

Mekong Case Study

- **TI Le-Huu and Lien Nguyen-Duc**
In cooperation with
Apichart Anukularmphal,
Do Hong Phan, Khammone Ponekeo,
Pech Sokhem and Zhang Hai-Lun



PCCP Publications 2001-2003

1. Frederick M. Lorenz, *The protection of water facilities under international law*, UNESCO-IHP, 46 p.
2. Sergel Vinogradov, Patricia Wouters and Patricia Jones, *Transforming potential conflict into cooperation potential: The role of international water law*, UNESCO-IHP, 106 p.
3. Stefano Burchi and Mehvin Spreij, *Institutions for international freshwater management*, UNESCO-IHP, 51 p.
4. K.D.W. Nandlal and Siobodan P. Simonovic, *State-of-the-art report on systems analysis methods for resolution of conflicts in water resources management*, UNESCO-IHP, 127 p.
5. Ali M. Yali, Sree N. Sreenath and Gundo Susiarjo, *An educational tool to examine the development constraints in the Limpopo river basin*, UNESCO-IHP, 50 p.
6. Fekri A. Hassan, Martin Reuss, Julie Trotter, Christoph Bernhardt, Aaron T. Wolf, Jennifer Mohamed-Katerere and Pieter van der Zaag, *History and future of shared water resources*, UNESCO-IHP, 150 p.
7. Yona Shamir, *Alternative dispute resolution approaches and their application*, UNESCO-IHP, 43 p.
8. Branko Bošnjakovic, *Negotiations in the context of international water-related agreements*, UNESCO-IHP, 50 p.
9. Philippe Barret, Alfonso Gonzalez avec les contributions de Yannick Barret et Céline Olivier, *Société civile et résolution des conflits hydriques*, UNESCO-IHP, 78 p.
10. Ti Le-Huu and Lien Nguyen-Duc in cooperation with Apichart Anukulamphal, Do Hong Phan, Khammone Ponekeo, Pech Sokhem and Zhang Hai-Lun, *Mekong Case Study*, UNESCO-IHP, 56 p.
11. Viktor Dukhovny and Vadim Sokolov, *Lessons on cooperation building to manage water conflicts in the Aral sea basin*, UNESCO-IHP, 50 p.
12. Keith W. Muckleston, *International management in the Columbia river system*, UNESCO-IHP, 47 p.
13. Peter Nachtsheim, *Danube case study*, UNESCO-IHP (to be published)
14. Álvaro Carmo Vaz and Pieter van der Zaag, *Sharing the Incomati Waters: Cooperation and competition in the balance*, UNESCO-IHP, 102 p.
15. Munther J. Haddadin and Uri Shamir, *Jordan case study*, UNESCO-IHP, 41 p.
16. Alan Nicol, *The Nile: Moving beyond cooperation*, UNESCO-IHP, 33 p.
17. Ina D. Frijters and Jan Leentvaar, *Rhine case study*, UNESCO-IHP, 33 p.
18. Raúl Artiga, *The case of the Trifinio plan in the Upper Lempa: Opportunities and challenges for the shared management of Central American transnational basins*, UNESCO-IHP, 13 p.
19. Eric Mostert, *Conflict and co-operation in the management of international freshwater resources: A global review*, UNESCO-IHP, 63 p.
20. Aaron T. Wolf, Shira B. Yoffe and Mark Giordano, *International waters: indicators for identifying basins at risk*, UNESCO-IHP, 30 p.
21. Pal Tamas, *Water resource scarcity and conflict: Review of applicable indicators and systems of reference*, UNESCO-IHP, 29 p.
22. Jerome Dell Priscoll, *Paradipeden, consensus building and conflict management training course*, UNESCO-IHP, 179 p.
23. WaterNet, CCR, ISRI, Catalic, UNESCO-IHE Delft, UZ, *Basics of water resources -Course book*, UNESCO-IHP, 97 p.
24. WaterNet, ISRI, Catalic, UNESCO-IHE Delft, ZU, *Basics of water resources -Reader*, UNESCO-IHP, 66 p.
25. WaterNet, ISRI, Catalic, UNESCO-IHE Delft, ZU, *Conflict prevention and cooperation in international water resources - Course book*, UNESCO-IHP, 269 p.
26. WaterNet, ISRI, Catalic, UNESCO-IHE Delft, ZU, *Conflict prevention and cooperation in international water resources - Reader*, UNESCO-IHP, 211 p.
27. WaterNet, ISRI, Catalic, UNESCO-IHE Delft, ZU, *Conflict prevention and cooperation in international water resources - Hand out*, UNESCO-IHP, 84 p.
28. WaterNet, CCR, ISRI, Catalic, UNESCO-IHE Delft, UZ, *Advanced mediation skills - Course book*, UNESCO-IHP, 83 p.
29. William J. Cosgrove (compiled by), *Water security and peace: A synthesis of studies prepared under the PCCP - Water for Peace process*, UNESCO-IHP, 108 p.
30. *A summary of PCCP publications 2001-2003*, UNESCO-IHP, 34 p.
31. Janos Bogardi and Saskia Castelein (eds.), *Selected papers of the International Conference From Conflict to Co-operation in International Water Resources Management: Challenges and Opportunities*, UNESCO-IHE Delft, The Netherlands, 20-22 November 2002, UNESCO-IHP, 600 p.



MEKONG CASE STUDY

Ti Le-Huu and Lien Nguyen-Duc

Water Resources Section, Division of Environment and Sustainable Development, UN-ESCAP

In cooperation with:

Apichart Anukularmphai, *Thailand*

Do Hong Phan, *Viet Nam*

Khammone Phonekeo, *Lao PDR*

Pech Sokhem, *Cambodia*

Zhang Hai-Lun, *China*

(SC-2003/WS/62)

The designations employed and the presentation of material throughout this publication do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The authors are responsible for the choice and the presentation of the facts contained in this book and for the opinions expressed therein, which are not necessarily those of UNESCO and do not commit the Organization.

ACKNOWLEDGMENT

This article is a contribution from UNESCO's International Hydrological Programme in cooperation with UN-ESCAP to the World Water Assessment Programme. It was prepared within the framework of the joint UNESCO–Green Cross International project entitled "From Potential Conflict to Cooperation Potential (PCCP): Water for Peace," and was made possible by the generous financial assistance of the Japanese government.

CONTENTS

1.	Introduction	1
1.1.	Purpose and Scope of the Case Study	1
1.2.	Geographical Setting	1
2.	Historical Development Context	3
2.1.	Early Stages of Mekong Cooperation (Late Nineteenth Century to 1946)	3
2.2.	Transition Period (1947-56)	4
2.3.	The Mekong Committee Period (1957-75)	4
2.3.1.	Development Needs and Cooperative Objectives	5
2.3.2.	Approach to Development	5
2.3.3.	Achievements	5
2.3.3.1.	Data Collection and Investigation	5
2.3.3.2.	Inventory of Resources and Development Plans	6
2.3.3.3.	Mobilization of Funds	6
2.3.3.4.	Sustainability of Development	6
2.4.	The Interim Mekong Committee Period (1976-95)	7
2.4.1.	Development Philosophy	7
2.4.2.	Achievements	7
2.4.3.	General Observations	8
2.5.	Recent Developments and Perceptions of Ongoing National Development Needs	8
2.5.1.	Summary of Development Needs and Emerging Trends in Cambodia	9
2.5.1.1.	General Aspects of Socioeconomic Conditions	9
2.5.1.2.	Perception of Priorities in Water Resources Development	10
2.5.1.3.	Remarks on the Importance of Mekong Cooperation	11
2.5.2.	Summary of Development Needs and Related Policies in Lao PDR	11
2.5.2.1.	General Socioeconomic Conditions	11
2.5.2.2.	Priorities of National Development	13
2.5.3.	Summary of Development Needs and Related Policies in Thailand	13
2.5.3.1.	General Socioeconomic Conditions of the Country	14
2.5.3.2.	Important Socioeconomic Features of the Mekong Region in Thailand	15
2.5.3.3.	Emerging Issues	15
2.5.4.	Summary of Development Needs and Emerging Trends in Viet Nam	17
2.5.4.1.	General Socioeconomic Conditions	17
2.5.4.2.	Emerging Trends in the Mekong Areas in Viet Nam	18
2.5.5.	Summary of Development Needs and Trends in Yunnan Province, China	19
2.6.	Recent Economic Development Trends and Implications for Water Resources Management	21
2.7.	Towards Sustainable Development Under the Mekong River Commission (1995 to Present)	22
2.7.1.	Strategic Global Economic Thrusts	23
2.7.1.1.	Globalization of Economies	23
2.7.1.2.	Global Social and Environmental Concerns	24
2.7.2.	Subregional Strategic Thrusts	25
2.7.2.1.	Agriculture	25

2.7.2.2.	Transport	25
2.7.2.3.	Energy Development	26
2.7.2.4.	Tourism Development	26
2.7.3.	National Strategic Thrusts	26
3.	Overall Analysis of Legal and Institutional Mekong Cooperation Frameworks	27
3.1.	Early Stages of Mekong Cooperation	27
3.1.1.	Legal Aspects	27
3.1.2.	Institutional Aspects	28
3.1.3.	An Analysis of the Frameworks	28
3.2.	Cooperation Through the Mekong Committee	29
3.2.1.	Legal Aspects	29
3.2.2.	Institutional Aspects	30
3.2.3.	Evolution of the Framework with Basin Development	31
3.3.	Establishment of the Interim Mekong Committee	32
3.3.1.	Legal Aspects	32
3.3.2.	Institutional Aspects	33
3.3.3.	Remarks	33
3.4.	Establishment of the Mekong River Commission	34
3.4.1.	Legal Aspects	34
3.4.2.	Institutional Aspects	35
3.4.3.	Development Philosophy	35
4.	Planning for Decision Making in Historical Perspectives	37
4.1.	Evolution of Mekong River Basin Planning for Decision Making	37
4.1.1.	Idealistic International Approach	37
4.1.2.	National Development-Oriented Approach	37
4.1.3.	Integrated Basin Development Planning Approach	38
4.2.	Mekong Basin Cooperative Development in the 1970 Indicative Basin Plan (1970 IBP)	38
4.2.1.	Mekong Basin Planning Philosophy and Purpose of the 1970 IBP	38
4.2.2.	Formulation of the 1970 IBP	39
4.2.3.	Important Lessons	40
4.3.	Mekong Basin Cooperative Development in the 1987 IBP	40
4.3.1.	Mekong Basin Planning Philosophy and Purpose of the 1987 IBP	40
4.3.2.	Formulation of the 1987 IBP	41
4.3.3.	Important Lessons	42
4.4.	Emerging Trends in Planning for Decision-Making	43
4.4.1.	Possible Trends	43
4.4.2.	Other Related Experiences in Water and Related Resources Planning	44
4.5.	Mekong BDP in the Basin and National Development Perspectives	44
4.5.1.	Development Scenario	45
4.5.2.	Conceptual Role of the BDP in the Basin Development Perspectives	46
4.6.	Remarks on the Application of System Analysis in the Mekong Basin Development Planning	47
4.6.1.	Changes of Methodologies in the Historical Contexts	47
4.6.2.	Approaches to Development	48
4.7.	Emerging Issues of Potential Conflict and Opportunities for Enhanced Cooperation	48

5.	Observations on the Mekong Frameworks for Negotiation and Mediation	50
5.1.	The Mekong Spirit: International Recognition of the Mekong Cooperation	50
5.2.	Foundation of the Mekong Spirit (IMC, 1993)	50
5.3.	Evolution of the Mekong Spirit	51
5.3.1.	Shared Vision of Cooperation	51
5.3.2.	Mutual Understanding	51
5.3.3.	Mutual Trust	52
5.3.4.	Common Goal: The River of Prosperity	52
5.4.	Remarks	53
5.5.	Conclusions	53
	Bibliography	54

ABBREVIATIONS

ADB: Asian Development Bank
BDP: Basin Development Plan
CCM: Consultative Commission on the Mekong
ECAFE: Economic Commission for Asia and the Far East of the United Nations
FAO: Foods and Agriculture Organisation
GDP: Gross Domestic Product
GOL: Government of Laos
GMS: Greater Mekong subregion
IBP: Indicative Basin Plan
IMC: Interim Mekong Committee
KV: kilovolt
Lao PDR: Lao People's Democratic Republic
LDC: least developing countries
MC: Mekong Committee
MRC: Mekong River Commission
MW: Megawatt
NEM: New Economic Mechanism
PHCM: Permanent High Commission of the Mekong
UNESCAP: United Nations Economic Commission for Asia and the Pacific
UNDP: United Nations Development Programme
UNESCO: United Nations Educational, Scientific and Cultural Organisation
PCCP: Transforming potential conflicts into cooperation potentials
WUP: water utilization program

1. INTRODUCTION

1.1. Purpose and Scope of the Case Study

The Mekong River Basin has been the subject of several books, a number of doctoral dissertations, and many research papers. In each case, the Mekong was viewed from different perspectives for various purposes. It is usually the case that a river basin organization is established after water use conflicts have occurred and direct communication among riparian countries has failed to solve the conflicts. In the case of the Mekong River Basin, cooperation began when the potential for conflicts over water was still very low, but the cooperation initiative came from national development aspirations based on global experiences and support. The current Mekong case study – carried out within the framework of cooperation between the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO) – is part of the global efforts coordinated in a UNESCO programme aimed at reviewing lessons learnt and providing possible best practices for international river basins in order to turn *potential conflicts* into *potential cooperations* (PCCP). In the context of the UNESCO PCCP program, the current case study, which because of time constraints focuses mainly on the Lower Mekong Basin and its upper part in the Yunnan Province of China, is primarily expected to provide information for integration into four subsequent thematic studies under the following categories:

- legal aspects
- historical context
- negotiation and mediation
- system analysis.

While aiming at serving these primary purposes, an attempt is made here to also present the Mekong case study as a stand-alone coherent paper for future reference in the context of cooperation among riparian countries of international river basins.

1.2. Geographical Setting

The Mekong is the longest river in Southeast Asia and one of the largest rivers in the world. In terms of drainage area (795,000 km²), it ranks twenty-first in the world and twelfth in terms of its length (4,800 km). However, its large runoff (475,000 million m³) places it eighth in the world table of great rivers. Starting at an elevation of over 5,000 m in the Tanghla Shan Mountains on the Tibetan plateau, the Mekong flows south, cutting through southern China to the common Myanmar–Laos–Thailand boundary. It then flows a further 2,400 km to the ocean. In terms of river flow, the Mekong Basin has two almost distinct parts: the upper parts in China and Myanmar account for 16 percent and 2 percent of the flow, respectively; and the lower part covering the other four riparians accounts for 82 percent of the Mekong flow.

In the upper part of the basin, the Mekong is known as the Lancang River, which passes through a series of north/south Hengduan Mountains ranges, with Kawagarbo the highest mountain in Yunnan at 6,740 meters. The river flows south from Kawagarbo, through a series of gorges, hemmed in by mountain ranges before changing direction along its southeastward course and then south into its valley in Yunnan. Here, the valley extends to the Myanmar border, has ranges of 1,100 to 1,400 meters on both banks, and gorges of 300 to 500 meters. The upper basin has a total catchment area of about 200,000 km². The climate of this region is primarily subject to the Indian monsoon, and its mountains were once covered with lush rain forest. In addition to cultivated tropical crops such as fruits, rubber, aromatics, and

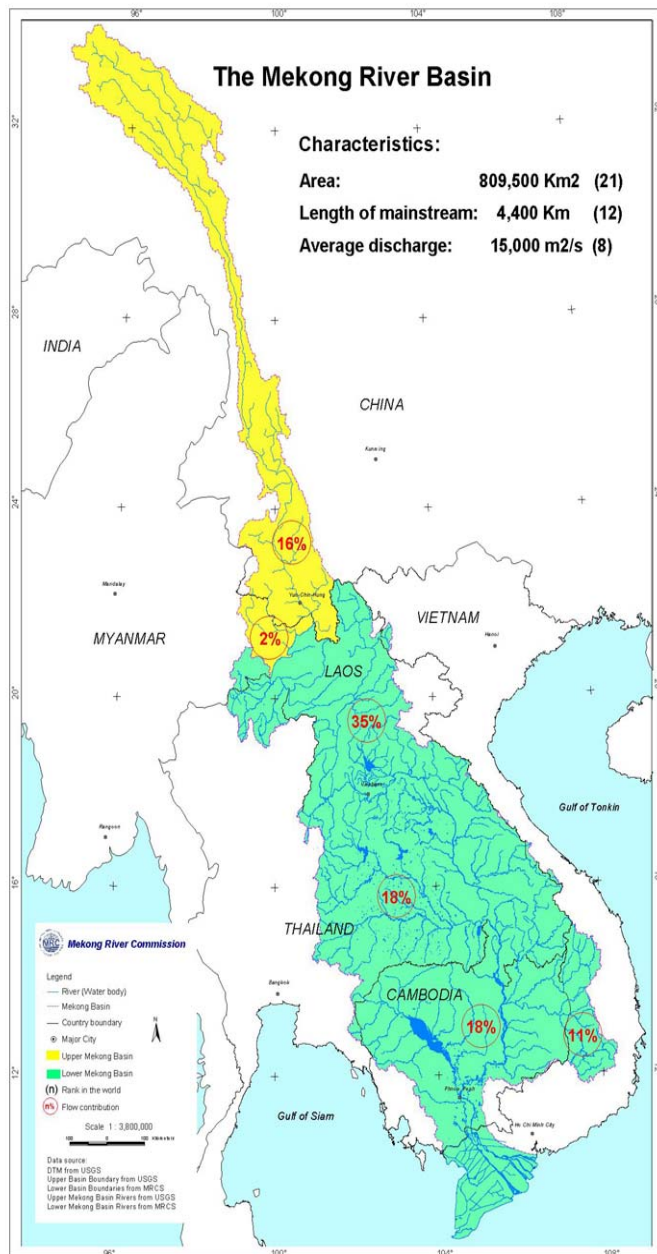


Figure 1. Map of the Mekong River Basin

tea, the native flora of the upper basin has been preserved in networks of deep, zigzagging valleys.

