, and share their experiences.

Deforestation of the basin is progressing at a devastating pace, and their impacts on forest ecosystems are reported widely. Deforestation also significantly increases the sediment run-off into the river channel, and adverse impacts on the aquatic ecosystems are almost inevitable. The most significant phenomenon is the siltation of the navigational channel, not only in the upper stream but also downstream. The sediment causes serious siltation in many stretches, as described in previous sections. Recently, reforestation has been conducted in many places in the basin. However, it has been done mostly with monoculture plantations of rubber, pineapple and tea, mainly because they are commercially viable and do not require substantial water supply. However, as seen in many cases, monoculture plantation often causes disastrous problems for many aspects of the forest and the surrounding areas. For the sustainable development of the basin, careful approaches are recommended in this aspect.

Several dam projects are planned in the mainstream and some tributaries of the Upper and the Lower Mekong (see Table 8.3). These are mostly for hydropower generation. With these dam systems, a constant volume of water, for example about 1000 m³/s in the Chinese cases, is planned to be discharged throughout the year. If this is the case, the water depth control for navigation will not have serious adverse effects under normal meteorological conditions. However, under unexpected meteorological conditions, specially with stormy weather, if a huge amount of water is released either to prevent structural damage of the reservoirs or by overflows, it may eventually cause disastrous floods downstream. Also, in the case of drought, on the other hand, release of water from the dams may be reduced and it will adversely affect the navigability of the river. Thus, together with dam constructions, introduction of well-integrated operations and management systems for all the water reservoirs in the entire Mekong basin should be seriously considered.

TRANSPORT INFRASTRUCTURE

The Upper Mekong Basin

A. *Economic Quadrangle*

(1) *Yunnan province.* Yunnan is a landlocked province. Kunming, the provincial capital of Yunnan, is a major industrial city producing surplus

of a wide range of goods and equipment at competitive prices. The present access of Kunming to the sea coast of China is by railway via Canton over a distance of 2000 km, or via Fancheng over a shorter distance. But domestic ports and railways in China are known to be congested (World Bank, 1987). The Yunnan province needs alternative access to the sea in order to reduce transit costs and open up new markets. Three alternative routes through neighbouring countries can provide access for Kunming to the seaports of Yangon, Bangkok and Haiphong. The province is seeking new markets through Myanmar ports via the 'Southwest Silk Road' and through the Eastern Seaboard of Thailand via the Upper Mekong to reduce its external trade dependency on Canton and Haiphong. The upper Mekong corridor is a potential transit route for the external trade of Yunnan province via Thailand. The so-called Economic Quadrangle is located along this route. There are basically two kinds of traffic: transit traffic from China to Thailand and Thailand to China; and bilateral trade among the four countries of the Economic Quadrangle (BECOM, 1994).

Compared with the neighbouring countries of Vietnam, Myanmar, north-eastern provinces of Thailand and Laos, Yunnan province is far more industrialized. In terms of production, the industrial and service sectors account for 60 per cent, while the agricultural sector constitutes 40 per cent of the total provincial revenue. Chinese products and consumer goods in particular are cheaper than those usually imported from Thailand. Yunnan province is already a net exporter. It is further anticipated that Yunnan will develop into a major centre for investment in southern China.

(2) *Myanmar*. Since 1988, the Myanmar economy has moved towards a more market-oriented approach. Steps have been taken to decontrol agriculture, encourage foreign investment, legalize border trade, encourage private sector participation in exports, and increase export profitability by regularization of border trade and adjustment of its currency. Because of its difficult internal economic situation, Myanmar's regional interest is primarily in strengthening bilateral economic ties with its neighbours in order to develop its resources and generate foreign exchange earnings. This is particularly true in the eastern part of Shan state, since there does not exist any kind of industry in this remote area, but only few mining activities (BECOM, 1994).

(3) *Thailand*. The Thai economy has undergone considerable change over the last fifteen years. At the end of the seventies, agriculture employed more than two-thirds of the labour force and produced more than a quarter of GDP. Agriculture value added has now declined to about

12 per cent. Along with rapid economic growth, as experienced during the last decade, signs of infrastructure deficiencies began to emerge in 1990. Infrastructure is under strain, especially roads, ports, and telecommunications in the Bangkok metropolitan region. Despite infrastructure bottlenecks, Thailand remains attractive to investors because of attributes such as good investment incentives, a large pool of low-cost labour, rapidly rising domestic demand, and buoyant export markets. Thailand is a strong proponent of free trade in the area of the Economic Quadrangle. Closer economic cooperation within the subregion is viewed as a way of participating in the vitalization of its neighbouring economies in transition. Today, there are paved roads reaching to almost all parts of north Thailand. Most of the border villages are connected to the electricity grid and water supply. The Thai government is now committed to help develop the north and north-east and diversify economic growth away from Bangkok (ADB, 1994a). Development of the Economic Quadrangle is exactly within the perspective of this policy and strategy of the government. Thai companies are already the most active outsiders in Myanmar and Laos, most visible in logging and mining, but also in tourism and commerce, banking and textile making.

(4) *Laos.* Laos has launched a new economic reform programme since 1987, replacing direct government intervention with a market-oriented approach. The government freed almost all prices, eliminated subsidies and protection of the state-owned sector, and encouraged private domestic and foreign commercial activities in virtually all spheres of economy. In 1992, the external current account improved markedly due to stronger export performances and slower import growth. The economy remains predominantly rural. Eighty per cent of the population is agrarian and produces 60 per cent of GDP, much of it at subsistence levels. Per-capita income remains among the lowest in the world. Owing to its poor infrastructure, over half of the population is living in small and scattered villages without regular road transport, electricity or health facilities. Laos's economy is based on agro-forestry and is aiming at developing further by setting up processing industries with a view to increase export in this sector. Development will be based on agriculture, forestry, hydro-power generation and export-oriented zones which can be served by the ports of Vietnam like Cua Lo (Vinh) which is only 100 km away from the Laos border. However, the priority region is the central provinces of the country, and northern provinces are left behind. These provinces are neighbouring or close to China and Myanmar and have access to Thailand via Bokeo. They have no way of communication with the rest of the

country but by degraded roads or the Mekong river. Their potential in terms of external exchange and related activities is highlighted by this geographical situation (BECOM, 1994).

Subregional Trade Development

With the background as described above, the Upper Mekong basin or Economic Quadrangle has a bright outlook for economic development since all four riparian countries have opened their borders to tourism and trade. The watershed of the Mekong provides ample agriculture, forestry, fishing, mining, energy, transport and tourism resources. The annual economic growth rate is estimated at 8 per cent for the next five years. Despite the differences in economic endowment and stages of development among the four countries, subregional cooperation is seen as a way to further stimulate the economic growth.

Southeast Asia now serves as the production base for a host of industries, from garment-making to basic electronic assembly. Japan, Korea and Taiwan continue to restructure their economies to adapt to the changing international economic environment by relocating their labour-intensive industries to lower-cost countries, particularly in Southeast Asia. Neighbouring countries like Singapore, Malaysia, and more importantly, Thailand, are all looking for such cheaper manufacturing locations. With its export development, due to several liberalization measures, foreign exchange policy and a growing industries output, Yunnan's trade surplus could benefit the market of the Economic Quadrangle provided adequate transport facilities are available. Development of trade in this mountainous area, deprived from communications, heavily relies on the availability of good transport facilities, including navigation on the Upper Mekong, and construction of the Circular Road which is often referred to as the major highway which will link four Upper Mekong riparian countries as well as local and rural roads in Laos and Myanmar.

Upper Mekong Navigation

A Chinese trade mission was first launched in May 1990, which was followed by a reconnaissance mission in October of the same year. It sailed all the way down the Mekong river from Jinghong to Vientiane, to cover the section from the China-Laos border point to Luang Prabang (about 580 km) and from Luang Prabang to Vientiane (426 km). Based on the success of the trade mission, the Chinese government started to study a large-scale programme of navigation development on this stretch of the Mekong to link up China to Laos, Myanmar and Thailand.

The Upper Mekong Associated Survey Team of China, Laos, Myanmar

and Thailand performed the survey from February 1993. The investigations carried out established that in the present conditions the Upper Mekong is navigable all the year round by 60 ton boats, although six shoals would require special winching devices during the dry season to haul boats along them. The survey launch used by the associated team had a capacity of 100 tons, was 34.4 m in length, 6 m in width and 1.7 m in depth, equipped with two 150 HP engines. Its draft at full load was 1.3 m. After completion, a 'Report on an Investigation of Waterway Transportation along the Upper Mekong river of China, Lao, PDR, Myanmar and Thailand' was issued. The report furnishes details of an improvement project proposed for implementation in two stages, the first stage from the Chinese border to Ban Houay Xai, and the second from Ban Houay Xai to Luang Prabang. The project consists of river training, dredging, rock-blasting and other measures meant for increasing river-borne transport capacity, including an efficient system of aids to navigation. Subsequent to the joint survey and official meetings undertaken among the four riparian countries, commercial navigation, mainly for tourists, commenced between Jinghong in China and Chiang Kong/Chian Saen in Thailand in May 1993, using cruise ships with 35 to 60 passengers, operated by a joint venture between Thai and Chinese companies. This has been followed by participation of other joint venture companies in this tourism/transportation business (Figure 8.8).

The river crafts engaged in the business have gradually increased in number and capacity, with the largest accommodating more than 100 passenger seats. The transport services have also considerably improved from the several days taken for a one-way trip at the time of initial operation to less than half a day in 1994, reflecting remarkable improvement in the propulsion of ships. The transport businesses have encountered some difficulties which resulted in occasional disruption of services, such as low water level in February 1994, and navigation control by the Laos authority. In January 1994, officials from China, Thailand, Myanmar and Laos met in Kunming and agreed to open the Upper Mekong river to tourism and trade, and agreed to draft an agreement for necessary authorization by the four riparian countries, and further to set up a joint administrative committee to oversee the project. This initiative eventually culminated in the formal agreement in October 1994 (Thaitawat, 1994).

Navigation Channel

The Upper Mekong river, in its present condition, is navigable all the year round for 30 ton boats with a draft of not more than 1.0 m. It would be navigable for 60 ton boats if they were assisted by winching in six

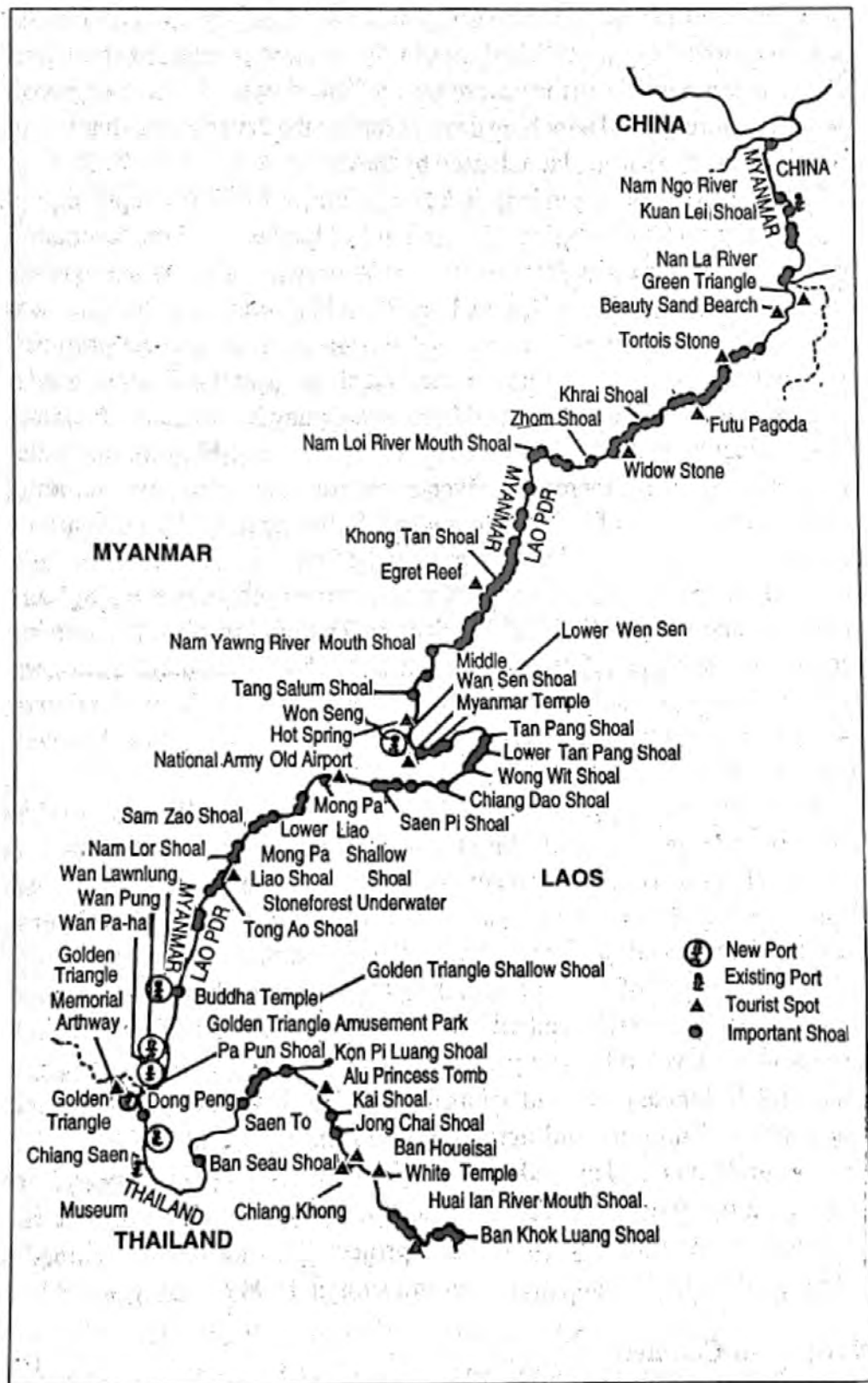


Figure 8.8. The Upper Mekong navigation channel.

shoals. In the dry season, rocky outcrops with swift currents are found in the channel. There are about 100 rapids and shoals with 1.5 m of least available depth. Four shoals are found with depths of only 1.2 m and one shoal with 1.0 m depth. In the rainy season, strong currents have to be coped with but ample water depth is available. A detailed description of the rapids and shoals of the Upper Mekong river is given in the report prepared by the Upper Mekong Associated Survey Team. The major navigational characteristics are summarized below.

Simao (China) to Myanmar Border: At present, the section of the river from Simao, passing Jinghong to the border of Myanmar is wide and navigable all the year round by boats of 150 ton up to 300 ton capacity. The section stretches over 150 km of the river channel.

Myanmar Border to Laos Border: The most difficult section of the river is where it forms the boundary between Myanmar and China for 31 km. The large number of rapids and shoals would hinder navigation at low water. The navigation channel meanders between rock outcrops with swift currents. There, navigation is restricted to boats of 60 ton capacity in the dry season and 150 ton capacity in the high water period (April–November). The furthestmost point of the Mekong river in China is at the mouth of the Nlar river, a tributary of the Mekong. This point, called the green triangle, is the three-country connecting point between China, Myanmar and Laos.

Green Triangle to Ban Houay Xai (Laos): The part of the river forming the border between Myanmar and Laos, which stretches over a 297-km channel, is navigable all the year round by boats up to 50 ton capacity, provided that special devices are available to haul boats along difficult shoals and rapids. Navigation is also hindered by rock outcrops, shallow spots, sharp bends and strong currents.

Ban Houay Xai to Pakbeng: During the dry season, this section of about 200 km has sand bars in many places with shallow waters. Draft is restricted during the low-water stage to 0.5–0.8 m and the river is navigable only with 15-ton country boats. Navigation is hampered by rocky passages and strong currents.

Pakbeng to Luang Prabang: This section of the Mekong, 163 km in length, is relatively good in terms of navigation. Part of it is equipped with aids to navigation. Navigation is possible all the year round with boats of less than 50 ton capacity. Boats of 100–150 ton capacity can be operated at medium to high water levels. The Nam Ou is one of the tributaries of the Mekong river with its mouth located some 24 km upstream of Luang Prabang, and is navigable. Typical 14-ton wooden cargo-cum-passenger

boats can operate up to Pak Bak over a distance of 96 km from the mouth. At Pak Bak, this waterway is connected with the road system linking to the National Road No. 2.

The Lower Mekong Basin

External Transport System

The Lower Mekong basin, as defined in this chapter, consists of northeastern provinces of Thailand and nearly the entire provinces of Laos. While the road network on the Thailand side is well-developed within the range of one day's drive by bus or truck to Bangkok, the transport system in Laos is yet to be developed. Laos is a land-locked country where external trade mostly transits via Thailand and Vietnam. This situation inevitably necessitates the integration of the Mekong river transport with the road networks. At present, three major transport corridors are available for the external trade of Laos, namely Vientiane–Nong Khai–Bangkok, Thailand; Vientiane–Keng Kabao–Danang, Vietnam and Savannakhet–Mukdahan, Thailand. In future, additional alternative corridors are likely to be opened, such as from Venue Kham to Phnom Penh and Ho Chi Minh, the Mekong river to Vinh via Route 8 and, in the north, Pakbeng–Oudom Xai to China and Vietnam. It is to be noted that all corridors need to link the Mekong waterway with highways. In other words, the Mekong river transport will continue to play an important role in the external trade of Laos (PADECO, 1994).

Transport Network in Laos

The major transport routes in Laos follow the north–south pattern of population distribution, with east–west links to the borders with Vietnam and Thailand providing access to those countries and their seaports. The public road network, which totals 1,300 km, excluding forest and mining roads, is mostly in a deteriorated condition, apart from sections recently completed under external financing. The road network consists of national, provincial and local roads. As of 1993, only 20 per cent of the total network is paved. National roads, linking major towns and provincial capitals, and providing connections with neighbouring countries, total 3390 km, of which 1620 km are paved; the rest have gravel or earth surfaces. The provincial road network, totalling 5640 km, comprises roads connecting towns and larger villages within provinces. Only 575 km of the network are paved, with the remainder mostly earth-surfaced. Many of the

national and provincial roads were constructed in the 1930s and 1940s and were not designed for heavy commercial vehicles of the type now in use. The maximum load limit of the bridges in the national road network is currently 20 tons, with 18 tons or less for the majority of the bridges (ADB, 1993c). The spine of the road system consists of National Road No. 13, which links Pak Mông in the north with Veune Kham in the south and passes through the major urbanized areas of Luang Prabang, Vientiane, Savannakhet and Pakse (Figure 8.9).

Waterborne transport on the Mekong river is also a major mode of domestic transport of goods and passengers in Laos. The Mekong river, which flows through Laos for some 2000 km, provides a natural means of transportation. Since port facilities have been built in Keng Kabao and Vientiane (Lak Si), the traffic on the river is expected to increase substantially. In a number of provinces such as Phong Saly, Bokeo and Oudomsay, villages have been built along the river which are remote from any access road. Cheap intervillage transportation is required to facilitate local commerce and link the villages with the urban areas.

Navigation Channel

Navigation on the Mekong river in Laos is hindered by a large variety of obstacles, included among which are rock outcrops, sharp bends, shoals, sand-bars and rapids. The nature of the obstacles depends on the stretch, and for each stretch the obstacles also change in their extent or magnitude depending upon the season. The Mekong river flows within Laos or along the border between Thailand and Laos over a total length of 1764 km from the northern border with Myanmar to Venue Kham near the border with Cambodia. Rapids and waterfalls prevent navigation over some sections of the river. During the low-water period, navigation is restricted or partly interrupted (BECOM, 1994). The network is, accordingly, often broken down into the stretches as described below.