The Lower Mekong Basin catchment area exceeds 600,000 km² and comprises almost all of Cambodia and the Lao People's Democratic Republic (PDR), one-third of Thailand (its northeastern region and part of its northern region), and one-fifth of Viet Nam (the Central Highlands and the Delta). It is estimated that some 62 million people live in the Lower Mekong Basin area, more than 40 percent of the total population of these countries.

The mean annual rainfall ranges from 1,000 mm near central north-eastern Thailand, to 4,000 mm in the Truong-Son mountain range between Laos and Viet Nam. Wet season rainfall (80 to 90 percent of total rainfall) is usually sufficient to grow rice (the main crop), but rainfall is unevenly distributed during the growing season, causing drought damage throughout the basin nearly every year. Where there is annual rainfall of 2,000 mm or more, there is little drought

damage, but in most of the basin, rainfall is only 1,000 to 1,200 mm/year. An adequate water supply could double paddy yields. Each year about 475,000 million m³ of water empties into the South China Sea off the Mekong Delta. At Pakse, for example, where the drainage area accounts for 69 percent of the total area, the maximum discharge (57,800 m³/sec) is more than fifty times the minimum discharge (1,600 m³/sec).

The flow of the Mekong and its tributaries is closely related to the rainfall pattern. The water level starts to rise at the onset of the wet season (April–May), reaching a peak in August, September, or October. It then falls rapidly until December, and afterwards recedes slowly during the annual dry period, or dry season, to reach its lowest level in March–April just before the monsoon. The Mekong carries an enormous volume of excess water during the wet season, resulting in severe flooding, and substantial damage almost every year in the fertile flood plains along

the mainstream and the major tributaries, as well as in the vast flood plains of the Delta. In contrast, during the dry season a serious reduction in flow often leads to drought; this not only results in a shortage of water for domestic and agricultural use but also limits the navigable depth in the mainstream. Most seriously affected during the dry season is the coastal plain of the Mekong Delta, where low flow results not only in a shortage of water for both people and agriculture, but also in intrusion of salt water into the delta. An area of some 2.1 million ha is normally affected by salt water.

Tonle Sap, the great lake of Cambodia, buffers water flow in the delta downstream of Phnom Penh by storing portions of peak flow from July to September and releasing it from October to April. During the flood season, excess water enters the lake through the Tonle Sap River. As the Mekong water level recedes, the Tonle Sap reverses direction and the lake releases water into the Mekong – both stored Mekong floodwater and the yield of its own catchment area. The seasonal flood of the Mekong comes chiefly from the tributaries that join the mainstream along its lower course. In the Vietnamese Delta, the Mekong finally distributes its waters through eight branches into the ocean. Tidal influence contributes significantly to the extent of salinity intrusion; the tidal range varies from 2 to 4 m. The role of tidal forces is more prominent during the dry season when the river discharge is normally about 2,000 m³/sec.

2. HISTORICAL DEVELOPMENT CONTEXT

From a historical perspective of socioeconomic development, the processes of cooperation, negotiation, and mediation in the development of the Mekong water and related resources reflected the differences in the actual development needs of the riparian countries, their perception of development opportunities, and their political rapport and international political environments. This chapter describes the conditions of the Mekong cooperation together with the underlying philosophy (as interpreted by the author), the achievements and problems encountered, and emerging trends for each period.

2.1. Early Stages of Mekong Cooperation (Late Nineteenth Century to 1946)

In the early stage of Mekong cooperation, the countries of the Lower Mekong Basin were in a backward stage of development. Progress of development was slow, with few financial and technical resources. The population density was also low. There was practically no urgent need for an accelerated development of the Mekong resources. When the French started to dominate the three Indochinese countries, the need to exploit the natural resources to feed the large demand for industrialization of Europe became higher. Trade was top of the program for development in the region. With several expeditionary missions traveling along the Mekong, the French at that time regarded it as one of the best transport routes for trade from the sea to China. In the words of one of the French expeditionary, Admiral Paul Reveillere, on the navigability of the Mekong: "there is a task worthy of raising the passions of our century with its love for great undertakings."

In parallel with the efforts to cooperate on the development of Mekong navigation, the French colonial administration also developed a program of river monitoring, with several key stations along the Mekong such as Vientiane, Pakse, Phnom Penh, Chau Doc, and Vung Tau. Transport facilities were constructed in the lower reach, such as Saigon and Phnom Penh ports, and to connect the lower reach with such facilities as still existed in the upper reach near Pakse and Veunkham in Southern Laos. Under a single administration of the colonial authority, the Saigon port was developed as an international transit port for "free trade" among the signatories.

The concept of linking inland navigation and international shipping was well established with the Saigon transit port. However, the volume of trade did not grow as expected and the political situation in the region was not stable enough for large-scale investment to be made. As a result, cooperative efforts on navigation development of the Mekong were not as fruitful as planned.

2.2. Transition Period (1947–56)

Development of transport systems has changed the demographic distribution in the Lower Mekong Basin. More people came to live near the river and along new waterways, and more populated centers were established along these watercourses. Since the establishment of UNESCAP (formerly known as ECAFE – the Economic Commission for Asia and the Far East), the emphasis has been on economic cooperation, water problems, and water resources development. In 1949, after the ECAFE secretariat had been moved from Shanghai (China), to the current location in Bangkok (Thailand), the ECAFE Bureau of Flood Control was set up to advise and assist governments in Asia and the Far East on matters relating to flood control and other water management problems. This bureau was asked to include international rivers in its studies of the technical problems in controlling floods. The bureau suggested a study of the Lower Mekong, and with the approval and assistance of the governments of the riparian countries it carried out preliminary field investigations, which also focused attention on the opportunities for developing the river's irrigation and power potential. That was the first attempt at a systematic study of the water resource potential of the Lower Mekong.

In 1955, the US Bureau of Reclamation embarked on studies of the river and completed a report that made a number of recommendations on the necessity of collecting data on hydrology, meteorology, hydrography, topography, sedimentation, and geology. It also suggested studies on agriculture, fisheries, navigation, and education.

In 1956, the UNESCAP Secretariat prepared plans for a team of seven experts to carry out a field reconnaissance on the basin's potentialities with respect to hydropower, irrigation, and flood control. The survey was carried out in close cooperation with the four riparian countries, and resulted in a report entitled "Development of Water Resources in the Lower Mekong Basin." The report provided a conceptual framework for planning the development of the river basin as "an integrated system." The report advocated an international approach to Mekong river development by calling for the four riparian countries to cooperate closely in data collection, planning, and development. This was essential for success as several major projects were located on the boundaries of two member countries and some projects, though located within a single country, could nevertheless benefit neighboring countries by supplying water for irrigation, regulating flow, allowing increased power production downstream, reducing flood losses, and improving navigation.

These efforts formed the cornerstone to strengthen cooperation among the riparian countries, and to open up an established channel of communication between developed countries and the riparian countries themselves for the flow of resources and technology into the region for development.

2.3. The Mekong Committee Period (1957–75)

In order to respond to the decision taken by UNESCAP at its thirteenth session, the Committee for Coordination of Investigation of the Lower Mekong Basin (in short the Mekong Committee – (MC)), was established by the governments of Cambodia, Laos, Thailand, and Viet Nam as an intergovernmental agency under the aegis of UNESCAP on the basis of equality of rights. The committee was established as an autonomous

organization of sovereign states to achieve a common purpose, namely the promotion and coordination of integrated basin development through regional cooperation. The committee became one of most significant institutional mechanisms for the development of the Mekong's water and land resources on behalf of its members who, either individually or collectively, did not possess the resources and technological expertise to develop the basin.

2.3.1. Development Needs and Cooperative Objectives

After peace returned to the region in 1954, the need for reconstruction and development of the riparian countries emerged as the central point of development efforts. The urgent need for an integrated development plan, based on the natural resources, was recognized as one of the top priority activities. Since they were underdeveloped, agriculture-based countries with a poorly developed infrastructure, the lack of financial resources and technology was well recognized by the riparian countries in their common efforts to develop one of the most important natural resources of the region. The Mekong Committee was established with an expectation of high achievements in this difficult mission. The committee was, in that context, conceived as an opportunity-development institution to assist the riparian countries in planning, mobilization of financial resources, and development. Training was recognized as an important element for sustainable development.

2.3.2. Approach to Development

As stipulated in its 1957 Statute, the objectives of the committee are to promote, coordinate, supervise, and control the planning and investigation of the water resources project of the Mekong River basin. With these objectives, the committee has, from the beginning, mapped out steps to achieve the four most important goals: first, the establishment of foundations for the development and long-term equitable sharing of the Mekong resources; second, the establishment of a common development action plan; third, the mobilization of funds and support; and fourth, the development of Mekong resources. Toward these goals, the following activities were carried out:

1. Systematic investigations of the Mekong water resources with a view to establishing necessary conditions for the development of Mekong major water resources.
2. An inventory of Mekong resources to establish the main thrust of common efforts for joint development.
3. The establishment of an Indicative Basin Plan to guide national development efforts in order to accelerate development of the basin.
4. The construction of selected tributary projects to lay technical and financial foundations for large-scale undertakings on the main stream.
5. The establishment of a long-term development mechanism to ensure the continuity, consistency, and sustainability of common efforts of development.

2.3.3. Achievements

2.3.3.1. Data Collection and Investigation

The first regional project sponsored by the committee in 1957 was the establishment of a basin-wide network of hydro-meteorological stations for regular collection of data. The network started with only few stations in 1957, and had grown steadily to some 400 stations by 1975. Efforts were also made to reconstitute the record to the beginning of this century. Collection of data continued and gained momentum in the early 1960s, with major field investigations on hydrography (for navigation and water

resource development of the mainstream); socioeconomic surveys for planning to establish benchmarks for development and to determine the most important areas of improvement; and investigations of other resources.

2.3.3.2. Inventory of Resources and Development Plans

A program of field investigations and planning activities culminated in a series of feasibility reports, an inventory of promising water resources projects, and most importantly the Indicative Basin Plan (IBP). The IBP, which was completed in 1970, put the Lower Mekong Basin on the world map as an area of quantified rich resources. These resources were to be developed to meet the needs of generations to come. The IBP provides important information to decision makers in the riparian countries to establish a long-term program of cooperation and negotiation for equitable sharing of these resources. The role of the committee, as an opportunity development institution, has thus become clearer.

2.3.3.3. Mobilization of Funds

In order to lay foundations for the mobilization of technical and financial support for Mekong development, the committee identified four important tributary projects in the four countries: Prek Thnot in Cambodia, Nam Ngum in Laos, Nam Pong in Thailand, and Yali Falls in Viet Nam. Only two projects – Nam Pong and Nam Ngum – were completed before 1975. The other two could not be completed because of war at that time in Viet Nam and Cambodia. Among these four projects, the construction and completion of the Nam Ngum project marked an important step in the direction of cooperation: a dam built in one country to supply nearly 80 percent of its energy to its neighbor. The experiences of this joint undertaking provide an important foundation and a vivid lesson on how, with international cooperation, various important and difficult steps could be taken in water resources development. This exemplary achievement provided the committee with a good showpiece for further support in financial mobilization.

In parallel with hydropower development, the development of irrigated agriculture – initiated and sponsored by the committee – also achieved important results. Achievements were possible with strong support from various donors and international organizations, including the World Bank and the Asian Development Bank. The investment made available through the committee in the 1960s and 1970s led to important steps towards the achievement of food self-sufficiency in the 1980s and at present. Those investments were made through a series of pioneer agriculture projects, experimental farms, seed multiplication centers, diversification studies, irrigation planning, fisheries projects, and related socioeconomic planning studies.

All of the cost of the operation of the committee and the fund for the programs run through the committee came from the United Nations Development Programme (UNDP) and the donor community. The riparian countries contributed in kind to the projects or investigations/programs.

2.3.3.4. Sustainability of Development

The committee recognized the importance of human resources development, and a training program was instituted and incorporated in the operation of the project and in the work of the secretariat. Building up the technical capacity of the riparian countries in dealing with the first three categories of activities under Section 3.2 has represented an important achievement by the committee.

It was planned that a mechanism for long-term development would be established with the implementation of mainstream projects. Efforts have been made continuously since the late 1950s. The state of readiness in each member country for implementation of mainstream dams was different. This has delayed the

implementation plan of any major dams, and dams have subsequently encountered opposition from environmentalist movements and social workers. The mechanism for long-term development has therefore never been seriously discussed within the committee, and the committee has continued to devote its efforts to short-term measures on a project basis.

2.4. The Interim Mekong Committee Period (1976–95)

2.4.1. Development Philosophy

It is difficult to identify any difference in the development needs of the basin during this period from those of the previous period. It is, however, clear that the Interim Mekong Committee (IMC) put more emphasis on joint efforts in planning, and continued with the development process. Furthermore, by adopting the name "Interim," it was obvious that the IMC preferred to maintain the momentum of joint development achieved in the early 1970s and to establish conditions for the return of the full committee. The absence of Cambodia has prevented the IMC from undertaking basin development and from further study of priority mainstream projects (Do Hong Phan, 2003). Thus most of the work during this period was confined to tributaries and was small-scale. As stipulated in the rules of procedures of MC, all projects on the mainstream and major tributaries of the Mekong require approval by consensus from MC member countries. This strict requirement became one of the contentious points that hampered the reactivation of Cambodia's participation in the MC in 1991–2, and as a result brought the Mekong cooperation to the brink of collapse (Sokhem, 2003). The problem was overcome in 1995 when the Mekong River Commission was created.

2.4.2. Achievements

The core activities of cooperation continued in the three member countries of the IMC, such as investigations and planning within each country. Collection of hydro-meteorological data continued with an expanded network, and the application of these data for production continued to widen to improve disaster preparedness and to increase the efficiency of water control works.

In addition to the activities of planning and investigation, the IMC also participated in the construction of development projects in the member countries. Several small projects were constructed under the auspices of the IMC, such as bank protection works and river ports in the Lao PDR, the Huai Mong water control structure in Thailand, and the Tam Phuong water control project in Viet Nam.

Environmental aspects have become a major concern of the committee in its development efforts. The committee has carried out many investigations and studies on this subject. Among these, the most important was the implementation of an environmental program, including the water quality-monitoring program.

For overall planning purposes, the IMC revised the previous Indicative Basin Plan. The revised IBP, entitled "Perspectives for Development of the Lower Mekong Basin," was published in 1987.

With the improvement in the socioeconomic conditions of the riparian countries, UNDP encouraged the member countries to contribute to the operational cost of the committee. So in this period, the member states of the IMC made cash contributions for the operation costs of the committee, with the amounts increasing year by year. The financial support of UNDP has changed from funding institutions to funding program activities. The support for the Mekong projects from the donor community is being maintained at past levels and is, more or less, being increased.

2.4.3. General Observations

It can be recognized that from 1976 to 1995, the economies of most of the riparian countries, especially Thailand, were developing at a high rate. Although production of paddy has surpassed the level of self-sufficiency, it was thought necessary to increase paddy production, especially in Viet Nam, to meet the rapidly increasing population. This has led to higher water demands for irrigation, especially in the northeast of Thailand and the Mekong Delta of Viet Nam. With the exception of Thailand, the economies of the three other riparian countries in the Lower Mekong Basin are still agriculturally based, with agricultural production accounting for 36 to 42 percent of GDP. During this period of rapid economic growth, the contribution of agricultural production in Thailand, although growing at an annual rate of 2 to 4 percent, has dropped from over 30 percent to 14 percent of GDP. The requirement for electricity was also growing rapidly in all riparian countries. The pressure of environmental concerns was emerging, in particular over the large projects on the main stream. The differences in aspiration for development among riparian countries continued to grow.

Despite the fact that Cambodia was not a member of IMC, communications were maintained almost throughout the period, with frequent annual meetings of the three National Mekong Committees of Cambodia, Lao PDR, and Viet Nam in parallel with the operations among the three members of the IMC, Lao PDR, Thailand, and Viet Nam. This signified the importance that Cambodia had attached to the Mekong cooperation, and underlined the determination of the four riparian countries to overcome political obstacles to joint development. In that spirit, mutual understanding and confidence among the riparian countries continued to grow despite the widening of the gap between the levels of economic development of the riparian countries, especially between Thailand and the other three Indochinese countries. While mutual understanding and confidence in the Mekong cooperation helped bring the riparian countries together, the widening gap of economic development among them reinforced the important differences in aspiration for development, as discussed in the following section. It was these differences in development aspirations that brought about significant changes in the framework of cooperation, which formed the main subject of negotiation when Cambodia was about to resume its membership of the Mekong cooperation program.

2.5. Recent Developments and Perceptions of Ongoing National Development Needs

For Cambodia and the Lao PDR, which are almost entirely situated in the Mekong Basin, development needs for the Mekong areas in the corresponding countries can be considered as principal national development needs. In the cases of Thailand and Viet Nam, the Mekong areas account for about 35 percent of the total area of Thailand and about 25 percent of that of Viet Nam. These areas have different economic roles and degrees of importance in development of the respective economies. The development needs of these areas cannot therefore be seen as principal national development needs.

The examination of the development needs of the Mekong areas was usually carried out by the Mekong River Commission (MRC) Secretariat within the scope of Mekong areas. However, socioeconomic development of these areas cannot be separated from other areas of the respective countries. In the following sections, attempts are made to examine important aspects linking the development needs of the Mekong areas with respective national economies. Reference works of importance to the following analysis include various national economic reports issued by the Asian Development Bank (ADB), the World Bank, the reports of national expert teams issued by the MRC Secretariat in 1994, and most recently studies related to strategic

planning and management of water resources in the countries in the Lower Mekong Basin, which were submitted to the UNESCAP-MRC Workshop, held in Phnom Penh in July 2002 on this subject.

2.5.1. Summary of Development Needs and Emerging Trends in Cambodia

2.5.1.1. General Aspects of Socioeconomic Conditions

After more than two decades of suffering from hostility and civil strife since 1970, Cambodia was set to move on the course of rehabilitation and reconstruction in 1991. The lack of a suitable minimum infrastructure, together with shortage of financial resources and limitations in technical capacity, formed the most important constraints to social and economic recovery and subsequent development. At the beginning of the 1990s, substantial financial resources were secured, under the auspices of the United Nations, to set the main rehabilitation program into action. Technical assistance was mobilized to increase the national capacity to absorb foreign assistance in the program of infrastructure rehabilitation.

Table 1. Key economic indicators of Cambodia

<i>Item</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
GDP (current prices, Riel billion)	7 543	8 325	9 149	10 543.	11 646	11 923
Official exchange rate (Riel per \$, midpoint average)	2 467	2 640	2 991	3 774.	3 814	3 861
GDP (current prices, \$ million)	3 058	3 153	3 059	2 794	3 054	3 090
Per capita GDP (current prices, \$)	288	290	274	244	261	255
Per capita GDP (constant prices, \$)f	223	230	232	231	236	239
Population (million)	10.6	10.9	11.2	11.4	11.7	12.1
GDP growth (constant 1993 prices; percent)	8.4	3.5	3.7	1.5	6.9	5.4
Agriculture	10.0	(0.7)	5.8	2.5	4.8	(2.7)
Industry	20.9	11.1	20.4	7.7	12.0	29.0
Services	5.7	3.1	(3.7)	(0.6)	5.8	3.1

Source: Asian Development Bank, Country Strategy and Program Update (2002–2004), Cambodia.

As a result of past devastation, Cambodian society has numerous problems. The Cambodian economy is still among the poorest in the world because of two decades of war. According to a study by the MRC Secretariat (Yv Chan Tong et al., 1994), GDP per capita in 1991 was estimated at \$80, which was about half that of 1970. GDP (in 1989 prices) increased by 7.6 percent in 1991, 7 percent in 1992, and 5.5 percent in 1993. Thus the yearly average growth rate of GDP in the period 1990–3 was 6.7 percent. Agriculture's share of GDP changed from 51.8 percent to 49 percent in the period 1991–3. This was caused mainly by drought, and political and military insecurity. The average yearly growth rate of agriculture was about 4.4 percent. Industry (including mining, manufacturing, water production, electricity, and construction) increased its share of GDP from 1991 to 1993, from 15.1 percent to 17.4 percent. But the manufacturing sector saw its share of GDP go from 46.4 percent of the industrial sector in 1991 to 38.7 percent in 1993. The construction sector grew from 44.6 percent of industry and 6.7 percent of GDP in 1991 to 53.3 percent and 9.4

percent in 1993, respectively. The yearly average growth rate of industry was about 15 percent in the period 1991–3 and 13.4 percent in 1994. The share of the service sector in the GDP increased from 33 percent in 1991 to 33.4 percent in 1992 and 35 percent in 1993. The service sector had a yearly average growth rate of about 10 percent in the period 1991–3.

After 1991, economic conditions improved significantly until the 1997 financial crisis affected Asia. There are signs of rapid recovery since 1999 as shown in Table 1.

2.5.1.2. Perception of Priorities in Water Resources Development (Hatda et al., 2002)

With the land and water resources of Cambodia having good potential, the rehabilitation program carried out during the past decade has consolidated a social and economic foundation for the country to move quickly with a development program in the coming decades. Water is a major factor in most aspects of life in Cambodia, and has a key role to play in achieving national goals in poverty alleviation, economic development, food security, and environmental conservation. The primary socioeconomic goals, which are expected to be achieved principally through the expansion of irrigated agriculture and improved water supply and sanitation, will enhance food security, increase income for farmers, and improve public health, with the provision of safe drinking water and basic sanitation.

Beyond meeting basic needs, the management of water and related resources of the Mekong River Basin is expected to offer greater opportunities for economic development. From that perspective, cooperation with neighboring countries is a necessity to ensure a conducive environment for investment, especially in the following three main areas of economic development: agriculture (including fishery and forestry), hydropower, and transport. Cambodian social and economic development goals related to these three main areas are perceived as follows:

- Expansion of irrigation will increase agricultural production towards achieving food security, poverty reduction, and socioeconomic development. (Cambodia used to export 200,000 tons of rice annually in the 1960s.)
- Improvement in water resources ecosystem and fisheries management will enhance the quality of life of the rural population – especially those living along the Mekong and Tonle Sap river system. The Tonle Sap lake has been known as one of the world’s most productive fishery ecosystems, contributing a great deal to export of fishery products.
- Development of the national hydropower potential will help meet the rapidly increasing demand for power of the country as well as offering opportunities for export of electricity. In spite of its 10,000 MW hydropower potential, of which only 1 MW power plant has been developed at Rattanakiri province and the 10 MW Kirirom Project (located on a national river outside the Mekong Basin but its construction was supported by MC), electricity in the country depends mainly on diesel engines.
- Improvement in drainage and protection from the annual Mekong floods will provide a safer environment for socioeconomic development of the country. Currently, Cambodia is the only country classified by the International Federation of the Red Cross in its annual report of 2001 in which more than 10 percent of its population was severely affected by the annual floods.
- Improvement in the extensive network of inland navigation in the country will promote better movement of goods and passengers and facilitate tourism.

Being a least-developed country, Cambodia needs a high increase in investment, technical assistance, and better access to international markets. Improvement in

cooperation with the neighboring riparian countries will help in meeting these requirements.

2.5.1.3. Remarks on the Importance of Mekong Cooperation

According to Sokhem (2003), the importance of the Mekong cooperation was clearly demonstrated from 1980–91 when the then state of Cambodia (with support from Laos and Viet Nam) tried very hard to break the vicious circle of international isolation from the region and the world by regaining membership of the Mekong Committee. From a strategic point of view, the Mekong cooperation would ensure Cambodia's security, sovereignty, and other vital interests. Without the Mekong cooperation framework, the likelihood of international water disputes over the Mekong would have increased dramatically. Water disputes would eventually have serious implications on other aspects of foreign and related policy, such as foreign trade, regional security, and peace among the Mekong countries.

As an international river basin organization, the Mekong Committee and current MRC have provided a forum for the four member countries to work out the best solution so that no development is missed or unnecessarily delayed, and no member country embarks on any water project without taking due account of the legitimate interests and legal rights of other member countries. The Mekong joint institution also enables the improvement of trust on data and other decision support tools, so that disputes over the validity of technical data related to controversial projects are less likely.

2.5.2. Summary of Development Needs and Related Policies in Lao PDR (Boualapha P. et al., 2002)

2.5.2.1. General Socioeconomic Conditions

The Lao PDR is a landlocked country with an area of 236,800 square kilometers stretching more than 1,700 km north to south; the country is bordered by Viet Nam in the east, Cambodia in the south, Thailand to the west, and Myanmar and China to the north. About 80 percent of country is mountain – ranging in height from 200 to 3,000 meters. This makes land transportation difficult and also poses problems for communication. Although the population of Lao PDR is small (about 5.4 million), it is growing rapidly (annual growth rate between 2.5 and 2.8 percent), and is heavily concentrated in the provinces bordering the Mekong River and its tributaries, putting increasing demands on the natural resources of these areas. Lao PDR remains a predominantly rural society with only about 15 percent of the population classified as urban. A life expectancy of fifty years is one of the lowest, and the infant mortality rate at 117 per 1,000 live births one of highest, in the world.

The country has abundant water resources. The Mekong River, originating in China, is the lifeline of Lao PDR, and traverses the country from north to south. It virtually drains the whole country, except for a small portion of the northeast. Its flow is very irregular, with an average highest level from August–October, and lowest from February–April. The alluvial plains and older terraces of the Mekong and its tributaries cover about 20 percent of the national territory. The Mekong River and its tributaries are navigable in its major part, but rapids make it impassable in several locations at some times of the year, especially during the dry season. The Mekong River and its tributaries, with their immense water resources, offer a tremendous potential for hydropower generation. There are at present several hydroelectric plants and stations, with the largest one being the Theun-Hinboun Project (210 MW) (Phonekeo, 2003). Hydropower is one of the main sources of export earnings.

In recent years the socioeconomic development of Lao PDR has improved significantly. Agriculture is still the main sector of the national economy and has

continued to show marked success, in spite of the negative impact of the financial crisis of 1997. Agriculture share of GDP was about 51 percent in 2000, with an average annual growth rate of 4 to 5 percent. Nevertheless, the pace of change has been quite uneven. Along the Mekong corridor, market forces drive the agricultural economy. In the mountain sloping land away from the Mekong, subsistence agriculture and acute rural poverty are predominant. Economic growth has had a significant effect in raising urban living standards, but its impact in remote rural areas has been marginal.

The country is ranked among the world's least-developed countries (LDC) yet has a promising economic development outlook thanks to its rich and competitive natural resources, including water resources. The prevailing economy of the Lao PDR is dominated by agricultural production, which is the main source of income, employing over 80 percent of the labor force and currently accounting for over 52 percent of GDP. The agricultural sector supplies 40 percent of foreign exchange earnings. The industrial and services sectors are still at an early stage of development except for hydropower, one of the main export sectors of the country.

In view of the importance of agriculture in terms of both income and employment generation, and the competitive advantage of Lao hydropower in the region, the water sector is key to the development strategy of Lao PDR. To date, about 20 percent of the cultivated land is provided with reliable irrigation water, and of the currently estimated potential 30,000 MW hydropower capacity (including the Mekong River), less than 3 percent has been developed.

Table 2. Key economic indicators of the Lao PDR

<i>Item</i>	<i>1997</i>	<i>1998</i>	<i>1999^a</i>	<i>2000^a</i>	<i>2001^b</i>
1. GDP per capita (\$, current)	364.0	262.5	284.2	330.5	343.7
2. GDP growth (percent, in constant prices)	6.9	4.0	7.3 ^c	5.9	6.0
Agriculture	7.0	3.1	8.2	5.1	5.3
Industry	8.1	9.2	7.9	7.5	7.5
Services	7.5	5.5	6.9	6.2	6.1

Notes:

- a: Preliminary estimates by the Lao People's Democratic Republic authorities.
- b: Projections.
- c: The Lao PDR authorities estimate real GDDP at 7.3 percent in 1999, mainly due to significant growth in agriculture. However, the ADB staff estimates real GDP to grow by 5.2 percent in 1999, following more modest growth in agriculture.

Source: Asian Development Bank, Country Strategy and Program Update (2002–2004), Lao PDR.

In 1986, the Government of the Lao PDR (GOL) made a drastic policy change, moving from a centrally planned economy to a market oriented system, by introducing the New Economic Mechanism (NEM). The reforms included price decontrol, liberalization of trade and payment systems, introduction of a two-tier banking system, freeing all but agriculture-related interest rates, initiation of civil service reforms, introduction of the legal framework to support a market economy, and an extensive privatization program. Considerable progress has been achieved in structural transformation and a macro-economy that contributed to the growth of real GDP at the robust rate of 63 percent per annum from 1990 to 1994, with per capita income rising at a rate of 3.2 percent over the same period. Growth accelerated to 8.1 percent in 1994, continuing at 7.1 percent in 1995 and an estimated 6.9 percent in 1996, led by the strong

recovery of agricultural production and a continued boom in manufacturing, construction, and services. Recent economic indicators are shown in Table 2.

2.5.2.2. Priorities of National Development

Since the beginning of 1994, the Lao national development policies have taken a major shift from those mainly oriented toward macroeconomic stabilization to a more rapid economic growth. The shift was made possible by an improved atmosphere for regional economic cooperation, signified by the completion of the first Mekong Bridge in the Lower Mekong Basin and the signing of an agreement between Lao PDR and Thailand for the development of about 1,500 MW electric power projects in the Lao PDR. However, since the financial crisis in 1997, which severely affected the Thai economy as well as the Lao economy, the national development policies have tended to be more conservative regarding economic growth than before the crisis.

Currently, the water sector is not specifically referred to in the national goals. However water is an essential part of the life and culture of Lao PDR. Ultimately the welfare of Lao PDR is bound up with water, and most major national development plans are expected to depend heavily on water resource development scenarios. Recent plans indicated several principal expectations from the development of water resources, especially through subsectors that are major water users: irrigation, hydropower, navigation, fisheries, and water supply for the urban and rural areas, as elaborated below.

- *Irrigation* is expected to contribute to achieving greater self-sufficiency in food, increasing the production of agricultural commodities, and reducing shifting cultivation. Additional financial resources are expected to be available for the construction of new irrigation schemes.
- *Hydropower* is expected to contribute to achieving the economic goals and to a lesser extent the social goals of rural development and income redistribution, which will lead to reducing urban migration. The increasing availability of electricity is improving the quality of life in rural areas. Hydroelectric developments are expected to play key roles in regional development and provide opportunities for tourism and fisheries.
- *Navigation* is expected to contribute to economic and social goals through improved transport particularly between the neighboring countries of Thailand, Myanmar, and China. Water-borne transport will also link many rural communities and provide a unique tourist experience.
- *Fisheries* will provide a major food source, create employment opportunities, and contribute to foreign earnings.
- *Urban water supply* will be expanded to meet the needs of industry as well as urban populations.
- *Rural water supply* and sanitation improvements are essential to the goals of increasing health and living standards of rural communities, and for the promotion of tourism.
- *Drainage, solid waste, and sewage disposal* are needed, principally in urban areas, to provide suitable conditions for industry and development.
- *Tourism* will help to gain additional income for the country.

2.5.3. Summary of Development Needs and Related Policies in Thailand (UNESCAP, 2000)

Thailand – a tropical land in the center of the Indochina peninsula – is bordered on the north by the Lao PDR and the Union of Myanmar, on the east by the Lao PDR and Cambodia, on the south by the Gulf of Thailand and Malaysia, and on the west by the Union of Myanmar and the Andaman Sea. The total land area is about 512,00 km². As

of 1997, the estimated population was about 60 million with a growth rate of 1 percent. The urban population was estimated at about 11 million, with high concentrations in the capital and the regional centers.

2.5.3.1. General Socioeconomic Conditions of the Country

According to a recent study by UNESCAP (Maiklad, 1999), Thailand has achieved exceptional economic development over the last thirty years, with a rapid expansion of the national economy at an average annual rate of 7.8 percent. The average per capita income reached 74,580 baht in 1996, compared with only 2,100 baht in 1961. During that period, public investment in the economic and social infrastructure made a significant contribution to an overall rise in incomes, living conditions, and quality of life. Development efforts have provided wider access to both the economy and basic social services. By 1994, around 97.7 percent of villages had electrification, and many also had clean drinking water – an amenity reaching 75 percent of urban settlements outside Bangkok and 32 percent of rural villages. The road network connecting provinces, districts, and subdistricts now totals 210,025 km. The rural population has greater access to education than ever before, with 97.7 percent of school-age children nationwide completing at least six years of basic education. In addition, improvements in public health provision have resulted in a significant increase in average life expectancy, from 63 years in 1990 to 67.6 years in 1994. The drop in the number of people living in absolute poverty has surpassed all expectations, falling to only 13.7 percent by the end of 1996.

Thailand's sound economic position is internationally recognized. However, despite the impressive rate of economic growth, most of its economic activities and prosperity has remained concentrated in the Chao Phraya River basin, particularly the Greater Bangkok metropolitan region. The average per capita income in the region is still much higher than in the other regions, and almost twelve times higher than that in the country's poorest region, the northeast. The gap between rich and poor has also widened over the last thirty years. In the four years from 1988 to 1992, the top 20 percent of households saw their combined income rise from 54 to 59 percent of GDP, while the combined income of the bottom 20 percent of households, the country's poorest, dropped from 4.6 to 3.9 percent of GDP. This growing disparity constitutes an increasing challenge to national development, not only in terms of improvement in income distribution and quality of life, but also in terms of environmental management and natural disaster prevention, particularly flood hazards.