Myanmar Border to Luang Prabang: On this section of the channel, about 360 km, navigation is possible all the year round with river craft of 60 to 150 tons, depending on the water level which changes seasonally. Navigation is hindered by rock outcrops, strong currents, sharp bends and shoals.

Luang Prabang to Vientiane: This section stretches over a 425-km-long channel and navigation is limited to boats with a capacity of 60 tons during the low-water season. Current velocities in the rapids are reported to be in the order of 3 m/s with peaks as high as 6 m/s in the narrow streams.



Figure 8.9. The Lower Mekong and Laos' transport network (ADB, 1993b).

Navigation from Luang Prabang to Pakkhone is hazardous, especially during the dry season. Goods and passengers are generally transferred to trucks at Pakkhone, 40 km by road from Luang Prabang. Navigation on the 113-km stretch between Vientiane and Sanakham is hampered by continuous rapids over a distance of 30 km from Ban Sampana to the spot about 20 km upstream of Vientiane. During the dry season, only boats with strongly built hulls and operated by skilled pilots can negotiate the swift currents, sharp bends and rock outcrops. In such conditions, boats are restricted to 15 tons in capacity and 25 m in overall length.

Vientiane to Keng Kabao: This section extends over a 433-km-long channel, and navigation is possible most of the year with vessels of 150 ton capacity which could be increased up to 1000 tons during the 6 to 8 month period of high water. During the low-water season, however, draft may be restricted down to 0.7 m due to shallows, sand-bars and rock outcrops, thereby preventing navigation except for boats up to 30 tons in capacity. Rocks and shallow water hinder navigation at a number of places, especially between Pak Kading and Thakhek. Sand-bars spread over from Vientiane to Keng Kabao, some of them reducing the channel width to 20 m. Mainly owing to meandering problems and swift currents, difficult passages exist 6 km upstream of Keng Kabao during the low-water period. During the high-water period, the channel alongside the river bank is used, thereby avoiding the rapids. The newly built port of Keng Kabao is the transit point for most of the traffic from and to Vientiane.

Keng Kabao to Savannakhet: The 26-km-long stretch from Keng Kabao to Savannakhet used for traffic destined for, or originating from, Savannakhet and Mukdahan, Thailand, is hampered by the rapids of Ban Pong Kham.

Savannakhet to Khemarat: Navigation further southwards from Savannakhet is interrupted by a number of rapids in the vicinity of Khemarat. Goods from and for Pakse are shifted to the road at Phak Thapan.

Khemarat Rapids to Khone Falls: Navigation resumes downstream of the rapids from Pakse to Khinak on Khone Island. Boats of 50 tons can operate during the rainy season from Pakse to Mounlapamok. Local navigation is possible all the year round with small boats of 8 tons. Navigation ends at Khinak before the Khone Falls.

Khone Falls to Cambodia Border: In the downstream of the Falls, navigation is possible from the port of Venue Kham to the ports in Cambodia with boats of 200 tons.

The Mekong Delta

Navigation Channels in the Mekong Delta

In the Mekong delta, the Mekong river has been the international channel for navigation to Phnom Penh, Kompong Cham and Kratie in Cambodia, and a maritime channel for ocean-going vessels, river craft and coastal vessels calling at river ports in South Vietnam. Navigation on the Bassac river and Mekong river mainstreams is restricted to ships with limited capacity owing to siltation at the river mouths. The main entrance to the Bassac river is deeper than that of the Mekong river and the channel of the Bassac river has recently been deepened to a depth of 4.5 m below chart datum, whereas the depth is only 2.3 m at the entrance of the Mekong river. The Bassac river is navigable for sea-going vessels with a bigger draft than on the Mekong river over a distance of 180 km from the entrance, but is not navigable further up to Phnom Penh. Sea-going ships have to use the 8-km-long Vam Pass linking the Bassac to the Mekong by way of the western Mekong arms at Cu Lao Tay Island (Figure 8.10).

Navigability of the Mekong river, in particular during the dry season, could be substantially improved by dredging of shallows, installation of navigation aids and removal of sunk ships. The Mekong river is also connected with the numerous canals in southern Vietnam, thus linking the river system to the port of Saigon. This route is used with convoys of river barges thereby competing with the sea-going route between the ports of Phnom Penh and Saigon. The barges are loaded in Kompong Cham, Kratie and other landing places along the Mekong river. A number of smaller rivers have an important role for the local transport of both passengers and farm produce. The whole navigable waterway system is estimated at 1750 km, out of which some 600 km are usually navigable all the year round.

The Mekong River in Cambodia

The Mekong enters Cambodia from Laos in the north, and flows through the centre of the country to Vietnam in the south. At the downstream of Phnom Penh, the Mekong river forms two branches, of which the western branch is called the Bassac river while the eastern branch is the Mekong river. At a distance of 178 km from the coast along the Mekong and 190 km along the Bassac, the two branches are connected by a bypass called Vam Nao pass. The Bassac river upstream of the border with Cambodia is not navigable. The vessels have to pass the Vam Nao pass and take the Mekong river to reach Phnom Penh. The water depth of the Bassac downstream of the Vam Nao pass and upstream of the mouth is more than 6.3 m at low water.

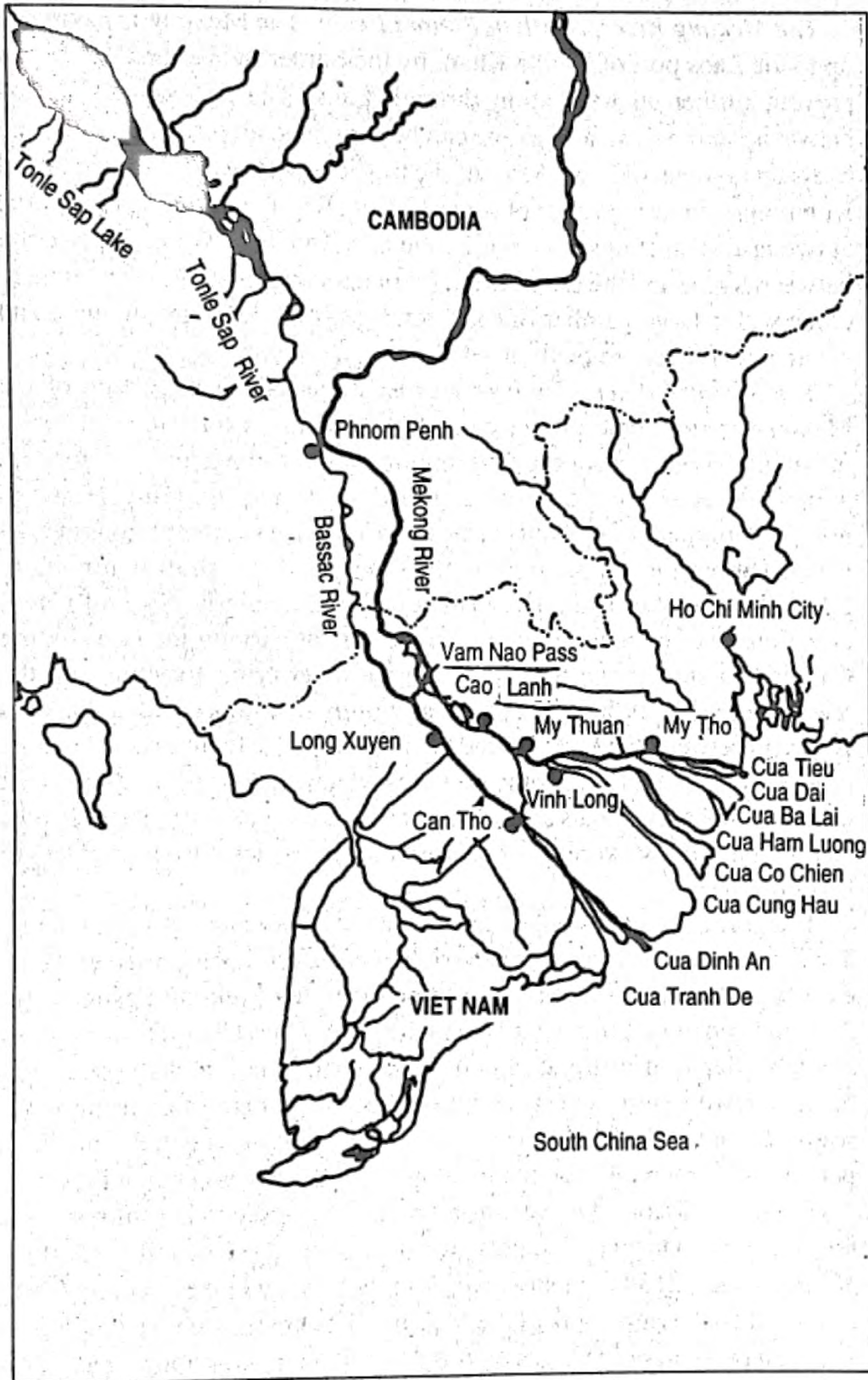


Figure 8.10. The Mekong delta.

The Mekong River, North of Phnom Penh: The Mekong is navigable up to the Laos port of Veune Kham by the border, while the Khone falls prevent further-up navigation through Laos. The 215-km-long reach between Phnom Penh and Kratie can be navigated all through the year by boats up to some 400 dwt. Most of the traffic is between Phnom Penh and Kompong Cham, a distance of some 100 km. Regular dredging is required at two critical sections between Kratie and Kompong Chm. The section between Kratie and the Laos border (about 200 km) is shallow and treacherous with a large number of rock outcrops. Accidents are frequent and channel markings are badly needed.

The Mekong River, South of Phnom Penh: Since this reach of the Mekong carries some 60 per cent of the country's total foreign trade, including 95 per cent of the fuel imports, it has to be kept open for sea-going vessels all the year round. The draft during the rainy season is normally limited to 4.4 m but can be up to 5.5 m for shorter periods at high water. During the dry season, on the other hand, the draft is limited to 2.5 m, or even 2 m if the river is not dredged regularly. Several places along the river have to be dredged regularly at varying intervals on the Cambodian side of the border. There are other critical sections on the Vietnamese side of the border such as within the estuary and at the Vam Nao pass between the Mekong and the Bassac rivers. In the access channel to Phnom Penh, there are some passages which are hazardous due to lack of navigation aids, shoals and sunk ships. In addition, due to sharp bends, navigation in the Mekong river in Cambodia is restricted to ships of length less than 100 m.

The port of Phnom Penh is located at the confluence of the Mekong, Tonle Sap and Bassac rivers, on the right bank of the Tonle Sap river. Ships calling at Phnom Penh port have to navigate the Mekong upstream for 332 km from its mouth at Cua Tieu in the South China Sea. The maximum available depth of water at Phnom Penh during the low-water season is 5.5 m, allowing ships with a maximum draft of 5.1 m to enter the port. Towards the end of the low-water period, the maximum draft at Phnom Penh is reduced to about 4.2 m due to siltation in the access channels.

The ports of Kompong Cham and Kratie are of secondary importance, now catering to local traffic only. Kratie is located on the left bank of the Mekong river, 213 km upstream of Phnom Penh, while Kompong Cham is located on the right bank of the Mekong, 124 km upstream from Phnom Penh. At present, only barges of 400 dwt sail up to Kompong Cham. Provided that adequate improvement works are achieved, ships up to 4 m draft will be able to reach Kompong Cham.

Inland Waterways in Vietnam

As mentioned earlier, the Mekong river forks into two main distributaries, namely the Mekong (Tien Giang) and the Bassac (Hau Giang). The Mekong flows through Vietnam over 330 km and discharges into the South China Sea through four distributaries, namely the My Tho, Ba Lai, Ham Luong and Co Chien rivers. The main estuary is Cua Tieu, dedicated to maritime navigation.

The 319 km long Bassac river has three estuaries namely, Cua Dinh An, Cua Long and Cua Tranh De, the main entrance being Cua Dinh An, dedicated to maritime navigation. Sedimentation in the Mekong river and its distributaries is high. The river is deep and broad, but the water gets shallower in the estuaries and at the confluence of secondary rivers and canals. The Mekong and Bassac rivers are cross-connected by three main branches or man-made canals, namely the Vam Nao pass in the north, the Sa Dec canal and the Tra-On/Mang Thit canals in the south.

Hundreds of waterways, varying in size, interlace in the Mekong delta, including the main channels of the Mekong distributaries, secondary rivers, natural creeks, and irrigation, drainage and navigation canals; thereby offering a complete network of navigable waterways totalling as much as 4785 km of which 1600 km can be regarded as main navigation channels. However, the total length of canals of depth more than 2.0 m is 1690 km. Furthermore, the depth denoted as least available depth in the main navigation channels referred to above, ranging from 2 to 3 m, is actually unknown owing to the lack of up-to-date soundings, thereby underlining the urgent need for hydrographic surveys. The Mekong-Bassac river system is also interconnected with the Dong Nai river system through man-made canals of which the most important is Cho Gao canal. Thus, the entire Mekong delta area is linked to Ho Chi Minh City and its domestic and international ports by waterways (Akatsuka and Yamaguchi, 1993 and Yamaguchi and Akatsuka, 1994) (Figure 8.11).

The waterways in the Mekong delta are quite stable, although affected by tides. The Mekong and Bassac rivers are very deep whereas transverse canals and secondary rivers are shallower and narrower with rather sharp bends. In particular, the channels parallel to the coastline are very shallow at low tide. Rivers and channels with a depth of more than 1.2 m account for 80 per cent of the total length used and those with a minimum depth of more than 2 m account for 50 per cent.

The transport system of the Mekong delta in Vietnam largely depends on the dense and efficient network of navigable waterways and therefore

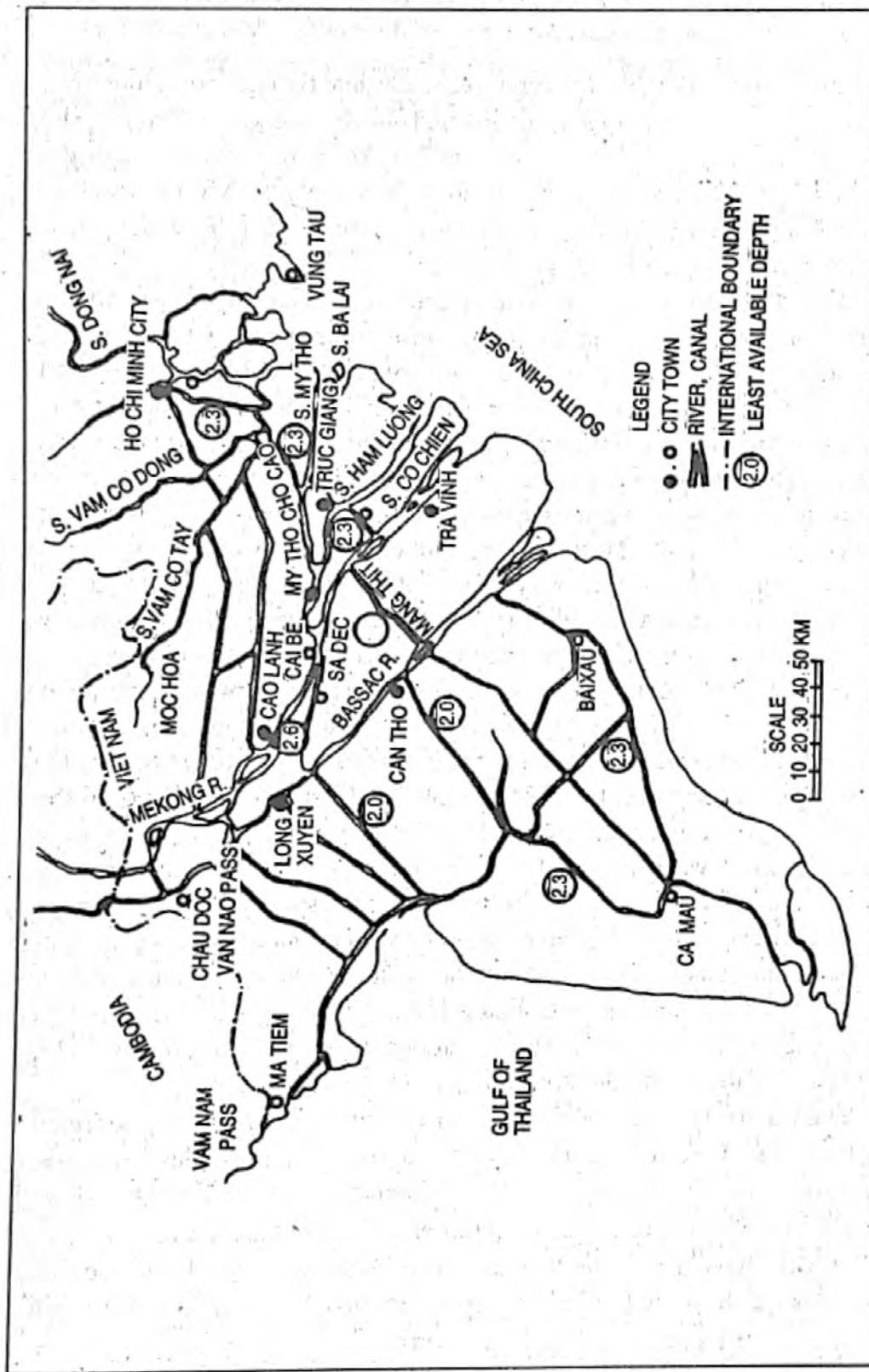


Figure 8.11. Inland waterways in the Mekong delta.

the share of road traffic is relatively small. In the Mekong delta area in Vietnam, the total length of main inland waterways is 4975 km, to compare with a total of 5774 km of national and interprovincial roads.

In the mouth Cua Tieu, the water depth of the Mekong mainstream is 2.10 m, restricting all navigation on the Mekong river to ships up to 2000 dwt (4.5 m draft). The Mekong provides navigation for coastal and sea-going vessels to the river ports in Vietnam, and further, hundreds of waterways varying in size interlace in the Mekong delta, including man-made canals, serving the rice-growing area of the Mekong delta.

Vessels up to 15,000 dwt with draft of 9.3 m can call at the Saigon port, the annual capacity of which is currently at the level of 4 million tons. The port is subject to the tidal effect which ranges from 3.6 to 4 m. The port of Binh Dong at Saigon serves the inland waterways traffic of South Vietnam. It is located along the canals to the west of Ho Chi Minh City. The total yearly traffic of the port is 500,000–700,000 tons. Traffic growth is a major concern for the ports of Ho Chi Minh City, and additional capacity will be required. Several projects are being considered to expand port facilities either within the existing port area or preferably outside. Among these projects are the extension of the port of Binh Dong along the Ben Luc river, the development of the port of Tan Thuan on the Saigon river for coastal vessels, and the river port of Phu Dinh for coastal vessels.

A deep-water port system is provided in the Ho Chi Minh City Master Plan, including both the ports of Thi Vai and Vung Tau. At present, there are some shallow berths at the port of Vung Tau which is located right at the Vung Tau municipality. The site of the future port of Thi Vai is located on the Thi Vai river, 20 km from Vung Tau. The Thi Vai river is deep and stable. Port facilities can be built there to accommodate ships up to 30,000 and 50,000 dwt. Thi Vai and Vung Tau will become the deep-water port complex needed to relieve the Saigon port complex from future congestion.