In terms of environmental management, the accelerated rates of economic growth have resulted in a rapid depletion of natural resources and deterioration in environmental conditions. During the first two years of the Seventh National Economic and Social Development Plan, no less than one million rai (about 160,000 ha) of forest were destroyed through commercial exploitation. The problems of soil erosion and falling water quality have become increasingly significant. The poor air quality, high volume of dust, and noise pollution that have become major concerns in Bangkok and other regional urban centers bear witness to the general worsening of environmental conditions. Environmental degradation has had a discernible negative impact on the quality of life.

The country is still considered as an agriculture-based country, with a total agricultural area of about 265,200 km², and more than 60 percent of the population engage in agriculture, while production accounts for only about 12 percent of GDP.

2.5.3.2. Important Socioeconomic Features of the Mekong Region in Thailand

The total area of Thailand inside the Mekong Basin is about 184,000 km² or about 35 percent of the area of the country, composed of a part situated in the northern

region, most of the northeastern region of about 168,000 km², and a small part in the eastern region situated along the Cambodian border. The northeastern region plays an important part in Thai policies on Mekong cooperation. It occupies about one-third of the total area of the country. The soils are mostly sandy with low fertility and low water-carrying capacity. In addition, one-third of the regional land area has an alkalinity problem, making it unsuitable for crop production. The average rainfall in the region is about 1,200 to 1,300 mm/year. The rainy season usually starts in May and ends in October. During May through to August, frequent chronic shortages of rainfall are normal, and cause severe crop damage. There are 20 million inhabitants in the northeast representing about 35 percent of the total population of the Kingdom, with an average annual population growth rate of 2 percent. The population density is 119 persons per sq. kilometer. Three important features of the northeastern region are:

1. Farmers in the northeast are poorest of all regions, earning about 70 percent of the national average agricultural income.
2. Agricultural income generally is lower than non-agricultural income except in the central region, where farm activities generated income comparable with the non-farm income of the region. This indicates that there is an opportunity to improve the agricultural sector.
3. It should be pointed out that the northeast depends heavily on paddy production, which generates a low return.

In 1981, the agricultural sector contributed 34.5 percent of the GDP of the region. In 1989, the share of agricultural sector dropped to 29.9 percent. During the same period, services and trading became more important, contributing a greater share of GDP. During the early part of 1990s, the northeastern regional economy continued to expand at the rate of 6 percent. Output of the non-agricultural sector grew at about 7 percent. Sectors that experienced high growth were manufacturing, particularly industries producing for local consumption, trade, and construction. The value of trade between Thailand and the Lao PDR grew by 44.6 percent, reflecting an increase in Thai exports to the Lao PDR of 45.2 percent and an increase in imports of 43.6 percent, resulting in a trade surplus in favor of Thailand of 2,500 million baht.

2.5.3.3. Emerging Issues

As a result of rapid economic development in the past decade, water demand continues to grow, and two of the four regions – the northeast and the central – are experiencing frequent droughts, while flooding also occurs more frequently because of deforestation. The water resources development budget has been increasing, and represents a large portion of the national development budget. However, there are currently environmental constraints for future large water resources development projects, which may eventually slow down construction of future projects.

The agriculture sector remains the main user of available water and accounts for 71 percent of total water demand, while industry accounts for 2 percent, domestic accounts for 5 percent, and the remaining 22 percent is for ecological balance. However, the trend will change with a reduction for agriculture and an increase for both industrial and domestic water.

Currently about 80 percent of the urban population is served with treated piped drinking water, and this is planned to increase to 91 percent by the year 2017. Of the rural population, about 70 percent are served with piped water systems, rainwater jars, and tube wells for drinking water; household users still have to rely on other water sources.

As discussed previously, northeast Thailand is and is likely to remain the poorest region of the country. Its development rate is lowest among the four regions in spite of large investments in basic infrastructure in the past. The growth rate of this region will probably remain low because of geophysical and socioeconomic disadvantages. Despite various constraints to the development of this part of Thailand, there are opportunities created by the changing political situation in the Mekong Basin and closer cooperation among the riparian countries, including various development options discussed by Dr Apichart Anukularmphai and summarized below.

1. PROMOTION OF AGRO-INDUSTRIES

Half of the northeast area is under agriculture and the yield, as well as the share of national production, is in decline. Agriculture development of the northeast needs to be reviewed seriously. One obvious but difficult solution is not to expand agriculture but to consolidate. Agriculture zoning has to be introduced together with a production and marketing strategy. Agro-industries should be promoted in order to bring value added to agriculture production, and at the same time to provide new professions. The farm population should be reduced with the introduction of substitute job opportunities.

2. IMPROVED WATER UTILIZATION EFFICIENCY

Domestic water requirements remain a major issue for the northeast. Programs should be coordinated to provide domestic water for all of the rural population, and should remain the first priority. The criteria for water resources allocation requires review so as to cover the needs of all sectors besides agriculture. Improving utilization efficiency is a necessary step, but the method should be appropriate and suitable to local conditions, while the cost involved for these measures has to be appropriate and justify the amount of water saved. Water pricing remains a sensitive issue, but should be contemplated in order to alleviate long-term problems. The concept for future water resource development must place equal emphasis on supply and demand management.

3. JOINT ECONOMIC DEVELOPMENT ACROSS THE BORDERS

The prevailing political atmosphere of the Lower Mekong Basin encourages a vision for cooperation between the member countries. While recognizing the different level of development between the northeast and neighboring countries, this should be viewed as an opportunity to foster closer cooperation by capitalizing on the advantages and strong bases of each member to arrive at an integrated economic development strategy. Economic development is not necessarily confined to the northeast but can be extended beyond the borders with closer cooperation; this in turn will benefit all parties.

4. JOINT RESOURCES DEVELOPMENT

The Mekong River can best serve as linkage for the member countries in terms of water resources development. Complementary projects that take into consideration the needs of each country and provide overall benefit to each member should be promoted. In addition, other resources that can be jointly developed or are complementary to the needs of the members should be considered for joint development. All options should be open to debate and reviewed to ensure mutual benefits for all the members.

2.5.4. Summary of Development Needs and Emerging Trends in Viet Nam (Nghia, 2001)

Viet Nam is a country with an area of 330,000 km² and a population of 78.8 million people (2000). Its GDP per capita (\$380 per capita in the year 2000) ranks among the

lowest in the world. Viet Nam is poor because it is a largely agricultural economy with an extremely high population density on its agricultural land (World Bank, 2002). With over 900 people per km², Viet Nam is far more densely populated than its neighbors Thailand or China, which have population densities of less than 300. Viet Nam has rich natural resources, most of which are not yet developed or are under-developed.

2.5.4.1. General Socioeconomic Conditions

The 1985–95 period was a time of renovation. The government advocated developing a diversified agriculture on the basis of considering food production as the key element guaranteeing sustainable social development, and a multi-factor commodities economy under the market mechanism and the government's management. The new economic structure created the issue of diversely supplying water to people, animals, and plants in plains, hills, and mountainous areas. The supply of safe water, especially in mountainous areas, was taken as the national plan. Water structures were radically and more efficiently exploited. However, in the process of exploitation and development, problems emerged regarding mobilizing socially useful labor, compensation, using land to build structures, environmental protection, immigration, and investment capital management. On the basis of extensive and careful research the designed investment projects were classified in harmony with each region's natural and hydraulic conditions and economic development demands. First successes were obtained in desalinating in several large areas, creating premises to shift crop mechanisms. From a position of having few structures, by 1995 there were seventy-five large-scale water control systems, 750 large and medium-sized reservoirs, tens of thousands of channels, and 7,000 km of river and sea dikes. In addition, there were tens of thousands of small structures and pumping stations. In 1995, a total area of 5,600,000 ha of paddy field and 560,000 ha of vegetable land was irrigated, an area of 865,000 ha drained, alum eliminated from 16,000 ha, and 700,000 ha of coastal land desalinated by building dikes, and drainage channels. Water was supplied to tens of millions of urban and rural inhabitants and the water demand of the people and industrial production in mountainous areas was met.

According to the World Bank report in 2001, the economy responded extremely well to the reforms. GDP growth went from below 4 percent per year in the 1980s to an average 8 to 9 percent per year between 1992 and 1997, when the Asian crisis hit. Even then, after two years of sluggish growth, GDP growth rebounded to an estimated 5.5 percent in 2000. Inflation decreased from 500 percent per year in 1986 to 15 to 20 percent in the early 1990s, and has remained below 10 percent since 1994. The benefits of growth, based in part on agriculture, were widely shared; poverty decreased dramatically from an estimated 70 percent in the mid-1980s to 58 percent in 1993, and 37 percent in 1998. Social indicators also improved.

Viet Nam's growth in the early 1990s was a result of a strong supply response in agriculture (which comprised about 40 percent of GDP at the beginning of the reforms) and the liberalization of internal trade allowed the services sector (which had comprised about 35 percent of GDP) to take off, with large increases in private transport and retail trade as well as tourism. As summarized in Table 3: the accelerated growth in the mid-1990s was mainly led by manufacturing (27 percent of growth), wholesale and retail trade (15 percent), agriculture (13 percent), construction (11 percent), and hotels and restaurants (9 percent).

2.5.4.2. Emerging Trends in the Mekong Areas in Viet Nam

The Mekong areas in Viet Nam comprise three areas: 1) the Mekong Delta in the southern part, 2) the Central Highlands in the central part, and 3) the Lai Chau area (Dien Bien Phu) in the northeastern part of Viet Nam. The Mekong areas in Viet Nam have played an important role in the development planning of Viet Nam in the past

and will do so in the future, especially the Mekong Delta and Central Highlands, in view of their high agricultural and hydropower potentials, respectively.

Table 3. Key economic indicators of Viet Nam, 1990-2000

<i>Indicators</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>Average 90-99</i>
GDP growth (%)	5.1	6.0	8.6	8.1	8.8	9.5	9.3	8.2	4.0	4.5	5.5	8.1
GNP per capita growth (%)	2.2	3.8	6.5	6.0	6.8	7.6	7.4	6.5	4.3	2.9	–	6.2
GNP per capita, Atlas method (current US\$)*	–	–	–	170.0	200.0	250.0	290.0	330.0	350.0	370.0	388.0	370.0
GNP per capita, PPP (current internat'l \$)*	937.0	999.7	1111.8	1204.7	1313.2	1451.1	1570.8	1654.2	1684.5	1755.3	–	1755.3
Agriculture, value added (% of GDP)	37.5	39.5	33.0	28.8	28.7	28.4	27.2	25.8	25.7	25.4	30.0	27.1
Industry and construction, value added (% of GDP)	–	–	–	28.9	28.9	28.8	29.7	32.1	32.5	34.5	30.8	18.5
Services, etc., value added (% of GDP)	39.9	36.7	39.7	42.3	41.6	41.7	42.1	42.2	41.7	40.1	–	40.8

Source: World Bank 2001. Viet Nam, Country Assistance Evaluation, Report No. 23288, November.

1. MEKONG DELTA

The economic success in recent years indicates that the Mekong Delta will continue to grow rapidly and steadily, especially in the agriculture sector. As a result of the increase in agricultural production, Viet Nam has emerged as the second largest rice exporting country in the world. The Mekong Delta contributed approximately 85 percent of rice export and almost 50 percent of the total paddy production of the country. In 1998 about 8 million tons of paddy out of the total production of 15.4 million tons from the Mekong Delta was traded with other regions of the country and to export. Also in 1998, the total fishery and aquatic products from the Mekong Delta accounted for more than 50 percent of the national outputs and over 60 percent of the country's export in fishery products.

Currently, there is a growing concern regarding the increasing impacts of intensive agricultural practices and aquatic farming on the environment; in particular, the possible further intrusion of seawater into the Mekong River system during the dry season. Efforts are being made to bring about a shift towards non-rice farming so as to minimize the use of water during the low flow period when the competition on the use of water is high in the delta as well as in the upstream countries. It was recognized that cooperation among the stakeholders in the Mekong Delta would be as important as that among the riparian countries to ensure a sustainable trend in socioeconomic development in the basin.

2. CENTRAL HIGHLANDS

The strategic orientation for development of the Central Highlands consists of a comprehensive socioeconomic development policy, sustaining the equilibrium of economic, social, and environmental factors. The economic growth in the Central Highlands provinces, coupled with the settlement of various ethnic groups, must ensure harmony between economic and social aspects. Human settlements built along highway and road axes should contribute to a rise in production efficiency to ensure good living conditions (communication, power, clean water, schools, hospitals, and so on). The protection of the environment in the Central Highlands is also very important, since million of hectares of basaltic soil are being degraded, requiring effective measures for protection and rational use.

In order to integrate the Central Highlands into the national economy and achieve better cooperation with the Lao PDR and Cambodia, investment is necessary to upgrade the highways linking the Central Highlands with coastal areas in the southern part, with coastal provinces in the central part, with the Lao PDR and Cambodia, and finally with northeast Thailand. In terms of agricultural production, emphasis should be placed on the promotion of perennial industrial plants such as rubber, coffee, and tea, and at the same time boosting the agricultural product processing industries linked with developing urban areas along highway and road areas.

In the Central Highlands there is a large potential for hydropower, ensuring not only the local power demand, but also the ability to exchange energy with southern Laos, through low-voltage connections across the border. In future, high-voltage interconnection with Laos, Cambodia, and the northeast of Thailand will be possible through the planned integrated transmission grid among GMS countries. The hydropower potential in the Central highlands is about 2,000 MW, and two projects have been constructed: the Fray Ling plant with a capacity of 13 MW (1995) and the Yali with 720 MW (2001). These plants, along with the 500 kV high-voltage transmission line, will constitute a unified power grid for safe and continuous supply of electric current, meeting the demand for the socioeconomic development of riparian countries. With the construction of large hydraulic and hydropower projects, it is necessary to take effective measures for environmental protection.

2.5.5. Summary of Development Needs and Trends in Yunnan Province, China

According to a recent report of the Yunnan Province, GDP in Yunnan reached 147 billion yuan in 1996 to jump to seventeenth place in China from its 1980 position of twenty-second, thanks to an economic growth rate of about 10 percent over a ten-consecutive-year period. Infrastructures like energy, telecommunication, and transportation continued to improve, and there was a marked acceleration in the industrialization process. During the eighth Five-Year Plan period (1991–5), the gross value of industrial output grew at an average rate of 13.7 percent annually, corresponding to an increase of 8 percent in GDP of the province. Agriculture continued to grow, consolidating and reinforcing its position as the foundation of the economy. Sustainable development in the rural economy has brought about continuous bumper harvests, which reached 12.46 million tons of food grain in 1996.

Yunnan was opening up to Southeast Asia and to the World, particularly with the increase in economic cooperation within the framework of the Greater Mekong subregion initiated by ADB at the beginning of the 1990s. Cooperation has markedly been enhanced in various sectors, including tourism development, transport and navigation, and trade and energy development. In respect of cooperation with the MRC, since 1996 China, in the capacity of observer, has participated in the annual session of the MRC and started dialogue with the MRC in areas of mutual interest. In April 2002, the "Agreement on the Provision of Hydrological Information of the

Lancang/Mekong River in Flood Season” was signed between the Ministry of Water Resources of China PR and the MRC Secretariat.

Table 4. Key economic indicators of Yunnan Province, China

<i>Item</i>	<i>1993</i>	<i>2000</i>
Population:		
Total	38 850 000	42 280 000
Urban	6 662 300	10 020 000
Rural	32 190 000	32 860 000
Gross Domestic Product (GDP)		
GDP (billion yuan, actual)	66.3	195.5
Per capita GDP (yuan)	1,700	4,624
(US dollar)	207	560
Primary sector (billion yuan)	24.4 (36.8%)	43.6 (22.3%)
Secondary sector (billion yuan)	28.4 (42.8%)	84.3 (43.1%)
Tertiary sector (billion yuan)	13.5 (20.4%)	67.5 (34.6%)

Source: Zhang Hai Lun, 2003.

Yunnan is rich in energy resources, particularly hydropower development. In addition to the Lancang River (forming the upper part of the Mekong River Basin), Yunnan has five other river systems. The six river systems provide an annual water supply of 222.2 billion m³ and an estimated hydropower potential of 103,640 MW. The development of Yunnan’s abundant hydropower resources, estimated at 22,500 MW, is in progress. According to a recent MRC study and Zhang (2003), the Manwan Dam on the Lancang River with an installed capacity of 1,500 MW was operational in 1993, the Dachaoshan Dam with an installed capacity of 1,350 MW was completed in 2000, and the construction of Xiaowan Dam Project (4,200 MW) was started at the beginning of 2002. These three hydropower plants are part of a series of fourteen hydropower stations planned along the Lancang River, at locations ranging from 30 km to 800 km north of the border between China and Myanmar.