Highways and Railways

The highways of Cambodia have seriously deteriorated due to lack of maintenance for the past twenty years. The road network, however, continues to function, although travel by road often is extremely difficult and costly. Many bridges are in a state of disrepair. The necessary programme of road rehabilitation is expected to last for a long time and to require large investments. The road No. 4 from Phnom Penh to Sihanoukville was built in 1957. The width is 7 m and the road is still in fair condition, but a number of bridges are in a state of disrepair. They are constantly being repaired

provisionally to ensure passage of traffic with limited axle load (Swe Road, 1994).

The shortest road leading from South Vietnam to Cambodia is Route 1 in Cambodia and Route 22 in Vietnam, totalling 240 km from Phnom Penh to Ho Chi Minh City. The road is asphalt-paved but degraded in some sections along Route 22 in Vietnam. The road breaks at the Mekong river at Neak Leung where transport is by ferry. The trip from Ho Chi Minh City to Phnom Penh by car requires 8 hours including border checking point formalities. Other roads are Route 7 in Cambodia and Route 22B in Vietnam, from Kompong Cham to Ho Chi Minh City, which is also asphalted, and Route 13 extending from Kratie to Ho Chi Minh City which is asphalted but reported to be in poor condition (BECOM, 1992).

Vietnam's National Highway No. 1 links the provinces of the Mekong delta in Vietnam to Ho Chi Minh City. Its surface is degraded and there are two ferries on the way at My Thuan and Can Tho. The width of the Mekong at My Thuan is 700–800 m. The ferry service is provided on a 24-hour basis. However, congestion is often encountered, with the bottleneck apparently being the inadequate transfer facilities from the road onto ferries. Construction of a bridge is planned at My Thuan. A similar ferry service operates across the Bassac river at Can Tho, although the traffic, and therefore the waiting time, are less.

The 262.6-km-long single-line track of metre-gauge railway linking Phnom Penh to Sihanoukville was built over the period 1960–69. Since then, the railway has been operated with limited maintenance, without renewal of equipment and limited replacement of rolling stock. Poipet is the gateway for the 665-km-long railway linking Bangkok with Phnom Penh. The 385-km-long railway from Phnom Penh to Poipet was built over the period 1929–43. While the service was interrupted since 1961 upon disruption of diplomatic ties between the two countries, the governments of Thailand and Cambodia have recently agreed upon the reopening of this rail link. This reinstatement will not only provide an important economic trade route between Thailand and Cambodia, but also a link between Thailand and Vietnam along the route Bangkok–Phnom Penh–Ho Chi Minh City either by road or by river from Phnom Penh to Ho Chi Minh City. The reopening of the railways is expected to stimulate economic activities in Cambodia, increasing the traffic through the port of Phnom Penh and on the maritime section of the Mekong river. At this moment, there is no railway which links the Mekong delta in Vietnam with Cambodia.

ISSUES AND PROBLEMS

Early in the 1950s, the United Nations proposed a study for the comprehensive development of the Lower Mekong basin. Since then, many feasibility studies and field surveys have been carried out on various development projects for hydropower, irrigation, navigation, fisheries and flood control. Some of the studies resulted in the implementation of several domestic projects. However, the outbreak of the Vietnam War in 1954 which lasted two decades, and subsequent hostilities in the region, made it extremely difficult to further international cooperation for the basinwide development projects. While a number of studies and surveys have been conducted for possible development projects, being sponsored by the various United Nations agencies and several donor countries since then, the majority of the proposed projects were shelved until recently because of the international circumstances surrounding the region. Most of these studies and surveys focused on the possible development of water resources mainly for hydropower and irrigation, over which there tends to be a conflict of interest among the riparian countries. It is to be noted that the recent environment for regional cooperation has distinctly favoured the development of transport and communications infrastructures. It is not a mere coincidence that the development of Mekong navigation is the first project agreed upon among the Upper and Lower Mekong riparian countries. We believe that it reflects the common understanding among the riparian countries that the development of transport infrastructure is urgently needed, and that the Mekong river transportation is readily and commonly available if they agree upon the basic requirements for international navigation.

Development of the Mekong inland waterway is now one of the top priority projects as confirmed at the Third Conference on Subregional Economic Cooperation among the six riparian countries which was convened in Hanoi in April 1994, with Asian Development Bank assistance. Underlying this philosophy appears to be the fact that where and when people and goods move with mutual benefit, the environment for further regional cooperation will be gradually developed in other areas such as hydropower and irrigation as well. Navigation itself does not consume water resources nor does it cause adverse impacts on the environment. The navigation channels, if well connected with regional highways such as Routes 8, 9 and 12 which are expected to become east-west corridors connecting Thailand, Laos and Vietnam, will provide land-locked

countries/provinces with easy and quick access to the sea ports in Vietnam and Thailand. In this context, the riparian countries will equally benefit from the development of the Mekong navigation channel.

While through navigation is not possible from the estuary to the Upper Mekong, because of the Khone Falls, the Mekong is still the most important integral part of the transport network in the basin area. There are many issues and problems to be resolved to improve navigability, to secure the safety of navigation and to provide the riparian countries with reliable and economical means of transport of goods and passengers. Listed below are those considered, among others, particularly important for the development of the Mekong river navigation.

Removal of Navigation Hazards

Numerous rock outcrops, sand-bars, shoals, rapids, sharp bends and sunk ships have been identified as navigation hazards in various sections throughout the Mekong river, though these differ in their magnitudes, extent and nature from section to section. Blasting, dredging, training and other appropriate measures are needed to remove these hazards to guarantee the safety of navigation.

Deepening of Channels

Available depths vary from section to section throughout the navigation channel and also from the Upper Mekong to the estuaries in the Mekong delta. Such changes in available water depths, in addition to the seasonal changes in water level in the Upper and Lower Mekong and the tidal change in the Mekong delta, adversely affects navigability, impairing the reliability and economy of river transport. In the Upper and Lower Mekong, it is not feasible to maintain channel depths unchanged throughout the year. However, it is extremely important to guarantee the minimum depth, if possible, over the entire channel of the Upper and Lower Mekong during the dry season and in the Mekong delta during low tide. If guaranteed, it will definitely enhance the reliability and economy of the river transport. Maintenance dredging, river training, navigation aids and other appropriate improvement works are needed.

Water Storage and Reforestation

Throughout the Upper and Lower Mekong, deforestation due mainly to logging and slash-and-burn farming has been rapidly proceeding, with consequential increase of sediment run-off and of siltation downstream. Further deforestation should be discouraged and reforestation should be encouraged, to minimize the sediment run-off and to preserve watershed

areas. Construction of water reservoirs either in the uppermost part of the mainstream of the Upper Mekong or in the tributaries, may be effective in reducing the sediment run-off. The controlled discharge of water from the dams is expected to be effective in maintaining the minimum depths during the dry season. However, there is a potential risk of uncontrolled discharge of redundant water from the dams during the rainy season, causing unexpected and unusual floods and consequential disasters downstream. If a number of large reservoirs are to be constructed, the introduction of an integrated operations and management system for these dams should be seriously considered.

Provision of Port Facilities

A number of ports and landing facilities have been built along the navigation channels in the mainstream as well as the tributaries, either as terminals at the nearby community centres or as nodal points interconnecting the main river transport with land transport. In any case, without port facilities the river transport system cannot serve its purpose. Well planned, designed and constructed port facilities are essential for safe, reliable and efficient handling of passengers and goods. The majority of the existing port facilities are not either well planned, designed or built to accommodate newly introduced river craft. Many were left without adequate maintenance and in a state of disrepair during the years of hostilities and conflicts. Urgent rehabilitation, upgrading, improvement, expansion and new construction projects have been identified.

Institution Building for Safety, Regulation and Management

While agreements have been reached among all the riparian countries on the free navigation of the Mekong, administrative institutions and effective arrangements are yet to be built up for the safety, regulation and control, and operations and management of navigation. As the traffic increases, the risk of accidents, such as collision, fire or shipwreck, and crime and other problems can be foreseen to increase. At this moment, the provision for such risks and better operations and management seems to be minimal or entirely lacking.

Research and Development

A great number of development projects have been proposed in the Mekong basin. While some are just conceptual, most of them are more or less based on the feasibility studies and field surveys. Unfortunately, however, the most fundamental data and information in the fields of hydrology, hydrography, hydraulics, topography, soils and sedimentation

of the Mekong are not necessarily adequately available or up-to-date to fully support the recommended projects. Data and information of ecological and environmental aspects of the Mekong basin are also yet to be studied and published. There are many cases where some statistical data conflict with each other between different reports on the same subjects. To facilitate better understanding on the issues and problems to be attended to, sharing of correct information and data is most important. It is very fortunate that excellent coordination efforts have been initiated by the riparian countries, as demonstrated in the case of joint surveys conducted by the Upper Mekong Associated Survey Team.

Development of Integrated Network of Transport

Even if the navigation channel of the Mekong is fully developed, it is not adequate to offer full transport services to all the communities and inhabitants in the Mekong basin. Only where river transport is adequately interconnected with other modes of transport, that is, road or rail transport, can passengers and cargo complete the entire trip from origin to destination. Therefore, development of the road network and connection with the existing railway system are as important as the development of inland waterways. In this connection, it is to be noted that while water-borne transport has its own merits in its capacity and energy consumption, it has many disadvantages as well.

In the Upper and Lower Mekong basin, the road network is still to be developed and the roads need to be paved and bridges need to be strengthened. The load limit of the majority of bridges in the region is about 10 tons or less, with the largest capacities being 18 to 20 tons in exceptional cases, even on the trunk national highways (excepting the road network in Thailand). Trucks and buses in the basin are limited to about 10 tons overall weight, with a carrying capacity of about 5 tons (pay load) at most. On the other hand, a river barge of 100 tons can carry a pay load of 100 tons or even more, depending on its design and size, which is equivalent to the load to be carried by a fleet of twenty 10-ton trucks. This implies that at the intermodal terminals, adequate open yards for parking, loading and unloading, ample storage space of sheds for goods, well-prepared shelters and amenities for passengers, and ancillary facilities will be required to facilitate efficient transportation services.

CONCLUDING REMARKS

This study, with particular emphasis on the navigational aspects of the Mekong river, was initiated as a part of the writers' common interest in

the inland water transport in Asia. In recent years, East Asia has been the centre of economic growth in the world. However, the growth is too rapid and the most basic infrastructures such as transport, power supply and telecommunications are under severe pressure and tend to become obstacles to the economic growth, as typically witnessed in Thailand. Under the circumstances, inland water transport, if the rivers, either domestic or international, are navigable, offers a readily available, economical and energy-saving mode of transport. As a matter of fact, inland waterway transport projects have already been implemented with the financial assistance of the World Bank and Asian Development Bank in Bangladesh, Myanmar, Thailand, and Indonesia. The potential for the development of inland waterways has been studied in Vietnam and China under UNDP and World Bank assistance, respectively.

While the Mekong is now open for international navigation under the agreements recently reached by the riparian countries, China, Myanmar, Laos and Thailand for the Upper Mekong, and Laos, Thailand, Cambodia and Vietnam for the Lower Mekong, actual access to the river was not so easy when this study was conducted. In other words, authors access to the Mekong was very limited on certain occasions and in some locations, which was to be expected, considering its enormous expanse. Under these circumstances, this study heavily relied on the various reports, documents, information and data collected by the authors and their colleagues in the field and from other sources. There may be errors in data quoted and information gaps between the current situation of the Mekong and what is reported in this study. A more precise and comprehensive profile of the Mekong needs to be developed.

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9 / Transformation of a River Basin Authority: The Case of the Mekong Committee

MORRIS MILLER

It is without great legal significance whether an Authority . . . is a new one or a modified Mekong Committee. What is important is the way it is designed to bring the states together into closer association and to achieve comprehensive integrated development of the basin for the benefit of all the people of the basin . . .

To be effective, the Authority should have sufficient political power, technical capability and financial capacity . . . Under existing conditions it is presumptuous to envisage the establishment of such an ideal mechanism in the Mekong region (but) for the immediate future, it may be practicable to tackle the issue of power in a lower key, that is, *to enlarge the functions and power of the Mekong Committee to meet the minimum requirements of an integrated plan of development. . . .*

—P. K. Menon, 'Some Legal Aspects of the Committee for the Co-ordination of Investigations of the Lower Mekong Basin', *Journal of International Water Law*, 1972

WHY EXAMINE THE FUNCTIONING OF THE MC? WHY NOW?

Though written over two decades ago, the comments by an official of the United Nations, quoted above, seem even more applicable today. During the fourth decade of its existence that dates from 1957,¹ the Mekong

¹ Even a very brief sketch of the history of the MC's establishment should refer back to key actions undertaken before 1957; in 1949, the UN's Economic Commission for Asia & the Far East (ECAFE) through its Bureau of Flood Control carried out a study on the Lower Mekong basin's water resource potential; in 1955, the U.S. Bureau of Reclamation undertook a number of studies of the Mekong's hydrology and related aspects; in 1956, ECAFE initiated a full-fledged survey to assess the potential for hydropower irrigation and flood control. This was followed the next year by a decision at ECAFE's thirteenth session to establish the Committee for Coordination of investigation of the Lower Mekong Basin as an autonomous organization comprised of four member states. It is popularly known by its shorthand name, the Mekong Committee.

Committee (MC) has arrived at a critical juncture. The catalytic factor has been the action taken in 1992 by the Thai government requesting the UN to recall the MC's Executive Agent. The request was initiated within the Thai government by the Thai National Mekong Committee. In its impact this action has raised the broader questions as to (a) whether the MC should continue to exist as a water-focused regional agency, (b) if so, whether its continuation as an *effective* institution calls for radical changes in the statute that ostensibly governs its organizational structure and mode of operations, and (c) what those necessary changes *should* be and, given the political composition of the MC, with one member relatively much more powerful economically than the other three, what those changes realistically *could* be.

Critics of the MC point to the fact that in the span of over three and a half decades of its existence not one major *regional-scale* project has been undertaken. Of the world's largest rivers, the Mekong river remains the least harnessed. The people of the riparian countries have, thus, been denied the enjoyment of the river's full potential. 'Why then,' it is being asked, 'have a MC at all?' Other variants of this type of question are being asked:

'Could not the MC's 'core functions' of hydrological and other surveys and related analyses and training be done at less cost and with fewer illusions by a regional foundation or institute?'²

'Could not the modest record of Mekong-related project development have been realized without the intervention of the MC?'

The standard answers make reference to three types of achievement:

- (i) the MC's 'core function' programmes are essential to provide the informational foundation for justifying present and potential programmes and projects,
- (ii) the MC has identified programmes and projects and has had some success in soliciting funding for them (almost all of which activities have been for the three poorer riparians), and
- (iii) the MC has provided technical assistance to its member countries thereby enabling them to improve their analytic skills in project

² The possibility (but not necessarily the advisability) of establishing 'a Mekong foundation' is mentioned in the *Report of the Senior Riparian Advisers for the Mekong Priority Functions Review* (Information Note by the Policy & Planning Division of the Mekong Secretariat, October 1991), p. 4. The reference is to hydrological monitoring and related data collection functions that need continuity and consistency and, therefore, need assured funding that is not subject to the uncertainties of contributions by fickle donors.

identification and preparation and, as well as their operational capabilities (almost all of which activities have also been focused on the three poorer riparian countries that have been most in need of such assistance).

In reply to critics that judge these achievements to be modest, the supporters of the MC point to the extenuating circumstances of the period, namely, the devastating wars that brought death and destruction to that part of the river basin region occupied by the three poorer riparian countries.

Notwithstanding the MC's modest but positive achievements and the compelling logic of treating the river basin in an integrated way, the voices of the critics—largely Thai—have become louder and more frequently heard. This reflects a weakening of political will to cooperate, at least to do so *through the intermediation of the MC*. For the sceptics it does not suffice to point to the fact that three of the riparians were, until recently, engaged in conflict. The factor, it is felt, provides only a partial explanation for the lack of substantial progress. Nor are they moved by the argument that the very fact that the MC has survived—albeit after 1976 as the Interim Mekong Committee—is testimony to the intrinsic strength of the MC as a concept and as an operational institution.

To make a convincing case that can surmount this challenge, the MC has to demonstrate that it can be a significant player on the regional development stage, now that political and other conditions in the region have become much more favourable. This would start a *virtuous* cycle whereby confidence in its capabilities leads to greater support by *all* its members, and this greater degree of confidence and support should lead, in turn, to greater competence and effectiveness. The alternative is a *vicious* cycle that would lead to the eventual demise of the MC, soon to be replaced by a regional agency with a different mandate, organizational structure and operational procedures that is better able to meet the needs of *all* the member riparian countries.

If the disappointing past record and bleak future prospects of the MC *as presently constituted* were not enough to prompt an appraisal of its assigned functions and mode of operation, recent developments of a global and regional nature would have made it necessary to undertake such a critical evaluation. These developments have opened up new opportunities and, at the same time, imposed new constraints, particularly with respect to funding. In any event, the timing of a constructively critical review has become opportune for two reasons: Cambodia has had to be

readmitted after an absence of many years and China as the head-water riparian country has indicated that it has been considering application for membership into a Mekong-centred regional agency. In light of these developments, the Mekong Committee's Executive Agent in 1991 commissioned studies on the following three key factors that were key elements in the decision-making process pertaining to the Secretariat's future:

- (i) the functions, the structure and the mode of operations of the Secretariat as the arm of the MC in promoting the integrated development of the Mekong region,
- (ii) the relationship of the MC Secretariat to the MC's members with particular focus on the role of the National Mekong Committees (NMCs) in this relationship, and
- (iii) the financing of the MC and the need for external support.

This chapter will focus on these three related themes.

The nub of the concern about the future should be centred on the assessment of the trends that points to a widening gap between the MC's potential and its performance. This would indicate to what extent and in what manner the agency's mandate should be or could be broadened in its scope to achieve renewal of commitment, and what appropriate policies and organizational changes would need to be made.

As originally conceived and articulated in the 1957 agreement that established the MC, the agency's main task was to 'prepare . . . plans for carrying out coordinated research, study and investigations' (Article 4 of the *Statute of the Committee for Co-ordination of Investigations of the Lower Mekong Basin*), and the MC's field of competence was basically seen as being confined to 'technical' aspects (Article 8 of the *Statute*). The supporters of the MC accept the need for some changes to improve the MC's performance and point to the fact that over time there has been a broadening of the scope of what is deemed permissible by *pragmatic* interpretations of the *Statute* that have enabled the MC to respond to the changing needs of its members. In their view, the MC could now operate as a regional coordinating and facilitating agency with a wide range of policies, programmes and projects. However, the more radical sceptics believe that this process has not proven to be adequate to meet the challenge of changed circumstances given that the MC is constrained by the limitation that its policies, programmes and projects must be *directly* related to the use and control of the Mekong's waters. Indeed, over the years there is little or no evidence of serious opposition to the subtle process of

extending the MC's range of activities so long as the direct connection to the waters of the Mekong basin was respected. This flexibility is evident from a reading of a recent report on the current and proposed functions of the MC, written and signed by three 'senior riparian advisers' who have had important roles to play in the MC since its birth and are intimately familiar with its historic vicissitudes.³

However, despite this extension of the MC's scope and mode of operations, the MC's work programme has tended to be limited to narrowly-focused programmes and to small projects on the Mekong's tributaries, that is, national as opposed to regional (multi-country) projects. This resulted in an 'imbalance' between the national and the regional programmes and projects, if a 50-50 ratio is deemed to be the desired norm. Efforts were made to address this imbalance but these have not been able to overcome a strong bias that favoured smaller national projects. By virtue of the fact that each of the riparian countries has a very different type and degree of dependency on the Mekong river for hydropower, irrigation, flood control, etc., there has been a divergence of views as to whether this bias is a desirable or an undesirable characteristic.

In this divergence of reliance on the Mekong basin waters lies a key problem insofar as this factor affects each nation's political will to support the MC with its present mandate, structure and mode of operation. When any one riparian finds little benefit from its membership or much less than that of the other members, it becomes very difficult to find policies and programmes that *all* the riparians can agree upon. The asymmetry of the costs and benefits of the programmes and projects becomes even more pronounced when account is taken not only of their different degrees of dependence on the Mekong's waters but also of their different technical and financial capabilities to handle the analytics of project appraisal, to find the funds, and to construct, maintain and operate projects.

³ In the *Report of the Senior Riparian Advisers* it is recommended that 'the core functions relating to co-ordination' be codified so that there are procedures established to ensure that the Secretariat receives information and undertakes obligations to provide information and other services with respect to three types of projects: (i) on tributary projects detailed information should be sent to the Secretariat, (ii) on major tributary projects, the feasibility studies should be submitted to the Secretariat for comments and, in some cases, for endorsement and (iii) an international projects that have multi-country impact, the endorsement of the Secretariat should be required, and, in some cases, the management should be delegated to the Secretariat.

'It would not be reasonable', the advisers allege, 'to have the Committee just stop at co-ordinating investigation and planning and leave all the remaining work to be carried out by another group of people as this would result in a waste of money and loss of the expertise built up at the Secretariat.' (p. 4)

The necessary basis for suggestions about changes is knowledge of and judgements about those political and organizational factors that have a significant impact on the MC's future usefulness to each of the riparian governments. The Executive Agent, therefore, undertook to obtain the views of the relevant officials and politicians about possible changes in the MC's mandate and operational modalities and commissioned a report for this purpose from three different consultants—of whom I was one.

All the reports were based on consultations. The process of consultation focused, firstly, on the issue of how the objectives of the MC were to be interpreted which raised questions of political will or commitment to the concept of regional cooperation in connection with the use and control of the Mekong river. As a second aspect, the consultations were designed to gauge the receptivity to possible options for the changes that were deemed to be both necessary and desirable to enable the MC to operate more effectively in the interests of all the riparian countries.

The resultant report was to be submitted for the consideration of all the riparian members at a meeting in Chiang Rai in September 1991. The Government of Thailand cancelled the meeting at the last moment on the initiative of the Thai Mekong National Committee.⁴ The cancellation had the effect of aborting any recommendations for change and was related to the UN's recall of the Executive Agent.

WHAT SHOULD AND COULD BE DONE TO ENABLE THE MC TO MORE EFFECTIVELY FULFIL ITS MANDATE OF PROMOTING THE DEVELOPMENT OF THE MEKONG REGION?

Addressing Political Factors Related to the Scope of the MC's Mandate

With some exceptions, the discussions with officials and politicians in the riparian countries revealed a broad consensus that there was a need to consider changes in the MC's mandate, structure and mode of operations. Some of the remedies proposed were exhortatory ('make the sceptics realize the importance of the Mekong!') and some were far-reaching in

⁴ It seems clear that this cancellation was prompted by opposition to the anticipated recommendations that might be offered for consideration at the Chang Rai meeting. This view and this decision were not unanimous on the part of the various ministries of the Government of Thailand. The Thai Mekong National Committee urged the Foreign Minister to cancel the meeting and to request the UN to recall the Executive Agent. Those in Thailand's administration who would have opposed this action were caught unawares as were other members of the MC. They faced a *fait accompli*.

calling for an extension of the scope of the MC's mandate beyond that of collecting data, researching, promoting and supervising Mekong basin-related programmes and projects of regional scope.⁵

Advocates of the more radical approach advanced the argument that if the MC was not to become marginalized, its scope had to be extended beyond the constraint that required all programmes and projects to have a *direct* relationship to the Mekong's waters. In effect, their proposals were tantamount to transforming the MC into a regional developmental agency that would have water use and control as only one of its responsibilities. The mandate would extend to a range of programmes and projects that were relevant for the development of the region and not necessarily water-related. Thus, the MC's scope might include road network and related transportation projects that traversed two or more of the riparian countries and, possibly, also include authorization to obtain funds on its own account from the capital markets and, thereby, have the capability to execute programmes and projects that those funds could make possible.

The regional agency might then be more appropriately called the 'Mekong Region Development Agency (MRDA)', or the 'Mekong Region Development Authority'. The implications of transforming the MC into the MRDA would have had to be spelt out before a decision of this nature could be made. Apart from the issue of the *desirability* of a regional agency with a wider mandate than the MC's or the desirability of transforming an existing agency rather than establishing a new one from scratch, there would be issues of both political and technical *feasibility* to consider.⁶

⁵ Apart from the views expressed in the discussions, there is reference to this idea in the Report of the Senior Advisers and it was put forward at a session of the MC in October 1990 by Prapath Premmani who was then the MC member for Thailand when he advocated that the scope of the MC's mandate should not be confined to water-related programmes and projects. Again, in a meeting sponsored by IDRC entitled 'Seminar on the Network of Mekong Development Institutions', some participants advocated a widening of the scope of cooperation of the MC to include tourism and trade.

⁶ There are examples of successful regional organizations and of dismal failures. The successful precedents are encouraging and the failed ones provide warnings and, even more importantly, valuable lessons. There is, however, no denying the need for institutions of governance to tackle problems or seize opportunities that transcend national boundaries. While most have been established on the basis of the need to cooperate within a river basin for purposes of developing or regulating navigation and hydropower, and managing watersheds and the environment, others have received their impetus from the recognition of mutual interests centred on trade or cultural affinities or some other factor. See, for example, the experience of the East African Community that successfully established and operated airlines and railway companies as regional enterprises, the St Lawrence Seaway Authority and the international Joint Commission (both between the U.S. and Canada),

Accordingly, it was deemed advisable, firstly, to decide in principle if there was *prima facie* logic in this position, and, if so, secondly, to commission a feasibility study that would include both political, legal, organizational and technical aspects in its terms of reference. The proposal to establish a MRDA by transforming the MC implied profound organizational and procedural changes that could overcome the crisis that has virtually paralyzed the MC for the past several years.

Addressing the Structural and Procedural Factors within the Existing MC Mandate

For those who believe that the water-focused aspect of the MC's mandate has posed no serious constraint, the changes deemed to be necessary are modest, related to the structure and procedures of the MC and not to the nature and scope of its mandate. For those who have favoured a regional agency of broader scope, the changes called for would necessarily involve redefining the mandate and that, in turn, has required a greater degree of political will to cooperate. This chicken-and-egg relationship in as much as political will is, in turn, influenced by those very changes designed to make the MC much more effective. In effect, those who have advocated that the MC be changed into a development agency undertaking regional planning and related programmes and projects that have regionwide or multi-country impact, assume that this would be likely to enhance its effectiveness and thus increase the support or the will to cooperate of all the riparians. This is simply because the broader scope puts more variables into play and enhances the opportunities for the MC to formulate/propose programmes and projects that are of benefit to all riparians in a more even-handed fashion.

Firstly, focusing on the aspect of structure, it was recognized that the present relationship of the Secretariat to the National Mekong Committees (NMCs) needed to be assessed to determine if it might prove to be a help or a hindrance to the work of the MC as a *regional* agency—as distinguished from an agency that offers technical assistance and other services to some of its member countries for their *national* projects. The present arrangement has placed the responsibility for project identification and preparation on *both* the Secretariat and the National Mekong Committees (NMCs).

Though not intended, dividing this type of responsibility has had the

and, as one of many around the world, the Tennessee Valley Authority (TVA) that, though operating within a nation, has to do so with the involvement of several state governments that exercise jurisdiction over water and other resources in the region of the TVA.

unfortunate result of making it more difficult for the Secretariat to perform its long-term planning function for the region. When the project-initiating role is ill-defined and shared, the NMCs have tended to put proposals forward that were neither mutually consistent nor consistent with financial and other constraints that the MC has had to contend with as a regional agency. It has been widely recognized that the NMCs have not been well-suited to discharge the responsibility of proposing and preparing project proposals of basin-wide scope. Accordingly, it has been recommended that the Secretariat be strengthened so as to enable it to improve the conceptualizing and technical capacity to take a basin-wide perspective.

The Secretariat once had the responsibility to prepare long-term indicative basin plans and, indeed, performed this role in commendable fashion in 1970 and 1987. Impressive-looking documents were written that identified programmes and projects to be prepared and assessed as part of the MC's work programme. In reality, what transpired was a work programme comprised of the core programme and a collection of proposals submitted by the NMC that were with few exceptions hardly more than ideas sketched in a very rough form. Achieving consistency within financial and other constraints proved to be very difficult. When the initiative for presenting programme and project proposals largely rested with the NMCs, the Secretariat was under great pressure to play a re-active role. It was forced into the position of being a broker or auctioneer trying to find bidders for a smorgasbord of project ideas. In the final analysis, it was the donors that determined the real work programme through their decisions as to what, if anything, on the buffet table they chose to finance.

If the Secretariat was to be strengthened so as to become more proactive and assume responsibilities for elaborating plans, programmes and projects that are of basin-wide scope, the process of project identification and preparation would need to be changed so that the Secretariat would have the *sole* responsibility for identifying programmes and projects of *regional scope*, and for their preparation and appraisal. In this process, the Secretariat would have to work in close consultation with the relevant governments and, in particular, with the NMCs that would, in effect, be each country's coordinating committee when many governmental agencies and ministries were involved.

The issue of the appropriate role of the NMCs has proven to be contentious: should or should not the national committees have an important project-initiating role for *regional* programmes and projects? How would they relate to the role of the MC Secretariat? This is an issue that should be decided on the basis of competency to ensure consistency and coordination in analysis and in implementation. The logical division of labour

should be one that works well, but experience has shown that the NMCs have been assigned more work than they could be expected to handle even when only the programmes and projects of *national scope* were to be their responsibility. The proposed changes would limit the role of the NMCs to project identification to as great a degree as they have the capability to assume and expect them to call on the MC for assistance before they rely on external donors. This would remedy a current weakness in the relationship of the MC to their national committees, a condition that the consultant, Robert Griffin, has pointed to in his report:⁷

The hard fact is that the main work of water resources development in each country is carried out directly by national governments, often with the assistance of bilateral donors, *but not by or under the auspices of the Mekong Committee.* [Italics added]

With the proposed change the NMCs would be in a position to present a shopping list of project proposals to the periodic meetings of the MC without the Secretariat having had any significant involvement. In the past these programme and project ideas were all too frequently prepared and rarely contained enough reference to regional basin-wide development plans so as to provide an appropriate context. In the words of Robert Griffin,

the NMCs' focus on the MC Work Programme as the subject for coordination is curious in that the Work Programme in each country is not an interrelated set of projects, but rather . . . made up of relatively small independent projects.

It is a serious enough problem when the Secretariat was obliged to respond to calls for assistance in project preparation at the expense of being diverted from its main *raison d'être*, namely, the function of *integrating* the programmes of each riparian country into regional cooperative programmes and projects.⁸ This is a function it can only perform through

⁷ Recommendations for Strengthening the System and Working Relationships of the National Mekong Committees, National Planning and Implementing Agencies, and the Mekong Secretariat for Regional Cooperation: A Discussion Paper for the Mekong Secretariat, September 1991, p. 2.

⁸ This view of the MC's main function should be juxtaposed to the view that sees its main role as that of preparing a smorgasbord list of projects from which donors can pick and choose. In effect, that is what is happening so that donors determine the work programme, that will be implemented. The issue is whether the items on the table are the right ones and whether the choices of the donors are the right ones for both the countries directly involved and for the region as a whole. Without a planning framework with its inherent criteria for selection, the answer is not likely to be what the founders had in mind in establishing a entity to promote regional cooperation. What they are getting is a convenient auctioneer that can package products attractively for the market and attract the bidders as well.

deep and continuing involvement in the process of identifying and preparing projects so as to ensure that they are not only sound in a professional sense but that they are, as a set of projects, mutually consistent *within the framework of a basin-wide regional plan.*

Furthermore, the past process introduced a bias towards small projects of questionable merit or priority as the NMCs endeavoured to put forward as many proposals as they possibly could because one of their assigned missions was to identify project ideas for the annual meetings where the grab-bag of proposals from all NMCs were to be considered. Rarely did this process leave enough time for the Secretariat to screen the proposed projects adequately and, for those that 'passed mustard', to embellish them with some semblance of a cost/benefit appraisal, and explain, if possible, how they fitted into a regional plan framework.

If this serious weakness of the past (and present) arrangement in the NMC-MC relationship had been recognized, it would have become incumbent on each of the riparian countries to question the role of their NMCs and of the concept of the NMCs as such: could they play both the role of *national* coordinator and of that of initiator of programme and project proposals of a *regional* nature? Since they were charged with that responsibility and were most capable of identifying national projects, why not leave the MC Secretariat to provide the service of basin-wide planning and implement region-wide programmes and projects? A realistic assessment would indicate that the division of responsibility should be based on the scope of programmes and projects: that is, if they have a *significant* impact on one country then the NMC is responsible, and if they have a significant impact on more than one country, the regional agency is responsible. 'Significance' could be determined on a case-by-case basis so that where there is uncertainty as to whether the impact is significant, an arbitration mechanism could be set up to handle the disputes that might arise.

Admittedly, changing the role of the NMCs and vesting the Secretariat with the important *initiating, implementing* and *supervising* responsibility for region-wide programmes and projects would call for a radical change in both the organization structure and the procedures of the MC. But lest it be feared that the Secretariat would thereby have too free a rein, it should be pointed out that the counterpart to giving greater responsibilities to the Secretariat is instituting organizational and procedural changes to ensure greater control by the riparian governments.

Secondly, with regard to the issues of control and the relationship of the riparian countries to the Secretariat, there has been a great deal of confusion with respect to the functions of control and of management. Ideally,

managers should be free to manage but *within policies guidelines laid down by the governments*. To exercise this control over the management of the Secretariat, the governments could establish a Board of Directors to oversee the MC's policies and operations and appoint diligent knowledgeable representatives to that board. *The members of the board should be appointees of the governments but not staff members*. This deviates from the present arrangement whereby the countries appoint the Assistant Executive Agent (who is financed by the UNDP and must have UNDP approval) and nominate persons who then become senior staff members of the Secretariat.⁹ When these nominees become staff members, often in a line of command immediately under the Executive Agent, they are placed in a very schizophrenic position with respect to day-to-day management issues: do they respond to their government's views when these views might be at odds with that of the Secretariat's management decisions?

Whatever the qualification of these nominees, placing them in the Secretariat with the *forced* acquiescence of the Executive Agent, has been bound to lead to a serious weakening of the Executive Agent's management powers. It is a practice that has also weakened the control of the governments themselves because this procedure has blurred the lines between management and control by owners. It is one of the cardinal rules of effective administration that management and ownership control be separate so as to allow the manager to manage, yet not diminish the authority of the owner-governments concerned. Under the proposed arrangement the governments, through the exercise of the Board's powers, would have the *decision-making role* with respect to both the broad lines of policy and the programmes and projects that are submitted to them. This organizational arrangement would be similar to that of almost all international bodies, parastatal entities and business enterprises.¹⁰

In the case of the MC, the issue of the relationship between the Board and Management could be addressed in detail by responses to several questions:

⁹ While the formality is that governments make a 'nomination' that becomes an 'appointment' when the Executive Agent agrees, the fact remains that the Executive Agents have had little choice but to go along with all the nominations.

¹⁰ A three-tier system is the conventional model of international organizations such as the World Bank and the IMF and the regional development banks and of multinational bodies responsible for river basin planning and operations: Ministers from each of the member countries act as 'share-holding' *Governors*, appointees representing each of the *Governors* act as *Directors*, and, the *Secretariat*, headed by the Executive Agent, is the operating arm headed by a *President* (World Bank) or *Managing Director* (IMF), or *Administrator* (UNDP), or *Secretary-General* (U.N.), etc.

- Should the Directors be appointed by their respective governments for a fixed period of time and, if so, for how long?
- Should the Directors reside full-time in Bangkok or would it suffice to have them in Bangkok for close working contact with the Secretariat for only a few days a month? At the same time or separately?
- How often should the Board meet to consider the agenda items that the Secretariat would be *obliged* to present for discussion and decision?

The board members might reside in Bangkok with offices in the MC so that board-management relations are maintained on a continuing week-to-week basis. The board members would then act as surrogates for the Governors who are the shareholders and who could meet once or twice a year. The essential criterion as to the desirability of any such arrangement is that it should enable the managers to manage and the governments to be well informed in a full and timely manner and, thereby, to have the opportunity to exercise control.

In the course of time, with the Secretariat's increased responsibility *and* accountability, there would probably be a qualitative change in the professional reputation of the Secretariat and a recognition by the donor community of this change. When the management function is well performed in a pro-active manner, the increased responsibility is likely lead to increased confidence and this, in turn, would possibly lead to greater responsibility being entrusted to the management. If continued long enough, this process could lead in time to a transformation in the status of the regional agency that could be reflected in the Committee being designated as a 'commission' or as an 'authority' with appropriate amendments to the *Statute*.¹¹

The distinction in nomenclature could be of some significance if it is taken to reflect the changed (enhanced) responsibilities of the MC Secretariat. The point to be made in changing the name is that a transformation has taken place that would eventually vest the regional agency with the

¹¹ In the *Report of the Senior Riparian Advisers for the Mekong Priority Functions Review* (Information Note by the Policy & Planning Division of the Mekong Secretariat, October 1991), the advisers recommended the following: 'a slow moving from the status-quo to different stages of development towards the ultimate scheme of operation . . . (when) the Committee would be some sort of Authority with the mandate of managing the international projects situated along the mainstream . . . (while, at the same time, recognizing) that the *raison d'être* of the Committee is also the development of the entire lower Mekong basin.' (p. 5)

authorization to raise capital on its own account. The effect of these changes would probably be very positive insofar as it would enable the riparian countries to gain access to more capital than would otherwise be made available to them as separate countries. This empowerment would, of course, be conditional on the approval of the Board that would be exercising its control function. The control would, in any case, be necessary since the governments collectively and individually would have to be the guarantors of the borrowed funds.¹²

Resorting to borrowed funds on its own account is likely to impose a discipline on the agency since the projects for which funds are borrowed would have to be 'bankable'. This is likely to have the effect of increasing the efficiency and effectiveness of the Secretariat. A virtuous cycle might well be established, leading in time to a situation where the Secretariat would need to rely less and less on outside funds and consultants. Hopefully, the day might eventually arrive when the MC would receive requests for consultant services from other river basin agencies willing to pay for such services. The Secretariat has already begun to offer such services-for-payment in a modest way, but with a better reputation this could become a significant item on the credit side of the Authority's budget. The financial implications are obvious.

All these structural and procedural changes appear to be permissible under *Article 5* that deals with the organizational aspects. The *organizational* changes in structural terms would have to be paced with sensitivity as to what is feasible rather than what is ideal. As for *procedural* changes, the flow of information would need to be altered from the prevailing practice as the Secretariat becomes less re-active and takes on a more proactive role, and as it divests itself of the responsibility to identify national projects and the packaging of such projects for donor solicitation that could be proposed to donors once the riparian countries can find donors on their own for projects that do not have basin-wide impact and, therefore, do not involve riparian neighbours.