In parallel with hydropower development, transport development (including improvements in water-borne transport) has progressed significantly. According to a recent study, the first steamship was introduced in 1962, and the use of the river for shipping began to be organized in 1965. During the 1970s, further development of the 188 km section from the Myanmar border to Ganlanba allowed ships of 50 to 140 tonnes to dock. During high water seasons, the docks could handle ships of 300 to 500 tonnes. By the late 1980s, ships of 300 tonnes could land year-round. In 1988, there were twenty-eight freighters in operation. Their net capacity was 281 tonnes, and 785 passengers. There were also ten barges with a net capacity of 740 tonnes. The vessels were organized under a state-run shipping company with two teams, which were also responsible for maintaining the anchorages and repair shops. The number of boats in use on the Lancang remains rather small, but it is important to note the continuing efforts to improve inland navigation on the Lower Mekong River system.

2.6. Recent Economic Development Trends and Implications for Water Resources Management

Until the recent economic crisis that seriously affected Thailand in the second half of 1997, the Lower Mekong Basin enjoyed a good economic growth rate. The average

annual growth rates of the GDP of the countries in the Lower Mekong Basin during the period 1990–7 was estimated in the World Bank's *World Development Report for 1998–9* to vary from 6.2 to 8.6 percent. These high economic growth rates have greatly reduced the difference in the economic structures among the countries (as shown in Table 5). Although the high economic growth rate has led to a change in economic structure towards less agriculture-based economies, the economy of the subregion still remains largely and predominantly agricultural (except that of Thailand before the crisis). Since the early 1980s, the agriculture sector has continued to grow consistently at a good annual rate in the basin, especially in Viet Nam and Thailand. This fact indicates, on the one hand, the rich potential of land and water resources of the subregion, but on the other hand implies the urgent need to improve water resources management to ensure sustainable development. The importance of water resources management is further enhanced by the recognition of the increasing importance of the agriculture sector in solving the economic crisis, as elaborated by Dr Apichart Anukularmphai (1998) in his recent study conducted for UNESCAP on the Thai experiences on water resources management.

Table 5. Key economic indicators, 1985 and 1997

	Cambodia		Lao PDR		Thailand		Viet Nam		Total	
	1985	1997	1985	1997	1985	1997	1985	1997	1985	1997
GDP (US\$10 ⁹)										
National	0.7	3.1	0.5	1.8	37.4	169	10.8	24.5	49.4	199
Basin	0.7 ¹	6.2	0.5 ¹	6.7	8.5	6	4.0	8.6	13.7	
Average % growth pa (1990–7)		2.1				7.5		5.2		
Agric'l sector growth (1990–7)						3.6				
Per capita income (US\$)										
National	100	300	140	400	735	2,80	180	320	–	–
Basin	100		140		440	0	240		–	
Origin of GDP (% of GDP)										
Primary sector	90	50	62	52	17	11	43	27	–	–
Secondary sector	5	15	6	21	30	40	33	31		
Tertiary sector	5	35	32	28	53	50	24	42		

Notes:

1. For practical purposes taken as the same as total GDP, although a small portion of the economy is outside the basin.
2. Information for 1985 was extracted from previous studies of the MRC Secretariat on the formulation of BDP.
3. Information for 1997 was extracted from the *World Development Report for 1998–99* of the World Bank.

Under the current economic crisis, the government of Thailand has reviewed and revised the Eighth National Economic and Social Development Plan in order to address the critical issues and to lay a sound economic structure for future development. In this connection, agriculture is once again expected to play an important role in lessening the economic impacts and fuelling the rapid recovery of the ailing economy. For such a purpose, it was considered essential to map out a long-term agricultural development plan, not only to cope with the current economic crisis, but also to lay a sound foundation for future development. The current economic crisis also provides an opportunity for the government to develop a comprehensive long-term agricultural development plan similar to that given to industrial development during the past three National Plans – that is, the fifth, sixth, and seventh plans.

In this respect, one cannot overlook the role of irrigated agriculture. The national policy puts heavy emphasis on export earning to serve as a basis for rapid economic recovery. Water resource and irrigation development has

to be undertaken in parallel with other agricultural measures. Coupled with global climatic changes such as El Nino, water resource development deserves more attention in securing the necessary quantity of water for various users, especially agriculture. The issue of water use efficiency is getting much attention and is generally believed to be able to solve the water shortage problem. This is true to certain extent, but not a solution to the water shortage problem. Irrigation is being blamed as an inefficient user of water, which again is partially correct. However, the fact remains that with gravity surface irrigation such as in the Chao Phya Basin, the highest possible efficiency cannot exceed 60 percent. So in the context of an individual project, that efficiency is thus low. However, in the context of basin development, there are many more projects downstream and the "wastage" (return flow) will be used again by the projects downstream and possibly again and again until the water reaches the sea. Therefore, irrigation efficiency needs to be improved to increase the cultivated area, but such improvement alone is not sufficient to meet the overall increasing demand. One possible solution is transbasin water resource development.

(Anukularmphai, 1998)

2.7. Towards Sustainable Development Under the Mekong River Commission (1995 to Present)

During the past decade, the Mekong subregion has become a focus of attention for investment and developmental cooperation. Apart from various papers prepared in the context of the Mekong cooperation, a wide range of literature has been produced focusing on development possibilities and subregional development perspectives. Of importance to BDP preparation are those papers prepared by the BDP national teams and by the representatives of the National Mekong Committees at a recent international workshop organized by the International Crane Foundation in Washington, D.C. from November 29 to December 2 1995, and the international symposium on the Mekong River Basin of the Third Princess Chulabhorn's Science Congress, held in Bangkok from December 11 to 15 1995.

In the above context the Mekong Basin is recognized as one of the fastest economic growth areas of the world. During the past decade, the Lao PDR, Thailand, and Viet Nam enjoyed political stability and high economic growth rates. Since the beginning of the 1990s, Cambodia has been in the process of rehabilitation and reconstruction, and has showed an early indication of a quick economic recovery. One of the main reasons for the economic success of the region is the liberalization of economic policies adopted by the riparian governments for closer regional cooperation and more active participation of the private sector. In order to maintain the high economic growth rate in the twenty-first century, economic liberalization policies must be continued and adapted to suit changes in the three most important areas:

- proactively participate in the current trend of globalization
- strengthen subregional economic cooperation
- consolidate and further develop the economies, with an increasing role for private sector participation.

In the following sections there is an overall analysis of strategic thrusts at three levels: global, subregional, and national, to identify the most important elements required to be taken into account in determining the driving forces and issues for basin development.

2.7.1. Strategic Global Economic Thrusts

Since 1991, the Mekong region has become a subregional area of Asia of rapidly increasing interest for investment by the private sector, and for development by several financing institutions and the donor community. Among the most important initiatives of the major financing institutions are:

1. The Greater Mekong Subregion (GMS) Cooperation Program initiated by the Asian Development Bank.
2. The Indochina Forum initiated by several countries, especially Japan and France.
3. Subregional projects and programs initiated by the World Bank.

These subregional initiatives open a new era of subregional cooperation for development of the Mekong Basin, in which coordination of subregional efforts becomes increasingly more important in terms of not only efficient use of resources, but also sustainability of development. The collaborative roles of the MRC in relation to the other subregional initiatives form the most important guidelines for the core elements to maximize the benefits of global cooperation.

2.7.1.1. Globalization of Economies

Cooperation among the Mekong riparian countries is moving toward a natural process of integration within the region, as economic conditions rise above subsistence level and the countries begin to enjoy rapid economic growth and to benefit from success in trade. The integration process is seen not only as an important opportunity for development of the region, but also as an important challenge faced by the countries in view of the significant differences in their level of economic development. With the exception of Thailand, the low per capita incomes (and consequently, low standards of living) form one of the most fundamental obstacles to development. In Cambodia, Lao PDR, and Viet Nam, for example, the lack of savings and financial resources greatly hampers the development task, especially rebuilding an infrastructure badly damaged during almost forty years of wars.

A brighter outlook for the development of this region is illustrated by several initiatives for greater and closer cooperation in economic development that is beyond the scope of the Mekong Committee. The most advanced of these is the program of cooperation among the Greater Mekong subregion (GMS) initiated by the Asian Development Bank (ADB). This increased cooperation on development is made possible by the very positive climate created by these countries in recent years. The sweeping reforms being introduced by formerly highly centralized, planned economies, including the adoption of outward-oriented trade and investment policies, have led to rapidly improving growth prospects in the Mekong region. As pointed out by Morita in his report of the Second Ministerial Conference of GMS:

There is a growing awareness among the six countries of the Mekong subregion that they have a great deal in common and much to gain from cooperating with each other. Realization of peace in the subregion is fostering a remarkable spirit of goodwill and enthusiasm for strong economic relation along the Mekong. In this context, then, every effort should be made by the international community to help nurture rapid and sustainable growth in the subregion. One vital dimension of this help should be subregional initiatives that complement the shared national goals of major improvements in the level and quality of living standards.

(ABD-GMS, 1993)

In this context, the challenge is to advance the Mekong cooperation so that it further stimulates sustainable economic growth and increases the international competitiveness of Mekong development to establish firm long-term economic partnerships of mutual benefit. In terms of basin planning, this challenge implies that the following elements need to be addressed:

1. To link the Mekong cooperation program with the wider scope of regional economic cooperation so as to ensure continuity and consistency of regional development.
2. To continue to improve the complementarities of national development measures and projects.
3. To create suitable conditions to implement regional economic cooperation policies, especially those related to regional projects and supporting national measures.

2.7.1.2. Global Social and Environmental Concerns

Continuing economic growth and the rapid increase of the population of the world have put increasing pressure on limited resources and caused considerable disturbance to various natural ecosystems. The increase in concern for the stability and sustainability of the global environment has led to a concerted effort initiated under the aegis of UN and resulted in the Earth Summit held in Rio de Janeiro in June 1992. Among various global environmental issues, the Earth Summit recognized that:

Freshwater resources are an essential component of the earth's hydrosphere and an indispensable part of all terrestrial ecosystems. Water is needed in all aspects of life. The general objective is to make certain that adequate supplies of water of good quality are maintained for the entire population of this planet, while preserving the hydrological, biological, and chemical functions of ecosystems, adapting human activities within the capacity limits of nature and combating vectors of water-related diseases.

(UN, 1992)

It recommended integrated water resources planning and management, and pointed out:

Such integration must cover all types of interrelated freshwater bodies, including both surface water and groundwater, and duly consider water quantity and quality aspects. The multi-sectoral nature of water resources development in the context of socioeconomic development must be recognized, as well as the multi-interest utilization of water resources for water supply and sanitation, agriculture, industry, urban development, hydropower generation, inland fisheries, transportation, recreation, low and flat lands management, and other activities.

(UN, 1992)

The Earth Summit also recognized that:

Transboundary water resources and their use are of great importance to riparian States. In this connection, cooperation among those States may be desirable in conformity with existing agreements and/or other relevant arrangements, taking into account the interests of all riparian States concerned.

(UN, 1992)

As seen above, environmental concerns about Mekong water resources development and management have a global dimension. These, together with the principle of equitable sharing of the common water resources, have been fairly reaffirmed in the MRC 1995 Agreement. These concerns need to be further addressed and incorporated in the framework of basin development, especially for the following needs:

1. To establish a framework and a foundation for peaceful and equitable sharing of common water resources to ensure the sustainability of economic development.
2. To develop and conserve the common water resources for better regional cooperation and to meet national needs of social and economic development of present and future generations.
3. To mobilize participation in the community to improve the efficiency of utilization and management of the water resources.
4. To create more opportunities for regional cooperation to meet national needs of development and protection of sensitive ecosystems.

2.7.2. Subregional Strategic Thrusts

The strategic location of the Mekong subregion, as part of the highest economic-growth subregion of the world, together with its rich natural resources which remain relatively undeveloped, form the most important competitive advantage for investment and development cooperation. From the related references, four major subregional strategic thrusts can be identified.

2.7.2.1. Agriculture

Despite the fact that the subregional economies are being diversified, with the shares of industrial and services sectors continuing to increase rapidly, the agricultural sector is expected to continue to be the most important foundation of subregional economic growth and stability. With Thailand being the world's largest rice exporting country and Viet Nam the second largest, the Mekong subregion would remain the rice bowl of Asia and the world. The strategic thrust would then be to meet the challenge of such expectation in the development perspectives: first, of higher demand from the rapidly increasing population in the subregion and the rice-consuming countries of the world, and second, for a better quality of life for the majority of the rural population. The first type of expectation calls for greater efficiency in rice cultivation, especially in terms of water utilization. The second type of expectation requires diversification of the agricultural sector and better development of the market.

2.7.2.2. Transport

Transportation linkage among the countries of the subregion, as well as between the subregion and the outside world, forms an important area of investment and development cooperation. Within the subregion, attempts are being made to establish several transportation centers and corridors for trade and tourism development, and multimodal transportation systems are being developed. The Mekong River, with its strategic position, constitutes an important element for such multimodal system development and its economic performance. Cooperation with countries outside the subregion is expected to further develop these subregional corridors and subregional transportation hubs into major corridors of the Asian and Pacific region.

2.7.2.3. Energy Development

The Mekong subregion is endowed with an important source of renewable energy – hydropower potential. If fully developed, this potential could make the subregion almost self-sufficient in electric energy. In the short and medium term, this potential could help

meet the rapidly increasing demands in the neighboring countries. In the long run, these renewable resources could constitute the fundamental and strategic element for an optimal and environmentally sound integrated electric power system of the entire subregion.

2.7.2.4. Tourism Development

With the increased intensity of globalization and economic liberalization, tourism is increasingly important, not only as a service sector for economic development, but also as a means for improved quality of life. With the natural beauty of many tourist sites and the virtually untouched natural conditions of the tropical forests, together with various historical sites representing a long past civilization and rich cultural diversities, the Mekong subregion offers an attractive network of destinations for ecotourism and cultural tourism.

2.7.3. National Strategic Thrusts

Despite the significant difference in the economic development between Thailand and the other three riparian countries, as developing countries they possess similar national strategic thrusts of different intensity. These are briefly discussed below.

The rapid increase in the population, especially in the rural area, results in more pressure on the use of natural resources, especially land and water; increasing unemployment or underemployment; increasing economic disparity and poverty; a more rapid urbanization process; and a higher demand for better human resources development. The population pressure calls for a more rapid improvement in the infrastructure, in mobility of labor, and better social welfare services.

Liberalized economic policies adopted by the riparian countries have led to a more active role for the private sector in economic development. Participation of the private sector continues to increase in scope and scale to cover many kinds of activities and various aspects of development. In all the riparian countries, mobilization of the participation of the private sector has been accorded priority in national development policies. Several important economic policies have been introduced to increase the interest of the private sector from both domestic and foreign sources, and to enhance the effectiveness of its participation. This has led to a significant improvement in the participation of the private sector in the national development process from domestic and foreign sources.

With the current trend, the participation of the private sector continues to play an increasingly important role in national, and therefore, basin development, as it not only provides financial resources but also acts as an additional source of skilled human resources and an effective medium for transfer of technology. Planning for basin development would need to take into account these important factors affecting its implementation. Such a basin development plan would therefore need to extend the scope of planning to cover not only public investment projects but also the framework for effective mobilization of private sector participation. In fact, as pointed out by Phonekeo (2003), the socioeconomic development of individual riparian countries of the Mekong River Basin is already in full swing, and will take its course with or without Mekong programs. Although the member countries are fully and formally committed to the 1995 agreement, when it comes to the elaboration of the rules and procedures for regulating the use of the water and related resources, dormant potential conflicts of interest might emerge, particularly in the process of the elaboration of the Basin Development Plan and during the implementation and operation phases of development projects.

3. OVERALL ANALYSIS OF LEGAL AND INSTITUTIONAL MEKONG COOPERATION FRAMEWORKS

Cooperation in the Mekong has existed since the beginning of the twentieth century. The foundation of such cooperation has always been the wish of the riparian countries to jointly develop the rich resources of the Mekong Basin for the benefit of the people in this region. The riparian countries' political will to cooperate marks an important feature for development of this region. Therefore, analysis of the legal and institutional frameworks must be based on this important foundation of cooperation. It can be recognized that the legal and institutional framework should be a vehicle to achieve the expectations of the respective founders. It must be built to direct the common efforts toward common goals, and to mobilize further support to increase momentum injected by the political will to cooperate. As such, the framework must be regularly adjusted to suit development needs and aspirations, to strengthen cooperation, and to consolidate the foundation of understanding and confidence. This chapter highlights important developments in the legal and institutional framework of Mekong cooperation, and analyzes the changes in the above context. It should be noted that this chapter draws heavily from the previous studies undertaken as part of the MRC project on "Preparatory Organizational and Legal Studies" completed in 1994.