The suggested organizational schema would, therefore, differ from the present one in three important respects:

¹² The guarantees that would be convincing would be those of the richer countries, in this case, Thailand. But Thailand could consider its guarantee as a form of aid to its poorer neighbours. This form of aid would have more modest budgetary implications than direct aid since it takes the form of a promissory note or contingent liability and is not likely to be called upon if the projects being financed by this means from the capital markets are economically and financially sound. The discipline of project appraisal becomes all the more important.

- (i) there would be a Board of Directors on which sit representatives of the riparian governments (and possibly the Executive Agent and two or three principal donors) that would meet two or three times a year for major policy decisions endorsing, modifying or rejecting management proposals;
- (ii) there would be full-time appointees of the governments at the Mekong Secretariat headquarters, but they would not be staff members; and
- (iii) the National Committee would not be the source of proposed programmes or projects but would play a facilitating and information role so that the Mekong Secretariat could prepare long-term plans and not be merely responsive to riparian National Committee proposals—as they are to a large degree at the present time.

There are several implications to be drawn from the proposed changes in the structure and the flow of information for identifying, preparing, appraising and evaluating programmes and projects ('the project cycle') and for decision-making for control and accountability purposes. Two of these implications bear noting:

- (a) The programming of the MC's work would benefit in terms of its *regional* responsibility since the Secretariat would be in a better position to carry out long-term planning on a regional basis. This would be expected given the ensuing lightening of the load now placed on the shoulders of the Secretariat that involves the preparation of a catalogue of project proposals that are strictly national in scope or involve two riparians, such as, for example, the Thai-Laotian bridge that the Australian government has financed. The mediation or broker function that the MC has assumed may no longer be necessary if and when these three riparians can get their act together to deal with donors on their own. That day may not be far off.
- (b) There is likely to be a beneficial impact on the MC's management function when the governmental appointees cease to act as country representatives and assume strictly staff roles. This clarification of their roles would give the Secretariat's Executive Agent a freer hand to manage. It implies that the Executive Agent should have a greater say in the recruiting of professional staff with due regard to maintaining a balance in the composition of the staff with respect to nationality but not to a degree that seriously compromises the criterion of professional competence.

This issue raises the question about whether or not the Executive Agent

should be recruited from outside the riparian countries. The two supporting reasons are that the pool from which the selection is to be made is much larger with the probability that a more qualified person could be identified and hired, and that when the Executive Agent is not a citizen of one of the riparians there is greater assurance of neutrality or, at least, there is a greater *prima facie* appearance of neutrality. What matters most is the line of authority that ensures that the Executive Agent is accountable to the Board of Directors and can be dismissed by them if they are not satisfied with his or her performance. After all, the power to fire is as important as the power to hire.

SUMMARY AND CONCLUSIONS

The Mekong river as one of the world's great rivers is distinguished by the fact that it is one of a dozen or so river basins with over five riparians. It has another significant characteristic that is rather unique for a river of its size and strategic importance to its riparians, namely, that despite its potential it still has not been harnessed for power, transport, irrigation or flood control purposes by a *major* project of *regional* scope.

Surveys and studies were undertaken and completed as part of a five-year regional river basin programme, and impressive documents prepared. They were destined to fill bookshelves and be ignored. The MC fell victim to a situation where its mandate and its efforts to achieve cooperation and coordination were seen by the major riparian, Thailand, to be imposing constraints that entailed 'costs' not balanced by enough apparent benefits, that is, there was asymmetry in the costs/constraints and benefits of the MC's operations as they affected the various riparians. This led the MC Secretariat to limit its range of actions and to turn a blind eye to some practices so as to minimize the chances of exacerbating tension among the riparians, and between any one of the riparians and the Secretariat. Thus, initiatives for regional-scale programmes and projects—other than the core programmes of surveys for data collection and the like—were best left on paper, and energies on the ground confined to national-scale projects or, at most, bi-national ones where the MC could play a facilitating role.

This pattern of behaviour is understandable and very common inasmuch as it is the least risky approach for management to take. One could cite the experience of several river basin agencies such as, for example, the Chad basin (Nigeria dominating by virtue of its comparative size) and the Tigris-Euphrates basin (Turkey dominating by virtue of its head-water location). This points to a need to design the constitution of intergovernmental agencies in a way that enables and encourages cooperation and

coordination by ensuring, as far as possible, that the economically most powerful or most strategically situated of the governments involved do not dominate, that is, the organizational structure and operations must yield benefits to *all* the entities involved in a roughly equitable fashion. Otherwise, it would be preferable for countries to handle common problems and opportunities on an *ad hoc* basis.

The smaller riparians have always understood how important a function could be performed by a coordinating agency, especially one that helps in procuring outside aid and providing technical assistance itself, but, above all, by helping ensure rules to protect their interests. The realization of the benefits that might be lost if such a cooperation-enhancing agency were to be dismantled leads the smaller and weaker riparians to call for discussions that might come up with remedial proposals for change. This is evident in the Mekong case.

Given the past history of these efforts to cooperate with its limited success and many failures, there has been a growing recognition that the restoration of the MC could only be achieved by a revision of its mandate that would enable *all* riparians to envisage a significant advantage in maintaining membership and playing by the rules of its constitution. This has given rise to proposals for the transformation of the MC into a regional development agency, that is, one that goes beyond programmes and projects directly related to the river basin waters. The signal advantage that this would provide is simply that in its operations the agency has a much greater number of variables to work with; that is, there is greater scope for trade-offs whereby all the parties involved could expect to enjoy a net gain by participating in its programmes and projects.

In this connection, it would be appropriate to be reminded of the comments of P. K. Menon cited at the beginning:

To be effective, the Authority should have sufficient political power, technical capability and financial capacity. . . . Under existing conditions it is presumptuous to envisage the establishment of such an ideal mechanism in the Mekong region (but) for the immediate future, it may be practicable to tackle the issue of power in a lower key, that is, *to enlarge the functions and powers of the Mekong Committee to meet the minimum requirements of an integrated plan of development. . . .*

Bitter experience in the intervening years since this was written may have yielded insights that make it less presumptuous to envisage an enlargement of the MC's functions and powers to those appropriate for a truly regional development agency.

It is also appropriate to ask: what should be or could be the role of the international organizations in abetting this transformation process from water-focused agency to a broader incarnation as a regional development agency or authority? In his Presidential address to the Seventh World Congress on Water Resources in Rabat, Morocco in 1991, Professor Asit K. Biswas made the pertinent observation that 'to a great extent international organizations have deliberately stayed away from the development and management of international water bodies' and went on to give the reason for this reticent policy position as the desire to shy away from issues that are politically sensitive.

This risk aversion approach characterized the relationship of the UNDP to the Mekong Committee.¹³ There are lessons to be learnt in this case, that would seem to have relevance for other river basin agencies whose operations have not been even-handed, that is, those which have been characterized by the exercise of power by the most economically powerful and/or most strategically situated for its own benefit at the expense of the other riparians.

UN agencies played a midwifery role of great importance in the birth of the Mekong Committee and have continued to assist with financial help and other forms of assistance. The UNDP has, thereby, been involved in a most critical way. One would expect that this role would be played in a manner that would make the UNDP an effective outside counterweight to the role of the major riparian when its policies dominate at the expense of the other parties. In the case of the operations of the MC, the riparians with smaller, weaker economies have had to be content, as they say, with small mercies, namely, being thankful for the assistance offered by the MC in procuring modest funding for small projects and for some training programmes. Their voices on critical issues have not been heard—or, at least, not heeded—in the UNDP headquarters in New York, as dramatically illustrated when the other three riparians officially challenged Thailand's assessment and protested the peremptory action of the UNDP officials in recalling the Executive Agent in 1992 well before his normal term of office expired.¹⁴

¹³ The role of ECAFE in the operations of the MC had long ceased to be significant. The UNDP became the sole UN agency with that responsibility.

¹⁴ When the MC's Executive Agent in the early 1990s sought to examine the MC's performance in relation to its regional mandate, Thai officials realized that the proposed changes for reform in structure and procedures that would probably follow would imply greater involvement of the UNDP as a serious player in ensuring that the mandate of the MC was carried out for the benefit of *all* the riparians. They pulled the plug on this exercise:

If boldness and imagination are to be the hallmarks of a transformation exercise that could make the MC an effective regional agency, the issues raised by this recent history would need to be addressed. In the process, there is likely to be a valuable spin-off if the international agencies are to overcome their reticence about being confronted with sensitive political issues. The nature of the process of establishing and managing river basin and related regional entities is political and one would expect that the international agencies would stand for the principle of fostering cooperation by ensuring that the weaker, smaller members of the United Nations are given the support that they need when disputes arise.

The Mekong case is still in flux as discussions proceed on how it should be restructured. This process provides a testing ground for a new approach on the part of the riparians themselves to reduce mutual distrust and, thereby, enhance cooperation and on the part of the United Nations that has been playing the roles of godfather, referee, rich uncle and fund-raiser to the Mekong Committee.

the Chang Rai meeting where the consultant reports were to be discussed was cancelled a few days before it was scheduled to begin and the UNDP was asked to peremptorily recall the Executive Agent. The UNDP obliged with indecent haste despite the protestations of the other riparians who insisted on proper procedures for such an action and expressed full confidence in the Executive Agent.

10 / The Mekong—A New Framework for Development and Management

GEORGE E. RADOSEVICH

INTRODUCTION

This chapter is submitted as part of a discussion on the topic of the legal and institutional aspects of the Mekong river development efforts. Professor Morris Miller prepared the first paper on the 'Transformation of a River Basin Authority: the Case of the Mekong Committee', which focuses on the period during which time the Mekong Secretariat commissioned studies on three key factors affecting the future effectiveness of the in serving the needs of the Mekong Secretariat in serving the needs of the Mekong Committee under the existing basic agreements between the riparians of the Lower Mekong river basin. He discusses two of those factors—the function, structure, and mode of operation of the Secretariat in promoting integrated development of the Mekong and the relationship of the Secretariat to the Committee's members and role of the National Mekong Committees. This analysis was made in light of the fact that improvements in the basic documents and organizational arrangements were long overdue, given the rapidly changing conditions and circumstances to meet the needs of the member states and effectively utilizing the waters of the Mekong, a requirement well known and appreciated by all the parties, but difficult to address.

The focus of this chapter is not on what needed to be done. Rather, it presents what actually was accomplished and how, by the four riparian countries in their genuine interest and commitment in meeting the challenge of carrying the 'Spirit of Mekong Cooperation' into the twenty-first century. Understanding this was their right and responsibility, and with the assistance of the UNDP in facilitating their efforts, the four countries have now concluded a new 'Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin' (Annexure 1). It was 'initiated' by their respective representatives of the Mekong Working Group on 28 November 1994 in Hanoi, and signed by their respective

plenipotentiaries at a historical ceremony in Chiang Rai, Thailand on 5 April 1995. It consists of six Chapters and 42 Articles, which will be summarized later.

An international agreement or treaty by definition involves two or more sovereign nations, and on the subject of transboundary water matters, it involves complex negotiations, understandings and compromises. The Agreement on the Mekong river involves four sovereign nations in the lower basin, and a near virgin mainstream with a wide range of actual and potential complementary and competing uses for the highly variable wet and dry season flows. The signing of the agreement in April was truly an historical accomplishment, providing a 'constitution of cooperation' for the Mekong river basin. Initially, it will include the four lower riparians, but the intent and provision is made for all riparians to participate in this mutually beneficial effort.

Through the formation of a Legal Studies Group in the Secretariat, funded by the Asian Development Bank and the European Union, training and research on legal issues pertaining to the development and sharing of international rivers and examinations of various other river basin agreements and organizations were undertaken. The intent was to enhance the level of awareness of all the parties on these complex matters of international law and practice.

Notwithstanding this programme, the countries, as individual sovereign nations and collectively as co-riparians of the twelfth largest river in the world, were faced not only with the reality of how to address the situation of continuing their cooperation, but also making necessary adjustments to conform to the fundamental change in the circumstances in the region, and meet their needs and desires. The necessity to take stock of this situation was accelerated by the Paris Peace Agreement on Cambodia (Agreements on a Comprehensive Political Settlement of the Cambodian Conflict) on 23 October 1991. As will be explained later, Cambodia, although originally a member of the Mekong Committee since 1957, withdrew in 1977 and had not participated as a member since that date. In 1978, the three remaining members formed the 'Interim Mekong Committee' (IMC) to continue their mutually agreed upon cooperative development efforts until such time that Cambodia might be ready to participate again in a reactivated Mekong Committee.

In early 1992, the Plenary Session of the IMC was postponed. For mutually acceptable joint cooperation to proceed, two options appeared available to the riparians: one, to reactivate the Mekong Committee under the basic documents and then amend and adjust these agreements to the

mutual satisfaction of the four parties; or two, to leave the existing framework intact while exploring the possibilities of a 'new framework of cooperation'. The latter course of action was unanimously chosen in late 1992. It is this approach and the results that this chapter sets out to explore.

Although I will not go into the geography, hydrology and geo-climatic conditions of the Mekong river basin (these are dealt with by Professor Akatsuka in this book), these features and the socio-economic and environmental amenities of the basin and region were constantly considered during the twenty-one months of negotiating the draft agreement. Also, it must be kept in mind, that the thirty-seven years of riparian cooperation gave birth and life to the 'Mekong Spirit of Cooperation'. What has occurred in the Mekong over the last two years was not the death of an 'institution' that played an important role in regional development, but rather, the natural evolution of an institution to adjust to rapidly changing conditions—nationally, regionally and globally—to meet the demands of the present and needs of the future. To fully appreciate why and what happened, requires a brief sketch of the history of the Mekong agreements and the principle events.¹

HISTORICAL BACKGROUND OF RIPARIAN COOPERATION

Traditionally, cooperation on the Mekong river has been among the four lower Mekong riparians—Cambodia, Laos, Thailand and Vietnam, although in fact, there are six Mekong riparians including China and Myanmar (Burma). Historically, there are nearly thirty agreements on the Lower Mekong dating from 1856 to 1978 (Annexure 2). Of primary significance, however, is the pre-1957 period and the post-1957 period.

During the pre-1957 period, 21 agreements were identified, mainly between Siam and France (Indo-China) covering friendship, commerce, navigation and boundaries; and several agreements between Cambodia, Laos, France and Vietnam pertaining to maritime and river navigation on the Mekong and the Port of Saigon. During this period, three implementing organizations were established: the Permanent Franco-Siamese High Commission (1928) between France and Siam, and the Mekong Advisory Commission (1950) and Commission of the Mekong (1954) between

¹ For an excellent history and details of the Mekong Committee and its activities see: *The Mekong Committee—A Historical Account (1957–89)*, Mekong Secretariat, 1989; *The Mekong Currency*, Lisbeth Sluiter, PER-TERRA, Bangkok, 1992; *The Mekong*, John Hoskin & Allen W. Hopkins, Post Publishing Co., Bangkok, 1991; and the *Mekong Secretariat Annual Reports*.

Cambodia, France, Laos and Vietnam. None of the three organizations remained operational very long, if in fact, they ever formally came into existence. Specific reference is made to the latter, because it was one of the reasons for the formation of the Mekong Committee in 1957. Only one agreement (1956) included all six riparians and several non-riparian nations (India, Indonesia and Pakistan), which was limited to provisions on measurement and registration of vessels used for inland navigation.

The stage was set for a 'Lower Mekong Riparian' agreement in 1947 with the creation of the UN regional body—Economic Commission for Asia and the Far East (ECAFE), now the Economic and Social Commission for Asia and the Pacific (ESCAP). It concentrated on natural resources development possibilities in the lower Mekong region. With the gaining of independence by Cambodia, Laos and Vietnam through the Geneva Accords (July 1954), there appeared an opportunity for the four lower Mekong nations to be brought under one mutually acceptable arrangement for development of their shared water resources. After considerable studies and proposals, the four nations agreed to form a 'coordinating committee' in 1957, under the auspices of the ECAFE.

On 17 September 1957, the four riparians adopted the *Statute of the Committee for Coordination of Investigations of the Lower Mekong Basin*, with a general but limited mandate 'to promote, coordinate, supervise and control the planning and investigation of water resources development projects.' The statute established the commonly known 'Mekong Committee.' Within two years, several other organizational appendages were added to facilitate its functioning, namely, the National Mekong Committees, an Advisory Board, the post of the Executive Agent, and the Mekong Secretariat.

By 1965, the four riparians realized their mandate under the 1957 statute was a constraint to their joint efforts. They attempted to make a third amendment to the statute by changing the name of the organization to the 'Committee for Coordination of Comprehensive Development of the Lower Mekong Basin,' and expanding the mandate to include construction and other development projects. This amendment was only ratified by three of the members, and thus did not take effect.

This did not dampen the spirits of the members, however. Investigations for multiple uses of the mainstream and tributaries was well underway. Hydropower, irrigation, fisheries, navigation, and flood control potential were explored and several dams were in the planning works to harness the Mekong's torrential flows. Most important, a wide range of data

were being collected. Donors were eager to support the Mekong activities by financing studies, investigations, mapping and data gathering on the mainstream and tributaries. The objective was integrated water resources development and management.

In 1970, the Indicative Basin Plan (IBP) was prepared as a framework for development up to the turn of the century. Among its many projects was the concept of a 'cascade' of seven dams on the Mekong, although constraints to donor funding was starting to be felt by the Committee.

A draft 'Mekong Charter' was presented to the Mekong Committee in 1971, but it was not mutually acceptable. Instead, it served as a basis for negotiating the 1975 *Joint Declaration of Principles for Utilization of the Waters of the Lower Mekong Basin*. Article II expanded the objectives of the Mekong Committee 'to ensure that the conservation, development and control of the water resources of the Basin are directed towards their optimum utilization for the benefit of all the peoples of the Basin States', and 'to promote the regional cooperation required for proper management of the water resources of the Basin.' It set out basic principles for mainstream and tributary developments, including adopting the standards of international law of 'reasonable and equitable sharing' and the eleven factors for so determining, cited in the *Helsinki Rules on the Uses of the Waters of International Rivers*, plus a benefit-cost ratio analysis for each project. It made a few minor adjustments to the Mekong Committee to enable it to carry out its functions more effectively. At that time it appeared as though the Mekong Committee was going to become a full-fledged comprehensive river basin development agency. The perception of such an achievement was expressed by President Johnson in 1964 while providing support to the Mekong Committee. He considered the potential of the Mekong basin great and the Committee's willingness to pursue major undertakings so strong that it would 'dwarf the TVA'.

In 1976, three members declined to attend the annual plenary session so none was held; and Cambodia continued to express its inability to participate in 1977. On 5 January 1978, the other three members entered into the *Declaration Concerning the Interim Mekong Committee for Co-ordination of Investigations of the Lower Mekong Basin* allowing the IMC to continue its work 'during the interim', until Cambodia would be able to actively participate.

In the 1980s, Thailand's economy was developing rapidly, and some progress in the basin was being made in Laos and Vietnam. In 1987, a Revised Indicative Basin Plan (RIBP) was prepared, which among other

proposed activities, expanded the 'cascade' concept to eight dams on the Mekong. Progress was steady, data collection continued, a number of national projects in all three countries were underway for improved irrigation facilities, early flood warning, navigation, fisheries, etc. But Cambodia was still experiencing many internal difficulties, and the need to consider the rights of all sovereign states in sharing the river's waters was omnipresent. Then, on 23 October 1991 the Paris Peace Agreement was signed by nineteen nations, including the three members of the IMC. Shortly thereafter, Cambodia requested the reactivation of MC as set out in the 1978 Declaration. This led to the postponement of the January 1992 Plenary Session of the IMC, and the four countries began to ponder and explore how to resolve the delicate issues before them.