3.1. Early Stages of Mekong Cooperation

3.1.1. Legal Aspects

Early international efforts to coordinate development of the Mekong resources started in the 1920s. From 1925–54, a series of agreements was signed by concerned parties in this region of the Mekong Basin. These agreements dealt mainly with the use of waters of the Mekong River for navigation purposes. Among them, the most important agreements are listed below:

- The Treaty of Friendship, Commerce, and Navigation between Siam and France, signed at Paris on February 14 1925.
- The Convention between Siam and France relating to the Regulation of the Relations between Siam and Indochina, signed at Bangkok on August 28 1926 (hereinafter referred to as the "1926 Convention").
- The Rules and Regulation of the Permanent Franco–Siamese High Commission of the Mekong, Resolution No. 1 of January 21 1928.
- The Convention of the Regime for Maritime and River Navigation on the Mekong and for River Navigation Approaching to the Port of Saigon, signed by Cambodia, France, Laos, and Viet Nam at Pau on November 29 1950 (hereinafter referred to as the "Pau Convention").
- The Agreement regulating 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 December 29 1954 (hereinafter referred to as the "Paris Convention").

3.1.2. Institutional Aspects

By these agreements, three commissions were established: 1) the Permanent High Commission of the Mekong (PHCM) established by the 1926 Convention; 2) the Consultative Commission of the Mekong (CCM), created in 1950 by the Pau Convention;

and 3) the Mekong Commission, established in 1954 by the Paris Convention. It is interesting to note the following important features of these commissions:

- The first commission covered all the four riparian countries of the lower basin, although the contracting parties were only two: Siam and France (for Indochina). The second and third commissions were concerned only with the three Indochinese states (and France).
- The first commission dealt with navigation and multiple uses of the river proper as well as boundary demarcation. The second and third commissions were restricted to navigation development.
- The first commission has more executive and regulatory power. The second and third commissions have only consultative power.

It is also interesting to note the institutional changes of the technical body serving each of the commissions:

- The secretariat serving the France–Siam Permanent High Commission was located in Vientiane, (Laos) with a president nominated by France and two secretaries, nominated by France and Siam. The secretary nominated by France had more management responsibility and administrative power.
- The secretariat of the Consultative Commission and the Mekong Commission was located in Phnom Penh with a number of technicians to assist in the work. The secretariat of these commissions started to build up a permanent technical foundation for cooperation: a centralized data bank. The commissions were constituted of two representatives from each of the participating states on equal footing.
- The process of selecting the president/chair and the head of the secretariat improved from the first to the third commission. This represents a clear progress in the evolution of the secretariat of these commissions, in terms of improving the effectiveness of cooperation of the sovereign states.

3.1.3. An Analysis of the Frameworks

The legal framework for cooperation of the France–Siam Permanent High Commission of the Mekong was quite extensive. The institutional framework was not well developed and not equipped to deliver what the legal framework covered. To illustrate this observation, one may note that apart from the provisions governing the use of Mekong waters for navigation, there were provisions dealing with other uses in the 1926 Convention: the utilization and diversion of the water of the Mekong for agricultural, industrial, or commercial uses, especially for the purposes of irrigation and generation of electric power.

While the Permanent High Commission functioned from 1928 until the Second World War, it did not proceed with further arrangements envisaged in the convention for the utilization and diversion of Mekong waters for agricultural, industrial, and commercial uses. The slow development of the region, coupled with cooperative efforts producing only small achievements, weakened the commission. This could have been because large-scale demand for non-navigation uses of the Mekong waters did not emerge until after the Second World War. It was only after the war that development was seriously examined.

It is important to note that the Lower Mekong, given the presence of natural obstacles, is not fully navigable throughout its entire course. Navigation was only the most popular and economic means of large-scale transport of goods for the lower part of the Mekong River, where ocean-going vessels could sail between Phnom Penh and the sea. Therefore, the number of active members engaged in cooperative efforts was

confined to only those of the Indochinese states in the subsequent period for navigation development.

The Consultative Commission and the Mekong Commission were established in 1950 and 1954 respectively, to focus mainly on navigation. The institutional framework of these two subsequent commissions was more developed and better equipped, and also had more riparian participation. The center of efforts was navigation between Southern Laos, Cambodia, and the sea. A number of instruments were established to facilitate development. However, with the weakening economic condition of France and subsequently its withdrawal from the region, the development of navigation lost most of its momentum. The institutional framework for common navigation development turned toward national development. These national bases were not lost but can readily be reintegrated for future cooperation and development.

3.2. Cooperation Through the Mekong Committee

The idea of developing the waters of the Mekong River for multipurpose use has evolved since the establishment of ECAFE in 1947. The concept of development of the natural resources, essentially the water resources of the Mekong River, was encouraged by this regional UN organization. In 1951 the ECAFE Bureau of Flood Control investigated international rivers, and it selected the Mekong River for particular attention while enlisting the support of four riparian countries in undertaking the studies. A principal finding of the study (completed in 1952) was that the river offered highly attractive opportunities for the development of hydropower and irrigation. The ECAFE then focused attention on development of the Mekong water resources, and provided some useful guidelines for the planning and development of the mainstream of the Mekong River.

3.2.1. Legal Aspects

Under the auspices of ECAFE, the four governments of Cambodia, Laos, Thailand, and Viet Nam (South Viet Nam) signed, in September 1957, the Statute to establish the MC. It was the first time that an intergovernmental organization dealing with the concept of integrated development of the Mekong river basin was established in the region.

The functions of the committee, as stipulated in the article 4 of the 1957 statute, are *to promote, coordinate, supervise, and control the planning and investigation of water resources development project in the Lower Mekong Basin*. To these ends, it may:

- Prepare and submit to the participating governments plans for carrying out coordinated researches, studies, and investigation.
- Make requests on behalf of the participating governments for special financing and technical assistance, and receive and administer separately such financial and technical assistance.
- Draw up and recommend to participating governments criteria for the use of the water of the mainstream for the purpose of water resources development.
- Employ on behalf of the participating governments personnel to assist the committee in the performance of its functions.

3.2.2. Institutional Aspects

The committee comprises four members; each member is appointed with plenipotentiary authority by one respective government. The members of the committee hold the chair in turn for a one-year period. Ordinary meetings of the committee are held three times a year. All participating countries attend the

committee's meetings. Representatives of other governments, international organizations, and specialized agencies may be invited to attend in the capacity of observers. The committee annually submits reports to the participating governments and UNESCAP (formerly ECAFE).

In addition to the sessions that the committee holds annually, it has a secretariat to support it in the daily work between sessions. The Mekong secretariat was originally composed of specific divisions, attached to the UNESCAP secretariat, and headed by an executive agent. The secretariat was given three important functions: program planning, management, and coordination. The secretariat gradually expanded its scope of work, from originally only two divisions – engineering (for hydrology and planning) and navigation – to four major divisions (engineering, navigation, agriculture, and social and economics) and two special units (planning and environment).

The executive agent was responsible for technical and administrative management. The executive agent's terms of reference covered several areas:

- coordinating all technical studies undertaken at the committee's request
- monitoring the preparation of reports and studies
- negotiating external assistance for projects to cover technical assistance and investments needs
- supervising the execution of projects
- ensuring the proper use of funds channeled through the secretariat
- serving as project management of UNDP institutional program support.

In 1958, an advisory board was established to advise the committee on all technical and financial aspects of its work. It consisted of engineers and experts in agriculture, finance, and economics. By the mid-1960s, the advisory board had begun to offer advice on a wide range of subjects and problems. However, the advisory board ceased to provide its advice in 1976 because of the impasse caused when the three members failed to appoint plenipotentiary members to the committee.

The National Mekong Committees have several basic functions that, as far as linkages between the Mekong secretariat and the member states are concerned, can be summarized as follows:

- To participate in the committees' work program within the framework of national and regional policies.
- To advise the member states' representatives to the Mekong Committee on all matters concerning the Mekong secretariat, including the preparation and the content of its work program.
- To follow-up the Mekong secretariat's progress in the policy matters pertaining to the implementation of its work program, to analyze progress, and to analyze technical and other reports prepared by the Mekong secretariat.
- To ensure linkage and liaison with national institutions.

On several occasions during the period from 1957–75 the committee adjusted its legal documents to meet the needs for changes. The 1957 statute was amended in 1962, 1967, and 1972. The committee had to approve its rules of procedure (1963), and some legal documents concerning the terms of reference of the advisory board (1963 and 1968) and the committee's executive agent (1968).

In 1975, the four member countries signed the "Joint Declaration of Principles for Water Utilization of the Lower Mekong Basin." The Joint Declaration adopted the principles elaborated in the Helsinki Rules, that is, those of equitable utilization and the duty not to cause appreciable harm. In addition, it has introduced principles specific to the development and management of the Mekong Basin. Article II states

that "development and control of water resources of the basin are directed towards their optimum utilization for the benefit of all peoples of the basin states." Other specific principles and criteria for the development of the Mekong River Basin include: "Development should be implemented under the guidelines of the Indicative Basin Plan which should be prepared and approved jointly by the Committee" (Preamble) and "Individual projects on the mainstream shall be planned and implemented in a manner conducive to the system development of the basin water resources" (Art. V).

3.2.3. Evolution of the Framework with Basin Development

Making use of the experiences of previous cooperative efforts, the framework of cooperation established by the Mekong Committee was much more specific and realistic. Detailed technical preparation and institutional support by ECAFE formed important elements for the constitution of the Mekong Committee's legal and institutional framework for cooperation.

The social and economic conditions in riparian countries in the Lower Mekong Basin were still underdeveloped at the end of 1950s. The legal framework was established to create development opportunity for the four sovereign countries, three of which in the Indochina peninsula had just become independent countries. The resources of the four countries were limited for undertaking any major projects.

The statute assigned the Mekong Committee the functions of investigation and planning of water resources development as well as project selection but did not bind the member countries to an international contract. The committee at times acted as a legal entity, taking initiatives in negotiations and in drafting agreements and plans of operations. Although the committee was not empowered to be a signatory to agreements, in certain cases it undertook such responsibilities (for instance in 1965, when it signed the convention concerning the Nam Ngum dam construction). During the first decade of its existence, the committee exercised great flexibility and broadened its scope of cooperation as a result of three statutory amendments aiming at responding to development demands and widening its scope of activities:

- The first amendment in 1957 dropped the reference to "quorum," ruling that the committee should be alternated by representatives of all participating countries.
- The second amendment in 1962 gave the committee the right to serve as a recipient and administrator of financial and technical assistance from donors, as well as the right to acquire title to property.
- The third amendment, in 1965, reflecting the widening scope of activities that were undertaken by the committee, changed its title to "Committee for Coordination of Comprehensive Development of the Lower Mekong Basin." The committee was given the right to undertake construction works and other development projects, in addition to its original functions of investigations and planning. However, Cambodia was not in a position to ratify the 1965 amendment, and this has prevented the third amendment from becoming effective.

In addition, within the framework of long-term cooperation for basin development, an important document was signed in 1975 on a "Joint Declaration for Utilization of Water Resources of the Lower Mekong Basin."

It is important to note the process of development of the Mekong legal framework with the above important documents referred to in this analysis. Analysis of these documents should be made in the context of cooperative development. An overall analysis of the process of development can be summarized as follows: the Mekong legal framework has slowly evolved to correspond with the needs of the riparian countries and with the stronger will of cooperation and mutual confidence.

The process of change was illustrated by the following factors:

1. To increase the readiness of cooperation among the riparian countries.
2. To better interact with cooperating countries and international organizations.
3. To move from a planning organization toward a development agency.
4. To lay foundations for further developments in each country without causing adverse effects on the others.

The ECAFE, and subsequently UNESCAP, provided the committee with an important foundation for institutional development. The generous financial and institutional support of UNDP constituted an important instrument for expanding the scope of work to strengthen cooperation among the riparian countries.

The Mekong institutional framework continued to grow from a small institution dealing with all the work on behalf of the countries to a multidisciplinary institution in the early 1970s, with more support in the riparian countries. This development process corresponded well with the development needs and was in tandem with the training program. The participation of riparian staff continued to grow in the planning work of the secretariat.

This process of institutional development has left important memories for sustainable development of the Mekong resources. One may, however, notice that there was little improvement in the participation of riparian decision makers in the important preparation of policy options of the committee. A Mekong advisory board was established to fill this gap. Unfortunately, this board could not replace an important missing link between policy option developers and decision makers in each country.

3.3. Establishment of the Interim Mekong Committee

3.3.1. Legal Aspects

In 1976 and 1977, as a consequence of the political change in the region, the committee faced difficulties. During the period of 1976–7, Cambodia failed to appoint its plenipotentiary representative. No committee session could be held in those two years and, as a consequence, no new activities could be introduced into the committee's work program.

In April 1977 three riparian states, (Lao PDR, Thailand, and Viet Nam) had a meeting and agreed not to wait any longer. They subsequently signed a Declaration on January 5 1978 to establish the Interim Mekong Committee (IMC).

The functions of the IMC, as stipulated in the Declaration of 1978, are *to promote the development of water resources of the Lower Mekong Basin*. Toward these ends, it may:

- prepare and approve plans for carrying out coordinated researches, studies, and investigation
- make requests on behalf of the participating governments for financial and technical assistance, and receive and administer such assistance
- employ on behalf of participating governments personnel to assist the IMC in the performance its functions
- draw up and recommend to participating governments criteria for use of the water of the Lower Mekong Basin for the purpose of water resources development.

3.3.2. Institutional Aspects

The institutional aspects of the IMC are very similar to those of the MC. However, because of the interim nature of the institution, financial support from the international donor community was mostly of a relatively short-term nature. This coincided with a major shift in the support policy of UNDP, which moved from institutional support granted to the committee in the previous decades to program-oriented support. This fact has resulted in a more serious consideration in the policies of the committee members of ensuring sustainability of the Mekong cooperation program. The main features of the new policies included enhancement of the participation of the riparian countries in the formulation of projects and preparation of the annual work program of the committee, improvement of the work efficiency of the secretariat, and improvement in financial resources. Important achievements in terms of sustainability of cooperation included the increase in financial contributions by the members to the operation of the committee, and the establishment of the Mekong Administrative Reserve Fund, which could assure continuity in the operations of its secretariat for several years.

3.3.3. Remarks

In the absence of Cambodia, the IMC was formally established in 1978. It can be said that the framework of cooperation under the IMC is a continuation of that of the MC in the process of the Mekong Basin development. This important improvement in the legal status of the IMC is a major factor to encourage the participation of this organization in the development projects of the basin.

The new role of the IMC enabled it to concentrate on food and power production, flood control, and navigation. The establishment of the IMC necessitated the reorganization and restructuring of the national Mekong committees and the Mekong secretariat. It also maintained the cooperation among riparian countries and financial support from the international community.

However, because of the absence of Cambodia from the framework of cooperation in this period, most basin-wide activities could not be implemented.

It can be noted that, after the last proposal for amendment in 1965, which could not be ratified, the committee continued to function under the legal framework formulated in the 1978 Declaration. The activities of the committee advanced with great rapidity to respond to the demands of the riparian countries.

An institutional framework became more important in order to achieve the goals of the committee, defined as: "the comprehensive development of water resources and related resources of the Lower Mekong Basin." The role of the Mekong secretariat was described as being "to mobilize and manage effectively inputs and investments and to coordinate the assistance to the Mekong Committee towards this end."

During the IMC period, the Mekong secretariat underwent reorganization several times with a view to rendering it more operational and effective. The new secretariat, more able to respond to the requirements in planning, programming, program management, and mobilization of resources, is now equipped to coordinate inputs and to monitor program implementation. Moreover, it assists riparian countries in the implementation and design of projects, and the transfer of new technology, through training and maintenance of information systems.

The riparianization policy was also an important organizational issue during this period. This policy aimed to fill professional posts at the Mekong secretariat with personnel from Mekong riparian countries. Strengthening the national Mekong committees was also an important part of the institutional development process during this period.

3.4. Establishment of the Mekong River Commission

3.4.1. Legal Aspects

As discussed earlier in Section 2.4.3, the increasing gap in the levels of economic development among the countries led to an increasing divergence in aspirations for cooperation in the development of the Mekong water and related resources. The divergence in aspirations resulted in a long process of negotiation between 1991 and 1995 among the riparian countries in the Lower Mekong Basin on the new framework of cooperation when Cambodia was about to resume its membership. The negotiation led to the signing of the "Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin" in April 1995 to establish the MRC (MRC, 1995).

The importance of cooperation for the development of the Mekong water and related resources to achieve sustainable prosperity in the Mekong riparian countries continues to be recognized as the main driving force in the 1995 agreement. The agreement includes the expectation that cooperation for economic growth and prosperity will extend beyond the Lower Mekong Basin and that the two upstream countries will join the cooperation in the future, and:

Promote and assist in the promotion of *interdependent subregional 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.

(MRC, 1995)

The agreement also kept in place the emphasis on joint development and pragmatism in planning for decision making through the formulation of a 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 programs to seek assistance for and to implement the plan at the basin level").

Although most of the fundamental principles of the cooperation legal framework among the international river basins stipulated in the Helsinki Rules and the Mekong Joint Declaration of 1975 are in place, the 1995 agreement adopted these principles within the framework of "a dynamic process of water allocation" (Radosevich and Olson, 2000). Articles 5, 6, and 26 mainly reflected the dynamic process.