FORMULATING A NEW FRAMEWORK FOR COOPERATION

The formulation of the new framework for cooperation was not an intellectual nor academic exercise; it was a genuine effort by four sincere and committed riparian nations to positively affect their respective peoples through the joint planning, development and management of the water and related resources of the Mekong river basin in their territories. The following is a chronology of key events leading to the completion and acceptance of the (draft) Agreement on 28 November 1994 in Hanoi, Vietnam by the four heads of the Mekong Working Group (MWG) delegations of the fifth and final MWG Meeting, and its official coming into force with the signing in Chiang Rai, Thailand by the plenipotentiaries of the four nations on 5 April 1995:

- 6 Oct. 1992 Hong Kong: UNDP sponsored a consultation to discuss the impasse and offered to assist as a neutral party.
- 16-17 Dec. 1992 Kuala Lumpur: Meeting of four countries and UNDP resulting in drafting a Joint Communique on a Future Framework of Mekong Cooperation for sustainable development of the Mekong river by forming a Mekong Working Group (MWG); donors meeting of 1993 Mekong Secretariat work plan.
- 4-5 Feb. 1993 Hanoi/MWG-I: Signing of a Joint Communique by Vice-Ministers of each country, Adopting of Guidelines for the Working Group on the Future Framework of Mekong Cooperation, set target of end of 1993 to complete MWG tasks, and approved appointment of a Senior Adviser.
- 4-5 Apr. 1993 Bangkok/MWG-II: Agreed to prepare national position papers on the 'principles' to govern future cooperation and begin examination of an institutional framework.

- 28–29 June 1993 Vientiane/MWG-III: Agreed on 'Outline' of draft agreement, approving many provisions, and to transforming the 'outline' to draft agreement at a Technical Drafting Meeting (TDM).
- 17–20 Aug. 1993 Bangkok/TDM-I: Refined draft agreement, approved many unresolved provisions, and improved the mutual understanding on remaining key articles.
- 7–8 Oct. 1993 Phnom Penh/MWG-IV: Agreed to several remaining provisions, enhanced understanding of positions and agreed on finalization efforts.
- 6–7 Jan. 1994 Vientiane/TDM-II: Examined options for reasonable and equitable utilization of mainstream and tributary waters, and transmountain diversions.
- 27–29 Nov. 1994 Hanoi/MWG-V: Initialled the 'Draft-Agreement' signifying mutual acceptance by the Mekong Working Group, and formed the Mekong Task Force to examine transitional and start-up needs for the new agreement and organization.
- 5 Apr. 1995 Chiang Rai: Signing ceremony of the Agreement.

As stated earlier, the four riparians had at least two options for improving their agreements on the Mekong and how they would carry these out. One, amend the existing two basic documents (1957 Statute and 1975 Declaration); or two, replace them with a new agreement that would hopefully combine the substantive and organizational issues. Of course, a third option existed—do nothing. UNDP offered to provide neutral assistance in facilitating a solution by proposing an informal consultation of the parties, which took place in Hong Kong on 6 October 1992.

The success of the Hong Kong meeting led to the historic meeting in Kuala Lumpur in mid-December 1992, in which the parties chose the second option by forming the Mekong Working Group consisting of representatives from the four nations, with a clear mandate to formulate a new framework of cooperation for the 'sustainable development of the Mekong River'. An optimistic timetable of one year was set. UNDP offered its good offices and assistance to facilitate this process, and to provide senior adviser(s) if the parties felt it necessary.

The offer to provide a senior legal adviser was accepted. It was definitely an assignment that challenged intellect of the law and related disciplines; an understanding of the region's geo-climatic conditions, hydrology, socio-economic situations and potentials, and the cultures; and patience. The above list of meetings were punctuated with 'shuttle diplomacy' efforts between the various capitals to refine the issues, problems, positions and solutions.

The following remarks are prefaced by the appreciation and respect of the negotiating process involving four sovereign nations who have the right, as such, to take varying positions reflecting their interests on issues regarding the development and use of the transnational waters of the Mekong river; and whose positions, in the absence of mutual agreement, are subject to interpretation under the prevailing rules of international law. The unique position of each country exists partly due to their relative locations, populations, and stage of economic development in the Mekong river basin, and partly as a result of the 37 years of 'Mekong Cooperation' under the 1957 Statute.

In this regard, there have been many positive actions taken by the four (Cambodia, Laos, Thailand and Vietnam—1957 to 1978—Mekong Committee), and later three countries (Laos, Thailand and Vietnam—1978 to 1992—Interim Mekong Committee). The cooperation, coordination, planning, investigations, project implementation and management, solicitation of donor support, confronting differences of opinions among members, staffing and personnel management of the Mekong Secretariat, and adoption of latest technologies and data analysis has earned global recognition and admiration of the 'Mekong Spirit of Cooperation'. The spirit was maintained even through very trying times of political and economic unrest.

Not only the successes, but also the limitations and weaknesses of the past arrangements were recognized and acknowledged by the member countries. Yet, rather than dismantle or terminate the existing frameworks as has been done in some other international river basins, the countries of the Lower Mekong basin chose to continue their on-going work through the Mekong Secretariat, while re-examining their positions and policies, mandates, organizational capabilities, and the processes of addressing issues and problems in the context of a new framework of cooperation. This was recognized as fundamental to the success of any cooperative relationship concerning a critical shared natural resource in a rapidly changing environment such as that experienced in Southeast Asia, where to stand still is to regress. To optimize the benefits for their people from the potentials of the common resource, a new framework of cooperation was essential.

It was optimistically anticipated by all that this could be done in the targeted time. Officials from each of the four governments expressed the importance and commitment of their governments to an agreement of principles and institutional mechanism for a new era of cooperation in the sustainable development of the Mekong river water resources. The Mekong Working Group transformed them into an 'action plan'.

THE MEKONG WORKING GROUP MANDATE AND GUIDELINES

At the Kuala Lumpur meeting in December 1992, the four parties drafted key points that formed the basis and commitment of each to work out a future framework of Mekong cooperation set out in a 'Communique and Guidelines', officially approved in Hanoi on 5 February 1993 at Mekong Working Group I. This 'mandate' of the MWG has served to guide the preparation of the draft agreement. The commitment of each country was reaffirmed 'to continue to cooperate in a constructive and mutually beneficial manner for the sustainable utilization of the Mekong River water resources.' In recognizing that changes have taken place since the original mechanism was adopted, they agreed to continue the dialogue to create an acceptable 'future framework of cooperation'.

The guidelines drafted in Kuala Lumpur, contain many important provisions of common interest and mutual acceptance to the parties. Acknowledging the 'great political, economic and social changes' that have taken place in the subregion, the countries are 'part of the most economically dynamic region of the world,' but also 'faced with major challenges of natural resources management and environmental protection'. Further acknowledging that 'the Mekong river system is a natural asset of immense value to all the riparian countries,' to address the inevitable pressure from economic growth in many water-related sectors of the basin, 'the coordinated management of the use of the river system's resources will become ever more essential'.

Recognizing that 'certain elements... of cooperation already exist' that may need redefining, 'six elements for the future framework of coordination' were prescribed for the MWG to prepare:

1. A set of principles for the sustainable utilization of water resources of the Mekong river system;
2. An institutional structure and mechanism for coordination;
3. A definition of the functions and responsibilities of the structure and mechanism;
4. The legal basis for the governance and financial operation of the structure and mechanism;
5. Future memberships of the structure;
6. Management of the structure.

The six elements of the guidelines were subsequently condensed at MWG-I to two major issues:

1. Principles for the sustainable utilization of the water resources of the Mekong river system;
2. Institutional and management issues relating to the mechanism of cooperation.

RESTATEMENT OF THE LAW ON INTERNATIONAL WATER RESOURCES

International law provided the ground rules for carrying out the MWG mandate. Schwarzenberger states that the role of an international lawyer as 'to point out the inherent advantages and disadvantages of any particular blueprint and the conditions on which its attainment depends. The choice, however, is for the governments . . . It involves political decisions which are outside the lawyer's province'.²

In this instance, the UNDP tried a unique approach in providing assistance to the parties. They supported one legal adviser to four parties with different rights and interests. In most other international river basin negotiations, each riparian involved would have their own legal adviser. Added to Schwarzenberger's list is the need to maintain credibility with the four parties and sensitivity to each of their concern.

The formulation of the agreement 'to cooperate in a constructive and mutually beneficial manner for the sustainable utilization of the Mekong river water resources' was a complex task necessitating the consideration of a wide variety of issues, none the least of which are the legal parameters. The key principles of international water law identify what has emerged from 'rules' as binding norms of international conduct based upon rationally verifiable evidence, of which the 'principles' are merely abstractions.³ And although they contain a 'consensus' and valuable experiences, sovereign nations are not bound by them, and in fact, through a treaty, make their own 'international law' relative to those parties.

International law generally, and applicable to international water law, is based upon three sources: customary international law, general principles common to major legal systems, and international agreements (treaties and conventions).

The four general principles of customary international water law that are almost universally recognized are: sovereign equality, freedom of navigation, free from harm, and equitable apportionment or sharing. The

² *A Manual of International Law*, George, Schwarzenberger, p. 25.

³ *Ibid.*, p. 21.

latter three are premised upon the first, a concept of civilized society as difficult to precisely define as the other three.

Brownlie writes that 'the sovereignty and equality of states represent the basic constitutional doctrine of the law of nations' and 'indeed the whole of law could be expressed in terms of co-existence of sovereignties,' with 'the institutional aspects of organizations of states result(ing) in an actual, as opposed to a formal, qualification of the principle of sovereign equality'.⁴ Hannun adds, 'Many writers essentially equate sovereignty with independence, the fundamental authority of a state to exercise its powers without being subservient to any outside authority,' with the proviso that 'the nature of territorial sovereignty necessarily implies the fundamental limitation that no state has the right to impose its will on the territory of another . . .' as 'by general and customary law, such as the right of innocent passage and freedom of navigation on the high seas and international waterways,' and 'the equitable use of water resources upon which other states depend also is mandated by international law.'⁵ By treaty, states can mutually adjust and clarify their relationship. 'Of course, adherence to a treaty is not a limitation on sovereignty; it is rather one of the ultimate sovereign acts. At the same time, however, the principle of *pacta sunt servanda* does suggest that states are not as free to denounce as they are to accede to treaties; . . .'⁶

Oppenheim, one of the foremost authorities on international law, states that 'Independence (external and internal), and territorial (territorial sovereignty) and personal authority (political sovereignty), are the three main aspects of the sovereignty of a state'.⁷ But restrictions on territorial authority are amply recognized, as his treatise notes: 'A state, in spite of its territorial authority, may not alter the natural conditions of its own territory to the disadvantage of the natural conditions of the territory of a neighbouring state—for instance, to stop or to divert or to pollute the flow of a river which runs from its own into neighbouring territory.'⁸

The 'no harm' and 'equitable utilization' principles are applicable globally, but, as previously recognized by the riparians of the lower Mekong river, they are somewhat ambiguous and defy clear definition. The *no harm doctrine* means that a riparian state should utilize an international river in such a manner so as not to cause significant (substantial,

⁴ *Principles of Public International Law*, Ian Brownlie, pp. 280–3.

⁵ *Autonomy, Sovereignty, and Self-determination*, Hurst Hannun, pp. 15–20.

⁶ *Ibid.*, p. 22.

⁷ *Oppenheim's International Law*, Vol. 1, ed. by R. Jennings & Watts, 1992, p. 382.

⁸ *Ibid.*, p. 391.

appreciable or determinable) harm to other riparian states. This may imply the right of a state to unilaterally make use of waters in their territory. The second principle on *equitable apportionment (or equitable utilization)* acknowledges the right of a state to a reasonable and equitable use (share) of an international watercourse, with a general condition that such apportionment be determined by all relevant facts and circumstances. Both are given credibility by the universally accepted principle that 'one should exercise one's right so as not to injure another' (*sic utero tuo ut alienum non laedas*).

The application of these principles have been translated into several doctrines that take into account the unique context of international water resources, the hydraulic characteristic of water, and the geographic location of the riparians. The *doctrine of absolute territorial sovereignty* gained its notoriety, if not its origin, from the legal opinion of US Attorney General Harmon in 1895 in response to an objection by Mexico (downstream riparian) and the use of waters by the US (upstream riparian) on the Rio Grande. Harmon 'concluded that because the United States has sovereignty over the Rio Grande in its territory, therefore international law imposed no obligation upon the United States to share the water with Mexico . . . Accordingly it is necessary to distinguish between what states say and what they do. It should be noted that the Harmon opinion contains two elements: (1) Territorial sovereignty, and (2) therefore no obligation.'⁹

Under the 1909 Boundary Waters Treaty between Canada and the US (which contains a statement that may be interpreted to mean the Harmon Doctrine) in a dispute over the Columbia river that arose in the 1950s, the situation was reversed. The US, realizing 'that under the rule of reciprocity the Harmon Doctrine may operate to the detriment of the State invoking it, made a dramatic volte-face and (further) repudiated the doctrine'.¹⁰ Previously in 1945, Secretary of State Acheson testified regarding the 1944 Treaty with Mexico on the three international rivers that 'The logical conclusion of the legal argument of the opponents of the treaty appears to be that an upstream nation by unilateral act in its own territory can impinge upon the rights of a downstream nation; this is hardly the kind of legal doctrine that can be seriously urged in these times.' This was followed by the

⁹ *Legal Aspects of the Use of Systems of International Waters*, Memorandum of the State Department, 4/21/58, p. 9.

¹⁰ *Africa's Shared Water Resources: Legal and Institutional Aspect of the Nile, Niger and Senegal River Systems*, Bonaya Adhi Godana, p. 37.

testimony of Clayton, US Counsel to the International Boundary Commission, that 'Attorney General Harmon's opinion has never been followed either by the United States or by any other country of which I am aware'.¹¹

The *doctrine of absolute territorial integrity* favours the downstream riparian's right to prevent the upstream riparian from interfering with the natural flow of the river. The doctrine has likewise been dismissed as unreasonable for it gives the downstream state an unquestionable right of veto.

The *doctrine of limited territorial sovereignty* has gained credibility and near universal acceptance because it recognizes the rights of all riparians to an equitable sharing and utilization of the transboundary waters, widely known as the Helsinki Rules and the latest draft report of the UN's International Law Commission, and the basis of the vast majority of treaties on the subject. This is most often accomplished through an apportionment of the waters between the riparians in what Schwarzenberger refers to as 'The Law of Reciprocity'¹² i.e., a riparian, within its territory is entitled to an equitable and reasonable share of the waters to be determined by all relevant factors, many of which are commonly enumerated as indicative though not mandatory, but limited by the same right of sharing and use in the other co-riparians.

The ILC report contains other principles that emerge from the common law principle of reasonable and equitable utilization, treaty practice and arbitral awards; the duty to cooperate and negotiate, and the implicit conduct of prior consultation, for which procedures are suggested. Although these may be considered principles common to some international agreements (treaties and conventions), their practical application is in the joint efforts of riparians to optimize the development of a basin's water resources and to avoid or mitigate any potentially harmful affects.

Finally is the *theory of community of interests* which has emerged out of agreements in some international river basins of riparian states to consider the hydrologic basin covering parts of their country as an interdependent economic and environmental unit to be collectively planned, developed and managed through positive cooperation. The co-riparians make every effort to take advantage of the strategic hydro-geographical features within the basin to optimize the real benefits and minimize harmful effects from natural occurrences and human development efforts. Equitable apportionment and utilization by individual states is not relevant. The

¹¹ Ibid., pp. 66-7.

¹² Supra note 1, p. 14.

members view the water resources as their common property, and through a free exchange of information, coordinated planning, development and management of the system, and a balancing of benefits to be derived so that all members are treated equally, strive towards optimum utilization. Added to this could be the new global trend towards sustainability and environmental protection.

This may appear very idealistic and non-achievable, but the precedence for its acceptability exists in varying degrees. Historically, the freedom of navigation (right of free passage) treats navigable international watercourse as common property or a special interest of the riparians. The most well-known application of the theory is the Tennessee Valley Authority, which took one of the poorest regions of the US, shared by six sovereign states, and turned it into one of the most productive areas. Many other examples exist, with varying degrees of success. And though the concept may be highly desirable, it has not reached a status in state or international practice to be considered a norm or 'principle' of international law.

The commonly practised options for addressing the issues of shared or common international water resources therefore are:

- (1) Do what one would like to do in one's territory and leave the burden of complaint upon the other riparians (which leaves a cloud of uncertainty for all parties);
- (2) Enter into an agreement to allocate the waters according to some formula agreeable to the riparians to be self-executing or implemented through an organizational arrangement; or,
- (3) Adopt several interlocking principles of reciprocity and cooperation premised upon a right to a reasonable and equitable share and use of the waters, and a sufficiently structured and functional organization to address and implement the objectives and provisions of the agreement.

Considering the history of cooperation in the Lower Mekong basin and the expressed intentions of the riparians, the third option became the likely choice. There are also elements of a 'community of interest' through joint cooperation and assistance on many related economic and social issues of the region that are directly or indirectly related to the Mekong river system.

The countries expressed the willingness and need for cooperation in the development, utilization and management of the Mekong river waters, recognizing that there are many points of common interest among the

riparians, and through cooperation, the countries could avoid conflicts and make plans and adjustments for maximum development and for sharing the Mekong waters.

DRAFTING PROCESS AND SUMMARY OF THE AGREEMENT

Criteria and Considerations

Four criteria seemed to govern the MWG's commitment and good faith in negotiating a new framework of cooperation and confidence building among the parties—acceptability, practicability, flexibility and implementability. Two underlying objectives directed the drafting process: one, to reflect and protect the sovereign interest of each co-riparian party; and two, to ensure the integrity of the final agreement. From the outset, the parties were concerned that the final agreement also comply with the requirements of international law.

The result of their effort is the *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin*. They have also considerably contributed to the body of 'international water law' by first, adopting existing principles into the agreement, and second, exceeding what international law requires by incorporating social, economic and environmental concerns in the evaluation and implementation process. The parties took the position that international law requirements should serve as a minimum standard to be met, and that in fact they should go beyond.

Three additional criteria should also be considered.

1. To evaluate the *theory* of the proposed and acceptable provisions with the *practical* and *realistic* joint implementation by the parties. This would lead to addressing the primary requirements of the agreement with flexibility to interpret their applications to situations that were not anticipated, and to make necessary amendments and deletions as considered necessary.

2. To consider the extent of their joint cooperation, in what may be described from the viewpoint economics as a range of effort and effects from lose/win, Pareto optimum, win/win, and superfairness. There was no question that a *lose/win* situation would not be an acceptable situation among the riparians in the development and use of the Mekong's water resources, as this would be inconsistent with each others sovereignty and territorial integrity. It was agreed that as a minimum, what economists describe as a 'Pareto optimum' condition may be acceptable, that is that one

party may not become better off if it makes any other party worse off. However, with proper planning, coordination and implementation, the desirable effect would be for a *win/win* situation for all parties. In retrospect, the Agreement exhibits, in theory at least, an effort towards a situation of *superfairness*, where the water and related resources of the basin are comprehensively evaluated to produce an optimum integrated sustainable development approach. That takes into account the human resources and needs, and the protection of their culture and environments.