As stipulated in the agreement, implementation of Article 26 (to establish Rules for Water Utilization and Inter-Basin Diversions together with the related implementation mechanisms) is expected to ensure that the signatory parties will "utilize the waters of the Mekong River system in a reasonable and equitable manner in their respective territories." Towards this ultimate goal, implementation of Article 26 would need *to establish common understanding of all riparian parties concerned* on an effective framework for a dynamic process of water allocation, which would enable the following key tasks of cooperation in water utilization be successfully carried out:

- (1) *To establish the time frame for the wet and dry seasons* as overall guidelines, including application to Article 5 on the reasonable and equitable utilization of water from the Mekong River system, and to Article 6 on the maintenance of flows on the mainstream.
- (2) *To establish the location of hydrological stations and to determine and maintain the flow level requirements at each station* as guidelines stipulated in Article 6 and as a tool *to optimize the multiple-use and mutual benefits of all riparians and to minimize the harmful effects that might result from natural occurrences and human activities.*

- (3) *To set out criteria for determining surplus quantities of water during the dry season on the mainstream:* such criteria must take into account all relevant factors and circumstances to ensure reasonable and equitable utilization of the waters of the Mekong River system in accordance with Article 5.
- (4) *To improve upon the mechanism to monitor intra-basin use:* this mechanism would help to ensure the most reliable data possible are collected and to regularly assess intra-basin water utilization.
- (5) *To set up a mechanism to monitor inter-basin diversions from the mainstream:* such a mechanism would help improve water utilization to serve the peoples of the Mekong countries.

3.4.2. Institutional Aspects

The 1995 Agreement also mandated a new organizational structure consisting of three permanent bodies: the council, the joint committee, and the MRC secretariat.

The council, which meets once a year, consists of one member from each country at ministerial or cabinet level. The council makes policy decisions and provides other necessary guidance concerning the promotion, support, cooperation, and coordination of joint activities and programs in order to implement the 1995 agreement.

The joint committee consists of one member from each country at no less than head of department level. The joint committee is responsible for the implementation of the policies and decisions of the council, and supervises the activities of the Mekong River Commission secretariat.

The MRC secretariat is the operational arm of the MRC. It provides technical and administrative services to the council and the joint committee. Under the supervision of the joint committee, the chief executive officer is responsible for the day-to-day operations of more than 100 professional and general support staff. The main counterparts for MRC activities in the four member countries are the national Mekong committees (NMCs). The organization structure of the MRC is shown in Figure 2.

3.4.3. Development Philosophy

The signing of the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin (hereafter referred to as "the agreement") in April 1995 marked a new phase of cooperation among the Mekong riparian countries for joint development of the Mekong water and related resources. The MRC emphasizes management of existing and potential water resources with the new concept of integrated water resources management (IWRM) under a "program approach," in contrast to the "project approach" of the MC and IMC periods (Phan Do Hong, 2003). The agreement establishes the MRC with a new mandate and a new vision. The new mandate extends the areas of cooperation and calls for more active participation of the countries in the policy and decision-making process for joint development work. The new mandate aims to reach a more specific focus of the new cooperation vision: *an interdependent subregional growth*. In order to realize the vision, the countries agree to establish a Basin Development Plan (BDP) with a new concept: as "the general planning *tool and process* that the joint committee would use as a blueprint to identify, categorize, and prioritize the projects and programs to seek assistance for and to implement the plan at the basin level." This concept is reflected in the increase in areas of cooperation, improvement in the planning and development process, and strengthening the protection and conservation of the environment. The BDP therefore aims to enable the MRC:

- 1 "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, hydropower, navigation, flood control,

fisheries, timber floating, recreation, and tourism, in such a way 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 human-made activities.”

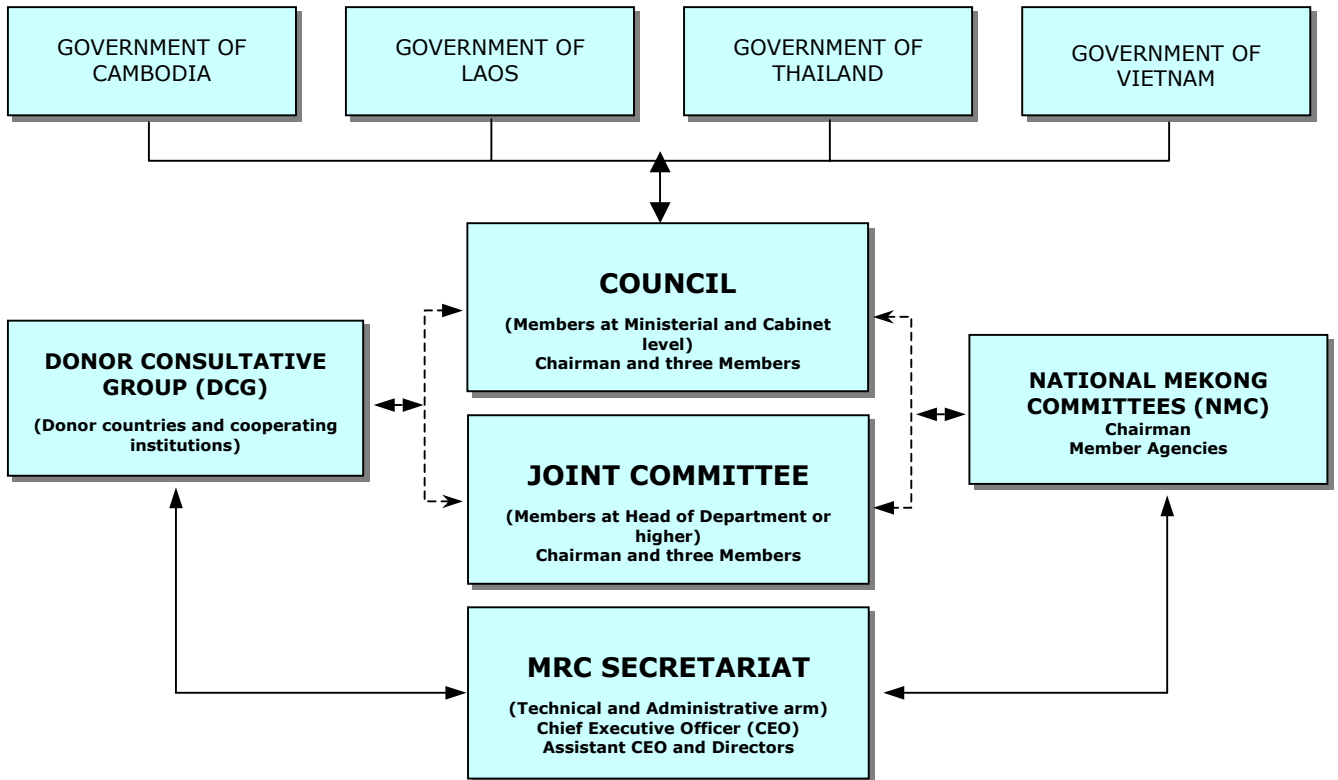


Figure 2. Structure of the Mekong River Commission

2. “To promote, support, cooperate, and coordinate in the development of the full potential of sustainable benefits to all riparian states and prevention of wasteful use of Mekong River Basin waters, with emphasis and preference on joint and/or basin-wide development projects and basin programs.”
3. “To protect the environment, natural resources, aquatic life, conditions, and ecological balance of the Mekong River Basin from pollution and other harmful effects resulting from any development plans and uses of water and related resources in the Basin.”

Furthermore, the concept of the BDP is also linked to the determination of the riparian countries to “promote and assist in the promotion of *interdependent subregional 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.”

4. PLANNING FOR DECISION MAKING IN HISTORICAL PERSPECTIVES

4.1. Evolution of Mekong River Basin Planning for Decision Making

Basin development planning has always been an important task in the framework of Mekong cooperation since the establishment of the Mekong Committee in 1957. Over the past three decades, the process of basin planning has changed significantly. The

changes are manifested by the results of major planning activities undertaken by the MC and lately by the MRC, as well as the underlying planning approach and philosophy of each period. As far as basin planning is concerned, three distinct periods can be identified: first, the Indicative Basin Plan of 1970 (1970 IBP), second, the Revised Indicative Basin Plan in 1987 (1987 IBP), and third, integrated development planning since 1992.

Before briefly discussing the differences in the basin planning approaches adopted in these three periods, it is important to identify their common areas. The basic and common denominators of basin planning for development of an international river basin can be listed as follows:

- the potentials of the basin
- the needs of the riparian countries
- the economic opportunities for development
- the common goals of basin development and priority areas to promote better international cooperation.

The main characteristics of evolution of the basin planning approach during the three periods can be simplified and are described in the following sections.

4.1.1. Idealistic International Approach

The most important hypothesis adopted in the Indicative Basin Plan of 1970 (1970 IBP) was that the basin should be treated as one unit, hydrologically and economically. The 1970 IBP did not make any major attempts to fully integrate the importance of sovereign economic policies of the riparian countries in basin development, although, for the short term, the 1970 IBP proposed national development works as a good start for basin development. This approach can therefore be referred to as an idealistic international approach for a basin plan, as it aimed to achieve optimal economic results without political and financial constraints. It was an idealistic vision of prosperity that acted as an important attracting force binding the riparian countries together. It should be noted that environmental concern was not a major factor of consideration in the 1960s.

4.1.2. National Development-Oriented Approach

In order to increase the practicality of basin planning, the revision of the IBP in 1987 paid more attention to national development. The approach adopted was based mainly on national projects that form the main ingredients for integration into a basin development plan. Theoretically, integration of priority national projects would lead to a program of basin-wide priority activities. Prioritization of national projects was an important activity that was undertaken during the period of 1987 IBP revision studies. It is also important to note that during this period mainstream and major projects could not be studied in full detail, as the study was carried out under the auspices of the Interim Mekong Committee, that is, without the participation of Cambodia.

4.1.3. Integrated Basin Development Planning Approach

On the basis of experience of the previous basin development planning work, the IMC secretariat has since 1992 embarked on a new approach towards "Integrated Development of the Lower Mekong Basin" in a search for a more realistic approach than in previous years. The approach adopted in the Integrated Development study focused on urgent national development issues that would have to be handled to ensure stable socioeconomic development for the riparian countries. The new approach was subsequently modified to reflect the new basin development planning

concept, stipulated in the new Mekong Agreement signed by the four Lower Mekong Basin countries in Chiang Rai on April 5 1995.

4.2. Mekong Basin Cooperative Development in the 1970 Indicative Basin Plan (1970 IBP)

The 1970 IBP was prepared by the Mekong secretariat in collaboration with the ECAFE (now UNESCAP) Division of Water Resources Development, pursuant to a decision taken by the Mekong Committee in 1962. Apart from the first skeleton plan, four subsequent reports formed the foundation of the 1970 planning study: the Wheeler Mission report of 1962, the Food and Agriculture Organisation (FAO) survey of 1959, the Japanese tributary reconnaissance survey report, and the White Mission report. Since its establishment in 1957, it was recognized that:

The lack of national financial resources meant that the committee had a vital role to play in mobilizing capital for investigations, investment and technical expertise with the invaluable support of a number of cooperating countries and international organizations.

(Mekong Committee, 1989)

The commitment and active participation of the member countries, with support from cooperating countries, culminated in international recognition, symbolized by the Ramon Magsaysay Award on August 31 1966. To retain keen interest in the riparian countries and to maintain the momentum of active participation of the cooperating countries was considered a major challenge for the Mekong Committee in its important tasks on basin development and coordination. The 1970 IBP was conceived in that context.

4.2.1. Mekong Basin Planning Philosophy and Purpose of the 1970 IBP

The 1970 IBP was recommended so as to establish a full-scale overall conceptual scheme for the basin development, and for better coordination and mobilization of support from the cooperating countries, as pointed out by one of the Mekong Committee's founders, Dr Boonrod Binson:

As the engineers began to get a grip on the true dimensions of the river's assets, they were increasingly tempted to speculate how these assets could best be used to produce electric power as cheaply as possible, to water irrigable land and to yield other benefits. As it was not just a matter of one dam but of a whole series of possible dams, the challenge was to find the optimum system.

(Binson and van der Oord, 1972)

It was pointed out that the philosophy of the 1970 IBP was to translate the cornerstone of the Mekong cooperation into major undertakings for the benefit of the peoples in the Lower Mekong Basin:

The *Mekong spirit*: Members understood, throughout the years, that slight concessions can lead to significant overall gains and that the members of the committee would never allow themselves to be bogged down in bickering over minor gains.

(Binson and van der Oord, 1972)

One of the most important premises of the 1970 IBP was development of the Mekong hydropower potential. It was conceived that "the mainstream holds great promise that

no alternative can match, especially if the water resources of the basin are developed as an integrated system that gives each of the four riparian countries far greater benefits than they could obtain separately." In order to develop such an integrated system (from the seven available options), "the committee hopes that, in this [planning] process of increasing involvement of government departments and officials and progressive interaction between Mekong development planning and national planning, the point will be reached, at or before the time when important decisions regarding implementation of major projects have to be taken, where there is a national and international consensus about what is required."

In that respect, the initial basin planning efforts were to solicit support and participation of "the four governments to place the development of the Mekong resources, as far as they are concerned, in its proper perspective in relation to other development possibilities and national requirements." These efforts were expected to lead to "an efficient program for the orderly development of water and related resources over the thirty-year period from 1971 to 2000. . . . Ultimately, it is hoped, the sum of the relevant parts of the national development efforts of the four riparian countries will in fact represent a close approximation of the optimum in integrated development of the river's resources." The 1970 IBP therefore aimed "to provide essential guidance to the countries in developing their general economic and social development programs by pointing out the possibilities and limitations which may be imposed by the available water and related resources and showing the opportunities for coordination and harmonization of the plans of the four countries" (MC, 1970).

4.2.2. Formulation of the 1970 IBP

In the words of the Mekong Committee founders, the 1970 IBP started from "a bootstrap operation sustained by the vision and enthusiasm of a few people supported by the faith of the United Nations and funds from friendly countries" (Binson and van der Oord, 1972). The experiences of more than ten years of achievement of the "bootstrap operation" (1957–70) established the momentum and direction for basin planning of the 1970 IBP. In formulating the 1970 IBP, the following five planning steps were adopted:

1. Baseline survey of socioeconomic development of the basin, covering the socioeconomic conditions, economic structures, status of water resources development, water management legal framework, and available data and existing systems of related data collection.
2. Inventory of the basin's resources to determine "the limits of human activity" as constrained by the availability of water and related resources in the Lower Mekong Basin.
3. Assessment of development needs for "a projection of the regional needs which the development of the resources of the Mekong Basin can assist in satisfying."
4. Establishment of a plan comprising: a short-range plan (1971–80), a long-range plan (1981–2000), and a complementary program.
5. Proposed follow-up actions as a comprehensive and detailed work program of investigations and studies designed "to permit the preparation of a more conclusive Lower Basin plan within the shortest practicable time – considered to be a five-year timeframe."

4.2.3. Important Lessons

The most important lessons from the assessment of achievements of the 1970 IBP made in 1987 and subsequent studies carried out by the Mekong secretariat are summarized below:

1. The short-range plans were practically completed in the Lao PDR and Thailand. Implementation of the short-range plans in Cambodia and Viet Nam was seriously affected by the security situation.
2. On the long-range plan, no physical progress was made with the exception of some water control projects in the Mekong Delta. It was judged that "on the one hand, the political situation was not conducive to such development; on the other hand, developments on both the demand (power) and supply (paddy) side developed differently from what was anticipated in 1970."
3. The committee was able to generate additional investments based on the complementary programs, and these additional investments have resulted in important achievements in the fields of agriculture, fisheries, navigation and river crossings, and social development and public health.
4. Many studies and investigations were carried out on the basis of the proposed program of investigations of the 1970 IBP. The proposed program of investigations of the 1970 IBP formed the basis for systematic strengthening of the core functions of the Mekong Committee.
5. The 1970 IBP recommended preparing a more conclusive Lower Basin Plan, as "such a plan is essential to evaluation of mainstream development within the scope of an integrated system of projects upstream and in the delta." The narrow concentration of the plan on mainstream projects has made it difficult to reach a conclusive plan as expected.

4.3. Mekong Basin Cooperative Development in the 1987 IBP

An IBP Revision was conducted in 1987 through a one-year study. Unlike the preparation of the 1970 IBP, the 1987 IBP revision was mainly carried out by a team of consultants in cooperation with staff members of the Mekong secretariat and, to a lesser extent, with officials of the three national Mekong committees (Lao PDR, Thailand, and Viet Nam, as Cambodia was not a member of the Interim Mekong Committee). The results of the study were presented to the Interim Mekong Committee and the final report was accepted with a new name: "Perspectives for Mekong Development" (IMC, 1998).

4.3.1. Mekong Basin Planning Philosophy and Purpose of the 1987 IBP

According to its terms of reference, the 1987 IBP revision study was expected to yield three key outputs:

1. A short to medium-term investment plan, based on the formulation of a selected number of distinctly different alternative short-term development scenarios, and elaboration of a single scenario into a short-term development plan.
2. Long-term development scenario(s).
3. Complementary programs of studies and investigations, for both the short to medium-term investment plan and the long-term development scenario(s).

The consultant however believed that "the complexity of the process of decision making on the development of the Mekong Basin and the changing political, economic, and social conditions in the riparian countries and the ensuing uncertainties render the establishment of a rigid blueprint for the basin's development an exercise with little practical meaning." The revision study was therefore considered as an input into the continuing and complex process of decision making.