3. To consider, at least for the purposes of exploring the full potentials of the Mekong river and the impacts of developing these potentials, a *one-nation-basin* scenario was proposed that would temporarily dissolve the national boundaries and suspend the complex and sensitive issue of 'sovereignty'. Later, these would be overlaid to ensure that the rights and interests of the respective nations were taken into account.

An Outline of the Mandate's 'Two Major Areas'

Initially, it was thought that the 'principles for sustainable development' should be completed, and then the 'institutional and management issues' be addressed. As the parties began to work on the former, it was agreed that these two components were fundamentally interdependent and should be worked on simultaneously. An outline of the combined issues was presented for consideration by the MWG.

Nine common points or 'principles' of the future framework were identified and found mutually acceptable as a starting point to the first major area. These general points were: Respect for the sovereign rights of all riparians; Develop water resources for the mutual accommodation of the parties; Equitable and reasonable sharing of the Mekong waters; Duty to inform (prior consultation); Duty not to cause harm; Duty to compensate injured parties; Observe and protect navigation rights (freedom of navigation); Protect the environment and aquatic conditions; and maintain databases. Subsequently, these points, many of which are principles of international law, were incorporated into the outline of a draft agreement.

The outline of the institutional framework emerged as a three-tiered organizational structure consisting of a policy-making body, a technical body and a secretariat (see Annexure 3). The MWG members reflected upon the existing MC/IMC and MC structure, and their strengths and weaknesses. They reviewed the organizational arrangements in the river basins (US and Mexico's IBWC, US and Canada's IJC, and those of the Senegal, Zambezi, Rhine, Danube and Indus rivers) to arrive at an acceptable structure for the new agreement.

From Outline to Draft Agreement Format

After the draft outline was agreed upon, the next step was to transform it into treaty or agreement format. An appropriate title was necessary. Given the scope of the outline, the MWG agreed it should reflect not just the mainstream of the Mekong, but the entire basin if the joint efforts to maximize the potentials of the Mekong's waters was to be realized on a sustainable basis. Thus, the accepted title 'Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin' reflects their universal position of a 'comprehensive and integrated water management' approach.

In fact, in the text of the draft the MWG went further than focusing just on the development of the Mekong waters. They included the concept of 'sustainability', not just of the transnational waters, but also of the 'related resources' and inter-basin transfers in conjunction with protecting and conserving the environmental/eco-system of the basin as a hydrologic unit, including the delicate ecological balance of the river system itself, and in facilitating the promotion of related subregional activities.

Incorporating the Kuala Lumpur rationale and mandate into the draft agreement produced a breakdown of six Chapters and forty-two Articles.

Chapter 1 is the *Preamble*, which states the intention of the parties by: Recalling the establishment of the Mekong Committee in 1957; Noting the unique spirit of cooperation and accomplishments of the Committee, Acknowledging the political, economic and social changes that have taken place since the creation of the Committee; Recognizing that the Mekong's waters and related resources of the basin are a natural asset common to all riparians; Reaffirming the cooperation of the four riparians for sustainable development in the basin; Affirming their desire to promote interdependent regional cooperation; Realizing the necessity of a joint organizational structure; and, Proclaiming their commitment to abide by and implement the objectives, principles and institutional framework set out in the remainder of the agreement.

Within the context of the broad MWG mandate for cooperation on the Mekong river system, it was apparent that these future actions and the implementing mechanism share an important, if not pivotal, role to foster and promote subregional cooperation in many interdependent areas. As the 'Mekong river system is a natural asset of immense value to all the riparian countries,' it is also a vital link and catalyst for subregional economic and social development and protection of environmental and cultural

values. The MWG gave serious consideration to fully utilizing this unique capability of the Mekong river to promote or assist in the promotion of interdependent subregional growth and cooperation among the 'family' or 'community' of Mekong nations. This implies taking into account extra-basin benefits that could be derived and/or detriments that could be prevented or mitigated from activities undertaken in the future within the Mekong basin.

Chapter 3 contains the substance of the Agreement, the 'Objectives and Principles of Cooperation'. The main topics addressed are: Areas of cooperation; Projects, programmes and planning, which places as the primary instrument, the Basin Development Plan; Protection of the environment and ecological balance; Sovereign equality and territorial integrity; Reasonable and equitable utilization; Maintenance of flows on the mainstream; Prevention and cessation of harmful effects; State responsibility for damages; Freedom of navigation; and Emergency situations.

Chapter 4 sets out the institutional framework by creating the Mekong River Commission as an international legal entity (Annex 4). It consists of a *Council* as the policy-making body at the Ministerial level, *Joint Committee* as the technical and implementing body at head of department level, and finally, a *Secretariat* to provide administrative and technical assistance to the Council and Joint Committee. The Council and Joint Committee consist of one permanent member from each country and annual rotating chairmanship. The head of the Secretariat is the Chief Executive Officer.

Anticipating that implementing the Agreement and pursuing the rights of the sovereign nation may lead to some problems, chapter 5 addresses the resolution of differences, first by the Mekong River Commission, and then by the governments pursuant to the full range of options available to sovereign nations under the UN Charter.

Chapter 6 contains the Final Provisions giving effect, scope and flexibility to the Agreement. It covers: The entry into force and the status of prior agreements; Amendments, modification, supersession and termination of the Agreement; Adding other riparian parties to the Agreement; Suspension and withdrawal of member states; Acknowledgment of the need for the United Nations and international community involvement to successfully implement the provisions of the Agreement; and Registration of the Agreement with the United Nations.

The 'Draft Agreement' was initialled by the MWG on 28 November, concluding the work of the MWG. In record time, each country approved the Draft Agreement and the signing ceremony was set for 5 April 1995. On that date in Chiang Rai, Thailand, with a gathering of over 500 people,

including ambassadors and other nation's and donor representatives, the plenipotentiaries from Cambodia, Lao PDR, Thailand and Vietnam signed the attached Mekong Agreement and the Protocol to activate the Mekong River Commission.

PROSPECTS FOR SUCCESS

In my opinion, the prospects for successfully implementing this Agreement are excellent because the members are committed to jointly cooperating in the development and management of the water and related resources of the basin. However, like the Mekong Committee, the success of the Mekong River Commission will also greatly depend upon assistance from the international donor community. This support and the degree of assistance will depend upon the creditability and maturity of decisions and actions taken by the MRC.

During the 24 months of negotiations, compromises and drafting, concern was often expressed over why it was taking so long to reach a mutually acceptable consensus on the new framework. Patience and understanding was needed and suggested.

In conclusion, the latest chapter in the efforts to harness the mighty Mekong river attests to the proposition that the 'Mekong Spirit of Cooperation' will continue to be a 'model' among multinational efforts in international river basin development. What has occurred has been a 'natural' evolutionary growth process reflected by changing condition and times. Whether it was a coincidence or by design that the new Agreement was chosen to be formulated at this time is now academic. In any event, much credit must be given to the four nations and their representatives to the MWG for grasping this window of opportunity to take the 'Mekong Spirit of Cooperation' into the twenty-first century.

Annexure 1

AGREEMENT ON THE COOPERATION FOR THE SUSTAINABLE DEVELOPMENT OF THE MEKONG RIVER BASIN

The Governments of The Kingdom of Cambodia, The Lao People's Democratic Republic, The Kingdom of Thailand, and The Socialist Republic of Viet Nam, being equally desirous of continuing to cooperate in a constructive and mutually beneficial manner for sustainable development, utilization, conservation and management of the Mekong River Basin water and

related resources, have resolved to conclude this Agreement setting forth the framework for cooperation acceptable to all parties hereto to accomplish these ends, and for that purpose have appointed as their respective plenipotentiaries:

The Kingdom of Cambodia:

H. E. Mr Ing Kieth

Deputy Prime Minister and Minister of Public Works and Transport

The Lao People's Democratic Republic:

H. E. Mr Somsavat Lengsavad

Minister of Foreign Affairs

The Kingdom of Thailand:

H. E. Dr Krasae Chanawongse

Minister of Foreign Affairs

The Socialist Republic of Viet Nam:

H. E. Mr Nguyen Manh Cam

Minister of Foreign Affairs

Who, having communicated to each other their respective full powers and having found them in good and due form, have agreed to the following:

Chapter 1: Preamble

Recalling the establishment of the Committee for the Coordination of Investigations of the Lower Mekong Basin on 17 September 1957 by the Governments of these countries by Statute endorsed by the United Nations.

Noting the unique spirit of cooperation and mutual assistance that inspired the work of the Committee for the Coordination of Investigations of the Lower Mekong Basin and the many accomplishments that have been achieved through its efforts.

Acknowledging the great political, economic and social changes that have taken place in these countries of the region during this period of time which necessitate these efforts to reassess, redefine and establish the futures framework for cooperation.

Recognizing that the Mekong River Basin and the related natural resources and environment are natural assets of immense value to all the

riparian countries for the economic and social well-being and living standards of their peoples.

Reaffirming the determination to continue to cooperate and promote in a constructive and mutually beneficial manner in the sustainable development, utilization, conservation and management of the Mekong River Basin water and related resources for navigational and non-navigational purposes, for social and economic development and the well-being of all riparian States, consistent with the needs to protect, preserve, enhance and manage the environmental and aquatic conditions and maintenance of the ecological balance exceptional to this river basin.

Affirming to promote or assist in the promotion of interdependent sub-regional growth and cooperation among the community of Mekong nations, taking into account the regional benefits that could be derived and/or detriments that could be avoided or mitigated from activities within the Mekong River Basin undertaken by this framework of cooperation.

Realizing the necessity to provide an adequate, efficient and functional joint organizational structure to implement this Agreement and the projects, programmes and activities taken thereunder in cooperation and coordination with each member and the international community, and to address and resolve issues and problems that may arise from the use and development of the Mekong River Basin water and related resources in an amicable, timely and good neighbourly manner.

Proclaiming further the following specific objectives, principles, institutional framework and ancillary provisions in conformity with the objectives and principles of the Charter of the United Nations and international law.

Chapter 2: Definitions of Terms

For the purposes of this Agreement, it shall be understood that the following meanings to the underlined terms shall apply except where otherwise inconsistent with the context:

Agreement under Article 5: A decision of the Joint Committee resulting from *prior consultation* and evaluation on any *proposed use* for inter-basin diversions during the wet season from the mainstream as well as for intra-basin use or inter-basin diversions of these waters during the dry season. The objective of this *Agreement* is to achieve an optimum use and prevention of waste of the waters through a dynamic and practical consensus in conformity with the Rules of Water Utilization and Inter-Basin Diversions set forth in Article 26.

Acceptable natural reverse flow: The acceptable minimum monthly natural flow during each month of the dry season.

Acceptable natural reverse flow: The wet season flow level in the Mekong River at Kratie that allows the reverse flow of the Tonle Sap to an agreed upon optimum level of the Great Lake.

Basin development plan: The general planning tool and process that the Joint Committee would use as a blueprint to identify, categorize and prioritize the projects and programmes to seek assistance for and to implement the plan at the basin level.

Environment: The conditions of water and land resources, air, flora, and fauna that exists in a particular region.

Notification: Providing timely information by a riparian to the Joint Committee on its *proposed use* of water according to the format, content and procedures set forth in the Rules for Water Utilization and Inter-Basin Diversions under Article 26.

Prior consultation: Timely *notification* plus additional data and information to the Joint Committee as provided in the Rules for Water Utilization and Inter-Basin Diversion under Article 26, that would allow the other member riparians to discuss and evaluate the impact of the *proposed use* upon their uses of water and any other affects, which is the basis for arriving at an agreement. *Prior consultation* is neither a right to veto the use nor unilateral right to use water by any riparian without taking into account other riparians' rights.

Proposed use: Any proposal for a definite use of the waters of the Mekong River system by any riparian, excluding domestic and minor uses of water not having a significant impact on mainstream flows.

Chapter 3: Objectives and Principles of Cooperation

The parties agree:

Article 1: Areas of Cooperation

To cooperate in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin including, but not limited to irrigation, hydro-power, navigation, flood control, fisheries, timber floating, recreation and tourism, in a manner so as to optimize the multiple use and mutual benefits of all riparians and to minimize the harmful effects that might result from natural occurrences and man-made activities.

Article 2: Projects, Programmes and Planning

To promote, support, cooperate and coordinate in the development of the full potential of sustainable benefits to all riparian States and the prevention of wasteful use of Mekong River Basin waters, with emphasis and preference on joint and/or basin-wide development projects and basin programmes through the formulation of a basin development plan, that would be used to identify, categorize and prioritize the projects and programmes to seek assistance for and to implement at the basin level.

Article 3: Protection of the Environment and Ecological Balance

To protect the environment, natural resources, aquatic life and conditions, and ecological balance of the Mekong River Basin from pollution or other harmful effects resulting from any development plans and uses of water and related resources in the Basin.

Article 4: Sovereign Equality and Territorial Integrity

To cooperate on the basis of sovereign equality and territorial integrity in the utilization and protection of the water resources of the Mekong River Basin.

Article 5: Reasonable and Equitable Utilization

To utilize the waters of the Mekong River system in a reasonable and equitable manner in their respective territories, pursuant to all relevant factors and circumstances, the Rules for Water Utilization and Inter-Basin Diversion provided for under Article 26 and the provisions of A and B below:

- A. ON TRIBUTARIES OF THE MEKONG RIVER, INCLUDING TONLE SAP, INTRA-BASIN USES AND INTER-BASIN DIVERSIONS SHALL BE SUBJECT TO NOTIFICATION TO THE JOINT COMMITTEE

- B. ON THE MAINSTREAM OF THE MEKONG RIVER
 - I. During the wet season:
 - (a) Intra-basin use shall be subject to notification to the Joint Committee.
 - (b) Inter-basin diversion shall be subject to prior consultation which aims at arriving at an agreement by the Joint Committee.

2. During the dry season:

- (a) Intra-basin use shall be subject to prior consultation which aims at arriving at an agreement by the Joint Committee.
- (b) Any inter-basin diversion project shall be agreed upon by the Joint Committee through a specific agreement for each project prior to any proposed diversion. However, should there be a surplus quantity of water available in excess of the proposed uses of all parties in any dry season, verified and unanimously confirmed as such by the Joint Committee, an inter-basin diversion of the surplus could be made subject to prior consultation.

Article 6: Maintenance of Flows on the Mainstream

To cooperate in the maintenance of the flows on the mainstream from diversions, storage releases, or other actions of a permanent nature; except in the cases of historically severe droughts and/or floods:

- (a) Of not less than the acceptable minimum monthly natural flow during each month of the dry season;
- (b) To enable the acceptable natural reverse flow of the Tonle Sap to take place during the wet season; and,
- (c) To prevent average daily peak flows greater than what naturally occur on the average during the flood season.

The Joint Committee shall adopt guidelines for the locations and levels of the flows, and monitor and take action necessary for their maintenance as provided in Article 26.

Article 7: Prevention and Cessation of Harmful Effects

To make every effort to avoid, minimize and mitigate harmful effects that might occur to the environment, especially the water quantity and quality, the aquatic (eco-system) conditions, and ecological balance of the river system, from the development and use of the Mekong River Basin water resources or discharge of wastes and return flows. Where one or more States is notified with proper and valid evidence that it is causing substantial damage to one or more riparians from the use of and/or discharge to water of the Mekong River, that State or States shall cease immediately the alleged cause of harm until such cause of harm is determined in accordance with Article 8.

Article 8: State Responsibility for Damages

Where harmful effects cause substantial damage to one or more riparians from the use of and/or discharge to waters of the Mekong River by any riparian State, the party(ies) concerned shall determine all relative factors, the cause, extent of damage and responsibility for damages caused by that State in conformity with the principles of international law relating to state responsibility, and to address and resolve all issues, differences and disputes in an amicable and timely manner by peaceful means as provided in Articles 34 and 35 of this Agreement, and in conformity with the Charter of the United Nations.

Article 9: Freedom of Navigation

On the basis of equality of right, freedom of navigation shall be accorded throughout the mainstream of the Mekong River without regard to the territorial boundaries, for transportation and communication to promote regional cooperation and to satisfactorily implement projects under this Agreement. The Mekong River shall be kept free from obstructions, measures, conduct and actions that might directly or indirectly impair navigability, interfere with this right or permanently make it more difficult. Navigational uses are not assured any priority over other uses, but will be incorporated into any mainstream project. Riparians may issue regulations for the portions of the Mekong River within their territories, particularly in sanitary, customs and immigration matters, police and general security.

Article 10: Emergency Situations

Whenever a Party becomes aware of any special water quantity or quality problems constituting an emergency that requires an immediate response, it shall notify and consult directly with the party(ies) concerned and the Joint Committee without delay in order to take appropriate remedial action.

Chapter 4: Institutional Framework

A. MEKONG RIVER COMMISSION

Article 11: Status

The institutional framework for cooperation in the Mekong River Basin under this Agreement shall be called the Mekong River Commission and shall, for the purpose of the exercise of its functions, enjoy the status of

an international body, including entering into agreements and obligations with the donor or international community.

Article 12: Structure of Mekong River Commission

The Commission shall consist of three permanent bodies:

Council

Joint Committee, and

Secretariat

Article 13: Assumption of Assets, Obligations and Rights

The Commission shall assume all the assets, rights and obligations of the Committee for the Coordination of Investigations of the Lower Mekong Basin (Mekong Committee/Interim Mekong Committee) and Mekong Secretariat.

Article 14: Budget of the Mekong River Commission

The budget of the Commission shall be drawn up by the Joint Committee and approved by the Council and shall consist of contributions from member countries on an equal basis unless otherwise decided by the Council, from the international community (donor countries), and from other sources.

B. COUNCIL

Article 15: Composition of Council

The Council shall be composed of one member from each participating riparian State at the Ministerial and Cabinet level (no less than Vice-Minister level) who would be empowered to make policy decisions on behalf of his/her government.

Article 16: Chairmanship of Council

The Chairmanship of the Council shall be for a term of one year and rotate according to the alphabetical listing of the participating countries.

Article 17: Sessions of Council

The Council shall convene at least one regular session every year and may convene special sessions whenever it considers it necessary or upon the request of a member State. It may invite observers to its sessions as it deems appropriate.

Article 18: Functions of Council

The functions of the Council are:

- (a) To make policies and decisions and provide other necessary guidance concerning the promotion, support, cooperation and coordination in joint activities and projects in a constructive and mutually beneficial manner for the sustainable development, utilization, conservation and management of the Mekong River Basin waters and related resources, and protection of the environment and aquatic conditions in the Basin as provided for under this Agreement.
- (b) To decide any other policy-making matters and make decisions necessary to successfully implement this Agreement, including but not limited to approval of the Rules of Procedures of the Joint Committee under Article 25, Rules of Water Utilization and Inter-Basin Diversions proposed by the Joint Committee under Article 26, and the basin development plan and major component projects/programmes; to establish guidelines for financial and technical assistance of development projects and programmes; and if considered necessary, to invite the donors to coordinate their support through a Donor Consultative Group; and,
- (c) To entertain, address and resolve issues, differences and disputes referred to it by any Council member, the Joint Committee, or any member State on matters arising under this Agreement.

Article 19: Rules of Procedures

The Council shall adopt its own Rules of Procedures, and may seek technical advisory services as it deems necessary.

Article 20: Decisions of Council

Decisions of the Council shall be by unanimous vote except as otherwise provided for in its Rules of Procedures.

C. JOINT COMMITTEE

Article 21: Composition of Joint Committee

The Joint Committee shall be composed of one member from each participating riparian State at no less than Head of Department level,

Article 22: Chairmanship of Joint Committee

The Chairmanship of the Joint Committee will rotate according to the

reverse alphabetical listing of the member countries and the Chairperson shall serve a term of one year.

Article 23: Sessions of Joint Committee

The Joint Committee shall convene at least two regular sessions every year and may convene special sessions whenever it considers it necessary or upon the request of a member State. It may invite observers to its sessions as it deems appropriate.

Article 24: Functions of Joint Committee

The functions of the Joint Committee are:

- (a) To implement the policies and decisions of the Council and such other tasks as may be assigned by the Council.
- (b) To formulate a basin development plan, which would be periodically reviewed and revised as necessary; to submit to the Council for approval the basin development plan and joint development projects/programmes to be implemented in connection with it; and to confer with donors, directly or through their consultative group, to obtain the financial and technical support necessary for project/programme implementation.
- (c) To regularly obtain, update and exchange information and data necessary to implement this Agreement.
- (d) To conduct appropriate studies and assessments for the protection of the environment and maintenance of the ecological balance of the Mekong River Basin.
- (e) To assign tasks and supervise the activities of the Secretariat as is required to implement this Agreement and the policies, decisions, projects and programmes adopted thereunder, including the maintenance of databases and information necessary for the Council and Joint Committee to perform their functions, and approval of the annual work programme prepared by the Secretariat.
- (f) To address and make every effort to resolve issues and differences that may arise between regular sessions of the Council, referred to it by any Joint Committee member or member state on matters arising under this Agreement, and when necessary to refer the matter to the Council.
- (g) To review and approve studies and training for the personnel of the riparian member countries involved in Mekong River Basin activities as appropriate and necessary to strengthen the capability to implement this Agreement.

- (h) To make recommendations to the Council for approval on the organizational structure, modifications and restructuring of the Secretariat.

Article 25: Rules of Procedures

The Joint Committee shall propose its own Rules of Procedures to be approved by the Council. It may form ad hoc and/or permanent sub-committees or working groups as considered necessary, and may seek technical advisory services except as may be provided for in the Council's Rules of Procedures or decisions.

Article 26: Rules for Water Utilization and Inter-Basin Diversions

The Joint Committee shall prepare and propose for approval of the Council, inter alia, Rules for Water Utilization and Inter-Basin Diversions pursuant to Articles 5 and 6, including but not limited to: (1) establishing the time frame for the wet and dry seasons; (2) establishing the location of hydrological stations, and determining and maintaining the flow level requirements at each station; (3) setting out criteria for determining surplus quantities of water during the dry season on the mainstream; (4) improving upon the mechanism to monitor intra-basin use; and (5) setting up a mechanism to monitor inter-basin diversions from the mainstream.

Article 27: Decisions of the Joint Committee

Decisions of the Joint Committee shall be by unanimous vote except as otherwise provided for in its Rules of Procedures.

D. SECRETARIAT

Article 28: Purpose of Secretariat

The Secretariat shall render technical and administrative services to the Council and Joint Committee, and be under the supervision of the Joint Committee.

Article 29: Location of Secretariat

The location and structure of the permanent office of the Secretariat shall be decided by the Council, and if necessary, a headquarters agreement shall be negotiated and entered into with the host government.

Article 30: Functions of the Secretariat

The functions and duties of the Secretariat will be to:

- (a) Carry out the decisions and tasks assigned by the Council and Joint Committee under the direction of and directly responsible to the Joint Committee;
- (b) Provide technical services and financial administration and advise as requested by the Council and Joint Committee;
- (c) Formulate the annual work programme, and prepare all other plans, project and programme documents, studies and assessments as may be required;
- (d) Assist the Joint Committee in the implementation and management of projects and programmes as requested;
- (e) Maintain databases of information as directed;
- (f) Make preparations for sessions of the Council and Joint Committee; and,
- (g) Carry out all other assignments as may be requested.

Article 31: Chief Executive Officer

The Secretariat shall be under the direction of a Chief Executive Officer (CEO), who shall be appointed by the Council from a short-list of qualified candidates selected by the Joint Committee. The Terms of Reference of the CEO shall be prepared by the Joint Committee and approved by the Council.

Article 32: Assistant Chief Executive Officer

There will be one Assistant to the CEO, nominated by the CEO and approved by the Chairman of the Joint Committee. Such Assistant will be of the same nationality as the Chairman of the Joint Committee and shall serve for a co-terminus one-year term.

Article 33: Riparian Staff

Riparian technical staff of the Secretariat are to be recruited on a basis of technical competence, and the number of posts shall be assigned on an equal basis among the members. Riparian technical staff shall be assigned to the Secretariat for no more than two three-year terms, except as otherwise decided by the Joint Committee.

Chapter 5: Addressing Differences and Disputes

Article 34: Resolution by Mekong River Commission

Whenever any difference or dispute may arise between two or more parties to this Agreement regarding any matters covered by this Agreement

and/or actions taken by the implementing organization through its various bodies, particularly as to the interpretations of the Agreement and the legal rights of the parties, the Commission shall first make every effort to resolve the issue as provided in Articles 18C and 24F.

Article 35: Resolution by Governments

In case the Commission is unable to resolve the difference or dispute within a timely manner, the issue shall be referred to the Governments to take cognizance of the matter for resolution by negotiation through diplomatic channels within a timely manner, and they may communicate their decision to the Council for further proceedings as may be necessary to carry out such decision. Should the Governments find it necessary or beneficial to facilitate the resolution of the matter, they may, by mutual agreement, request the assistance of mediation through an entity or party mutually agreed upon, and thereafter to proceed according to the principles of international law.

Chapter 6: Final Provisions

Article 36: Entry into Force and Prior Agreements

This Agreement shall:

- (a) Enter into force among all parties, with no retroactive effect upon activities and projects previously existing, on the date of signature by the appointed plenipotentiaries.
- (b) Replace the Statute of the Committee for Coordination of Investigations of the Lower Mekong Basin of 1957 as amended, the Joint Declaration of Principles for Utilization of the Waters of the Lower Mekong Basin of 1975, the Declaration Concerning the Interim Committee for Coordination of Investigations of the Lower Mekong Basin of 1978, and all Rules of Procedures adopted under such agreements. This Agreement shall not replace or take precedence over any other treaties, acts or agreements entered into by and among any of the parties hereto, except that where a conflict in terms, areas of jurisdiction of subject matter or operation of any entities created under existing agreements occurs with any provisions of this Agreement, the issues shall be submitted to the respective governments to address and resolve.

Article 37: Amendments, Modification, Supersession and Termination

This Agreement may be amended, modified, superseded or terminated by the mutual agreement of all parties hereto at the time of such action.

Article 38: Scope of Agreement

This Agreement shall consist of the Preamble and all provisions thereafter and amendments thereto, the Annexes, and all other agreements entered into by the Parties under this Agreement. Parties may enter into bi- or multi-lateral special agreements or arrangements for implementation and management of any programmes and projects to be undertaken within the framework of the Agreement, which agreements shall not be in conflict with this Agreement and shall not confer any rights or obligations upon the parties not signatories thereto, except as otherwise conferred under this Agreement.

Article 39: Additional Parties to Agreement

Any other riparian State, accepting the rights and obligations under this Agreement, may become a party with the consent of the parties.

Article 40: Suspension and Withdrawal

Any party to this Agreement may withdraw or suspend their participation under present Agreement by giving written notice to the Chairman of the Council of the Mekong River Commission, who shall acknowledge receipt thereof and immediately communicate it to the Council representatives of all remaining parties. Such notice of withdrawal or suspension shall take effect one year after the date of acknowledgment or receipt unless such notice is withdrawn beforehand or the parties mutually agree otherwise. Unless mutually agreed upon to the contrary by all remaining parties to this Agreement, such notice shall not be prejudicial to nor relieve the noticing party of any commitments entered into concerning programmes, projects, studies or other recognized rights and interests of any riparians, or under international law.

Article 41: United Nations and International Community Involvement

The member countries to this Agreement acknowledge the important contribution in the assistance and guidance of the United Nations, donors and the international community and wish to continue the relationship under this Agreement.

Article 42: Registration of Agreement

This Agreement shall be registered and deposited, in English and French, with the Secretary General of the United Nations.

IN WITNESS WHEREOF, the undersigned, duly authorized by their respective governments have signed this Agreement.

DONE on 5 April 1995 at Chiang Rai, Thailand, in English and French, both texts being equally authentic. In the case of any inconsistency, the text in the English language, in which language the Agreement was drawn up, shall prevail.

For the Kingdom of Cambodia:

For the Lao People's
Democratic Republic

Ing Kieth
Deputy Prime Minister and
Minister of Public Works and Transport

Somsavat Lengsavad
Minister of Foreign Affairs

For the Kingdom of Thailand:

For the Socialist Republic of
Viet Nam:

Dr Krasae Chanawongse
Minister of Foreign Affairs

Nguyen Manh Cam
Minister of Foreign Affairs

PROTOCOL

To the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin for the Establishment and Commencement of the Mekong River Commission

The Governments of the Kingdom of Cambodia, Lao People's Democratic Republic, Kingdom of Thailand, and Socialist Republic of Viet Nam, have signed on this day the AGREEMENT ON THE COOPERATION FOR THE SUSTAINABLE DEVELOPMENT OF THE MEKONG RIVER BASIN.

Said AGREEMENT provides for in Chapter 4 the establishment of the Mekong River Commission as the institutional framework through which the AGREEMENT will be implemented.

BY THIS PROTOCOL, the signatory parties to the AGREEMENT do hereby declare the establishment and commencement of the MEKONG RIVER COMMISSION, consisting of three permanent bodies, the COUNCIL, JOINT COMMITTEE and SECRETARIAT, effective on this date with the full authority and responsibility set forth under the AGREEMENT.

IN WITNESS WHEREOF, the undersigned, duly authorized by their respective governments have signed this protocol.

DONE on 5 April 1995 at Chiang Rai, Thailand.

For the Kingdom of Cambodia:

For the Lao People's
Democratic Republic

Ing Kieth
Deputy Prime Minister and
Minister of Public Works and Transport

Somsavat Lengsavad
Minister of Foreign Affairs

For the Kingdom of Thailand:

For the Socialist Republic of
Viet Nam:

Dr Krasae Chanawongse
Minister of Foreign Affairs

Nguyen Manh Cam
Minister of Foreign Affairs

Annexure 2

LOWER MEKONG RIVER: RIPARIAN AGREEMENTS PRE-1957

1. *Treaty of Friendship, Commerce and Navigation between France and Siam*, signed at Bangkok, 15 August 1856.
2. *Treaty between France and Siam for the Regulation of the Position of the Kingdom of Cambodia*, signed at Paris, 15 July, 1867.
3. *Treaty of Peace and Convention between France and Siam*, signed at Bangkok, 3 October 1893.
4. *Convention entre la France et le Siam par Laquelle le Siam renonce a ses pretentions sur le Royaume du Luang Prabang et de la province de Bassac*, signed at Bangkok on 7 October 1902.
5. *Convention and Protocol between France and Siam Relative to Friendship and Boundaries*, signed at Paris on 13 February 1904.
6. *Treaty between France and Siam Relative to Frontiers and Jurisdiction*, signed at Bangkok on 23 March 1907.
7. *Agreement Relative to the Concessions Made to the Government of the French Republic on the Right Bank of the Mekong in Execution of Art. VIII of the Convention of 13 February 1904*, signed by France and Siam at Bangkok on 23 March 1907.
8. *Treaty of Friendship, Commerce and Navigation between Siam and France*, signed at Paris on 14 February 1925.
9. *Convention between Siam and France Relating to the Regulation of the Relations between Siam and Indochina*, signed at Bangkok on 25 August 1926.
10. *Rules and Regulations of the Permanent Franco-Siamese High Commission of the Mekong*. Resolution No. 1 of 21 January 1928.
11. *Treaty of Friendship, Commerce and Navigation between France and Siam, with Protocol and Exchange of Notes*, signed at Bangkok on 7 December 1937.
12. *Settlement Agreement between France and Siam*, signed at Washington on 17 November 1946.
13. *Convention on the Regime for Maritime and River Navigation on the Mekong and for River Navigation Approaching the Port of Saigon*, signed by Cambodia, France, Laos, and Viet Nam at Pau on 29 November 1950.

14. *Protocol Relating to the Use and Administration of the Port of Saigon*, signed by Cambodia, France, Laos, and Viet Nam at Pau on 29 November 1950.
15. *Agreement Regulating Maritime and Inland Navigation on the Mekong and Inland Navigation on the Approach to the Port of Saigon (with Protocol Relating to the Dissolution of the Mekong Advisory Commission)*, signed by Cambodia, France, Laos, and Viet Nam at Paris on 29 December 1954.
16. *Agreement Relating to the Use and Operation of the Port of Saigon*, signed by Cambodia, France, Laos, and Viet Nam at Paris on 29 December 1954.
17. *Convention Regulating Maritime and Inland Navigation on the Mekong and Inland Navigation on the Approach to the Port of Saigon*, signed by Cambodia, Laos, and Viet Nam at Paris on 29 December 1954.
18. *Convention entre le Viet Nam et le Cambodge sur l'utilisation du port de commerce de Saigon*, signed at Paris on 29 December 1954.
19. *Convention entre le Viet Nam et el Laos sur l'utilisation du port de commerce de Saigon*, signed at Paris on 29 December 1954.
20. *Status of the Mekong Commission established by the Paris Convention of 29.12.1954 between Cambodia, Laos, and Viet Nam on the Regime of Maritime and Fluvial Navigation.*
21. *Convention regarding the measurement and registration of vessels employed in inland navigation. Multilateral agreement*, signed by Burma, Cambodia, China, India, Indonesia, Laos, Pakistan, Thailand, and Viet Nam at Bangkok on 22 June 1956.

LOWER MEKONG RIVER: RIPARIAN AGREEMENTS POST-1957

1. *Statute of the Committee for Coordination of Investigations of the Lower Mekong Basin*, established by the Governments of Cambodia, Laos, Thailand, and Viet Nam as adopted at the meeting of 17 September 1957 of the preparatory Committee and amended 31 October 1957 at the first session of the Committee for Coordination and approved by the participating Governments, and amended 2 August 1962 and March 1972.
2. *Terms of Reference of the Executive Agent*, 9 March 1959.
3. *Rules of Procedure for the Advisory Board to the Mekong Committee*, January 1963.
4. *Convention for the Supply of Power between Laos and Thailand*, signed by Cambodia, Laos, Thailand, Viet Nam, the Executive Secretary of the United Nations Economic Commission for Asia and the

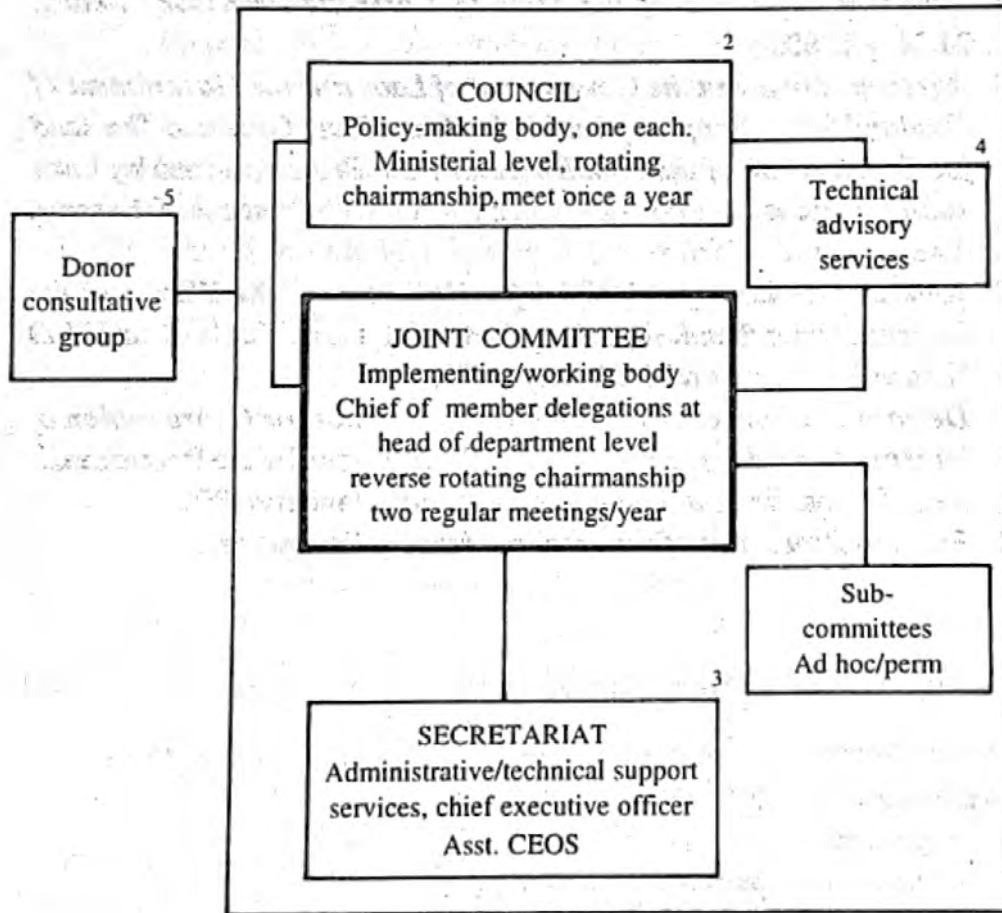
- Far East and the Executive Agent of the Committee for Coordination of Investigations of the Lower Mekong Basin at Vientiane on 12 August 1965 (with protocol of 29 March 1966).
5. *Protocol for the Implementation of the Convention for the Supply of Power between Laos and Thailand*, signed by Laos and Thailand in Bangkok on 21 and 23 April 1966.
 6. *Agreement between the Government of Laos and the Government of Thailand for the Supply by Thailand of Cement to Laos in Exchange of Power to be Produced at Nam Ngum*, signed in Bangkok and Vientiane on 21 and 23 April 1966 (with protocol of 29 March 1966).
 7. *Terms of Reference of the Mekong Committee Advisory Board*, 21 May 1968.
 8. *Agreement between the Government of Laos and the Government of Thailand for the Supply by Laos of Rock and River Gravel to Thailand for Construction of the Lam Dom Noi Dam Project*, signed by Laos and Thailand at Saigon on 25 January 1969 (with Protocol of the same date).
 9. *Joint Declaration of Principles for Utilization of the Waters of the Lower Mekong Basin*, signed by Cambodia, Laos, Thailand, and Viet Nam at Vientiane on 31 January 1975.
 10. *Declaration Concerning the Interim Committee for Coordination of Investigations of the Lower Mekong Basin*, signed by the Representatives of Laos, Thailand, and Viet Nam on 5 January 1978.
 11. *Rules of Procedure of the Interim Mekong Committee*.

Annexure 3

MEKONG RIVER BASIN AGREEMENT

Organizational Structure

MEKONG RIVER COMMISSION¹



¹ International body with internal structure of three organs

² Council addresses political/intergovernmental issues, joint committee addresses technical issues

³ One assistant chief executive officer to rotate with committee chairmanship annually

⁴ Provisions to obtain technical advisory services if needed

⁵ Provision to invite donors to form a consultative group for basin development plan and projects

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