According to the consultant's perception of the revision, "the terms of reference for the study essentially call for a project-oriented approach to the study, augmented with complementary programs of investigation and other activity." The objectives of the 1987 IBP revision "as commissioned by the Mekong secretariat are simultaneously

more modest, less technocratic, and more practical than those of the 1970 IBP." The basin planning work of the 1987 IBP revision was therefore based on the philosophy that "the immediate aim of the longer-term perspective of the basin's development potential is to serve as a framework within which the shorter-term possibilities may be evaluated." The focus of the 1987 IBP was therefore more on the short-term opportunities to mobilize more resources for basin development. In addition, as an important part of input to the continuing process of decision making, the 1987 IBP revision aimed to strengthen the institutional capability of the Mekong secretariat for basin planning and development coordination, especially in relation to the fishery, navigation, and environment aspects.

4.3.2. Formulation of the 1987 IBP

Formulation of the 1987 IBP was carried out in three steps:

- basic studies
- formulation of short-term scenarios
- appraisal of the short-term plan in comparison with long-term development possibilities (as criteria for project rankings and trade-off analysis among project portfolios).

The participation of Mekong secretariat staff and riparian officials in the formulation process consisted of three major meetings to discuss the inception report, interim report, and final draft report. The basic research included five studies:

- food balance forecast
- power system studies
- review of existing projects
- list of promising projects
- review of feasibility and desk studies.

"The food balance forecast study concentrated on demand for and production of rice, since secondary crops such as maize, cassava and groundnuts are often not grown as food crops but rather as either industrial or export crops." The study concluded that with no new irrigation projects, a food deficit was inevitable. The power system studies covered the three countries, Lao PDR, Thailand, and Viet Nam. A review of ten existing projects on irrigation, hydropower, and fisheries (five in Lao PDR and five in Thailand) was made to assess their achievements and to identify measures and actions to enhance the effectiveness of Mekong projects and the efficiency of investment. In order to establish a list of promising projects, an overall review of the priority sectors and an assessment of related projects identified by the countries (irrigation, power, fisheries, and navigation) was made. From the list of promising projects, twenty-nine projects, twenty-six of which are national in scope and three international, were proposed as the short-term investment plan.

Apart from the basic studies, an overall review of the economic situation of the three countries was made through a series of economic sketches. The economic reviews of the countries resulted in key information to establish performance indicators for appraising Mekong project candidates for short-term development scenarios. The performance indicators included the development objectives and the resource constraints of each country. Short-term development scenarios were established – mainly based on the national projects and the possibility of implementing one of the three international projects.

As a basis for the appraisal of short-term development plans, an integrated view of Mekong Basin development was attempted as a long-term development perspective of the basin. The long-term development perspective study included:

1. A brief review of the history of the Mekong development and planning cooperation and important achievements of basin development.
2. A review of reservoir operation studies of previously proposed development schemes and projects.
3. Reservoir operation studies of a new Mekong cascade (discussed below).
4. An attempt to optimize basin development.

In trying to optimize Mekong development, the 1987 IBP recommended an assessment of the economic values of the low flow, which would make it possible to assess the economic benefits or losses of augmenting or reducing the flow. Because of the complexity of the subject, this approach required further study, and was one of the most important subjects in the revision of the Mekong Delta Master Plan.

The new Mekong cascade (cascade of 1987) constituted the main feature of this part of the perspective study. It was intended to replace the Mekong mainstream dams developed in the 1970 IBP. The new cascade aimed to reduce adverse effects on environment and social conditions. An analysis of the physical, technical, economic, and political conditions suggested that a long-term development scenario of the Mekong Basin should be centered on the development of the Low Pa Mong dam in the short term. In addition to the Low Pa Mong dam, Nam Theun No. 2 and Nam Ngum No. 2 were the other two international projects recommended as options to be developed in the short term.

Three categories of studies and investigations were proposed: project-oriented, country-specific, and basin-wide in nature. The proposed basin-wide studies were structured into a hierarchy composed of three tiers. The *first tier studies* included feasibility studies on Low Pa Mong and Nam Theun 2, impacts of upstream mainstream storage on fisheries and soil fertility downstream, an agricultural diversification study, and a sediment and erosion study. The *middle tier studies* comprised a dam and configuration study, a land and water resources master plan for northeastern Thailand, a delta master plan study for Viet Nam, and organizational and legal studies. The *top tier* contained the integrative study, which would collate and synthesize the intelligence gathered in the two lower tiers with the aim of producing a plan. Funding requirements for studies and investigations, institutional strengthening, and investment for the twenty-eight projects were estimated at about \$4,200 million through the year 2000 (another national project was delayed until beyond that date).

4.3.3. Important Lessons

From a recent review made by the secretariat, the following important lessons can be drawn from the 1987 IBP study:

1. A system of basin-wide studies and investigations proposed in the 1987 IBP has provided a good program for coordination and implementation of many studies and investigations conducted since 1988. Most of the recommended basin-wide studies have been completed, and these have contributed to further strengthening mutual understanding among the riparian countries. Many of the country-specific and project-oriented studies were carried out.
2. Since 1988, political, social, and economic conditions in the basin have changed significantly, enabling better and closer regional cooperation. The changes resulted in different priorities for national development and thus affected the priority of national projects considered in the 1987 IBP. Among the twenty-nine projects recommended, only one (Pak Mun) has been completed and two (Nam Ngum-Luang Prabang transmission line and Yali Falls) are in progress.
3. The criteria of project prioritization adopted in the 1987 IBP revision study provided a good basis for ranking them. However, the lack of studies on complementary

programs in the context of national social and economic development has weakened the system of prioritization.

4. From the assessment of past basin development work, the IBP study suggested that *the IBP needs an appropriate mechanism for its implementation*. It was pointed out that the Mekong secretariat structure corresponded to the annual work program but might not necessarily respond to the needs of IBP implementation.
5. The project-oriented approach adopted by the consultant for the 1987 IBP study has substantially reduced the scope of involvement of the Mekong Committee in integrated development of the Lower Mekong Basin. In contrast, the single-unit basin approach adopted in the 1970 IBP tended to expand the scope of work of the committee (through the complementary program) to better achieve integrated development of the basin.

4.4. Emerging Trends in Planning for Decision-Making

4.4.1. Possible Trends

Using the above reviews and analyses, the following conclusions and recommendations were drawn up for reference in future basin development planning activities:

1. In order to improve the practicability of basin development planning, the Mekong BDP needs to be linked to the national planning process and the social and economic development targets of all the riparian countries. In this way, national macroeconomic development priorities and related strategies would be incorporated in the BDP.
2. Priority development activities of the Mekong Basin should be linked to national development priorities, and especially those crucial for achievement of short-term goals of national social and economic development. Successful linkage to these goals will ensure the active participation of the riparian governments in the implementation of the BDP. Coordination of national development policies and corresponding sectoral development strategies is required to ensure the stability of basin development as a whole. Finally, improvement of the cooperation framework and establishment of a development coordination plan are necessary to achieve sustainability of basin development, and to ensure that cooperation in Mekong Basin development facilitates national development processes.
3. Formulation or revision of the BDP needs to be conducted with active participation of the riparian governments and related national departments. Such a participatory approach will help improve the acceptability and therefore the practicality of the BDP.
4. The organizational structure of the MRC secretariat and its annual work program need to be based on the BDP and closely linked to its implementation. In that connection, the BDP can be seen as an action program in the form of a *rolling plan* that needs to address the integration of sectoral development programs and to focus more on sectoral development strategies, which form the basis for prioritization of projects for short-term development plans.

In summary, a good linkage between the short-term development strategies and the long-term development perception and vision of a basin development plan is a key to the success of Mekong Basin development planning. Experience points to the fact that a resource-oriented planning approach is not likely to lead to development, regardless of how sophisticated a technical advance is introduced. It also points to the fact that a new planning approach for a practicable BDP requires involvement of not only water resources experts from the member countries, but also social and economic

development planners from the countries. How could such involvement be organized for the preparation of a new Mekong BDP? This is one of the most important questions highlighted during the first meeting of the subcommittee of the BDP. It was accepted that this question would need to be examined to strengthen the relationship between the BDP and the development perspectives of all the riparian countries.

4.4.2. Other Related Experiences in Water and Related Resources Planning

Since the late 1980s, the linkage between water resources management and development and national economic and social development goals has been recognized as a necessity to ensure the continuity and consistency of developmental efforts, and therefore the sustainability of utilization of resources and investment. Developmental planning of water resources is no longer considered a one-way process in which water is merely an input or factor of production. The water sector sets significant developmental opportunities and constraints, and is often a driver of important thrusts to achieve national development goals. In a recent study by ADB, it was recognized that:

National goals for economic and social development have significant, but frequently unrecognized, implications for water resources demand and allocation. This is particularly the case where a shift from an agricultural to an industrial base of the economy is sought, especially when a large proportion of the available resource has already been committed for irrigated agriculture. Strategic planning for water resources development and management is desirable at the national level to take account of cross-sectoral uses of water and investment capital, on a time scale of decades.

A strategic planning method, such as that adopted in a recent study for the Flood Action Plan in Bangladesh, would take driving forces and issues of development as the starting point.

Based on past Mekong experience, the development perspectives of all the riparian countries would form the basis for the identification of the driving forces of basin development, and common and major development issues forming *key strategic thrusts* for the formulation of the Mekong BDP.

4.5. Mekong BDP in the Basin and National Development Perspectives

For Cambodia and the Lao PDR, which are almost entirely situated in the Mekong Basin, development needs for the Mekong areas in the corresponding countries can be considered as principal national development needs. The Mekong areas account for about 35 percent of the total area of Thailand, and about 25 percent of that of Viet Nam. These areas have different economic roles and degrees of importance in the national development of their respective economies. The development needs of these areas cannot therefore be regarded as principal national development needs. However, socioeconomic development of these areas cannot be separated from other areas of the countries. In the following sections, the scenario of development expected to prevail over the subregion shows that development of the Mekong areas would create important links among the national economies. As the subregional economy grows, these links would grow into the backbone of the Mekong subregional cooperation.

4.5.1. Development Scenario

Since the return of peace in the region and the adoption of liberalized economic policies by the four riparian countries, there is a growing trend of mutual trust and

accommodation for better economic cooperation among the countries. This growth of mutual confidence has extended beyond the Lower Mekong Basin, leading to opportunities for economic cooperation with the countries located in the Upper Mekong Basin as well. On this foundation an integration of national economies has taken shape, starting from a bilateral basis. Agreements have been made to develop several large-scale hydropower projects that would benefit Laos and Thailand, and major infrastructure projects linking the countries. The exchange of experience of economic development continues to increase. These initial activities of economic integration and continuing confidence-building measures have established a suitable atmosphere for closer and stronger economic cooperation in the Mekong region. This atmosphere has resulted in several regional programs, such as the Greater Mekong Subregion Economic Cooperation program initiated by ADB. In view of the prevailing situation, the most likely *development scenario* is the one with an increasing integration of economies and higher degree of interdependence of economic development not only in the Lower Mekong Basin, but also extended to the Upper Mekong Basin. All opportunities and challenges in Mekong development cooperation should be considered to ensure the practicality and comprehensiveness of basin development planning. The Mekong Basin development plan should try to prepare for the challenges of economic integration, and aim to make use of opportunities created by regional development projects.

The most important challenge is to ensure the stability of regional cooperation and the sustainability of development, and this is therefore one of the priority areas of basin development planning. To meet this challenge, it is necessary not only to continue strengthening mutual understanding and trust, but also to prepare appropriate action plans for developing the common resources to meet national development needs and provide mutual benefits. Among these resources, the Mekong water resources form the most important common denominator of cooperation, and this needs to be carefully addressed in terms not only of plans for development and management, but also of the human resources development activities required to implement these plans.

The extent to which water resources development contributes to economic productivity and social well-being is not usually appreciated, although all social and economic activities rely heavily on the supply and quality of freshwater. As populations and economic activities grow, the countries are expected to rapidly reach conditions of water scarcity, or face limits to economic development. Water demands continue to increase rapidly. The holistic management of freshwater as a finite and vulnerable resource, and the integration of sectoral water plans and programs within the framework of national economic and social policy, is of paramount importance for action in this decade and beyond. The fragmentation of responsibilities for water resources development among sectoral agencies is proving, however, to be an even greater impediment to promoting integrated water management than had been anticipated. Effective implementation and coordination mechanisms are required.

Integrated water resources management is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good, whose quantity and quality determine the nature of its utilization. To this end, water resources have to be protected, taking into account the functioning of aquatic ecosystems and the perenniality of the resource, in order to satisfy and reconcile needs for water in human activities. In developing and using water resources, priority has to be given to the satisfaction of basic needs and the safeguarding of ecosystems. Beyond these requirements, however, water users should be charged appropriately.

Development strategies should aim to prepare for integrated water resources management, including the integration of land and water-related aspects, at the level of the Mekong Basin and sub-basins to achieve the following four principal objectives:

1. To promote a dynamic, interactive, iterative, and multisectoral approach to water resources management, including the identification and protection of potential sources of freshwater supply, which integrates technological, socioeconomic, environmental, and human health considerations.
2. To plan for the sustainable and rational utilization, protection, conservation, and management of water resources based on community needs and priorities within the framework of national economic development policy.
3. To design, implement, and evaluate projects and programs that are both economically efficient and socially appropriate within clearly defined strategies, based on an approach of full public participation, including that of women, youth, indigenous people, and local communities, in water management policy making and decision making.
4. To identify and strengthen or develop, as required, in particular in developing countries, the appropriate institutional, legal, and financial mechanisms to ensure that water policy and its implementation serve as a catalyst for sustainable social progress and economic growth.

In summary, the most important challenges of the development scenario envisaged in this article require cooperation by all parties:

- to translate the strong political will of cooperation into development opportunities
- to convert the mutual understanding and trust into important vehicles for rapid economic growth
- to strengthen the existing cooperation framework to ensure extensive and intensive coverage of benefits for all the Mekong peoples of the present and future generations.

4.5.2. Conceptual Role of the BDP in the Basin Development Perspectives

From the analyses summarized in the previous chapter, the strategic thrusts identified could determine possible courses of action. However, given the experience of the Mekong cooperation, it is of the utmost importance to ensure the collaborative efforts are taken in accordance with the following steps:

- *a shared vision* of basin development and development cooperation
- development and coordination of efforts
- adaptive management of the basin's resources.

In this context, the MRC developed *a shared vision* for basin development to form the starting point for the subsequent identification of key areas, for which strategies for sectoral and cross-sectoral development were formulated to strengthen the framework of cooperation and to ensure proper management measures were taken towards the shared vision. The first MRC Strategic Plan was developed in 1998, and subsequently updated in 2002, with the following statements of vision and mission:

- *Mekong River Basin vision*: "An economically prosperous, socially just, and environmentally sound Mekong River Basin."
- *MRC vision*: "A world-class, financially secure, international river basin organization serving the Mekong countries to achieve the basin vision."
- *MRC mission*: "To promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being by implementing strategic programs and activities and providing scientific information and policy advice."

4.6. Remarks on the Application of System Analysis in the Mekong Basin Development Planning

4.6.1. Changes of Methodologies in the Historical Contexts

The application of system analysis to decision making for water resources development in the Lower Mekong Basin started at the early stage of the Mekong cooperation in the late 1950s, when the concept of integrated basin development was first envisaged under the auspices of UNESCAP. Since then, there have been many important changes in the socioeconomic and environmental conditions in the Lower Mekong Basin over the past five decades. The application of system analysis to decision-making has also changed drastically with these conditions, and particularly with the strengthening of human resources and the technical capability of the riparian countries.

At the beginning of the Mekong cooperation, most of the work on system analysis was carried out with the aim of identifying development and investment opportunities, and in the main these activities were performed by expatriate experts. In the 1960s, a major part of the cooperation resources was devoted to human resources development, and this resulted in important improvements in the technical capability of the riparian staff working at the Mekong secretariat. Since then, system analysis has been used to identify options for development and formulating investment scenarios – as reflected in the publication of the Mekong Indicative Basin Plan in 1970. It is important to note that the impartiality of expatriate experts and improvement in professionalism of the Mekong secretariat have helped build confidence in the technical information for discussion and negotiation, and have as a result led to an improvement in mutual understanding among the riparian countries. In other words, the Mekong secretariat had assured “equality in access to information” (Binson, 1993).

As the level of socioeconomic development continued to increase in 1970s, and possible impacts of water resources development on the environment were becoming more obvious, the riparian countries started to pay more attention to the application of system analysis to specific cases in view of the increasing complexity of decision making. Important examples of the application of system analysis included the detailed Optimization Study of the Downstream Effects of the Pa Mong Hydropower Project (1972–6) and the study on an alternative network of electricity transmission in the Lower Mekong Basin, which had provided technical information for negotiation of energy values for power exchange among the countries.

It should be noted that up to the late 1980s, most of the activities on system analysis were oriented towards engineering or technical aspects of development. Following the completion of the revised 1987 IBP, the riparian countries started to pay more attention to the framework for decision making, including the legal and organizational aspects of cooperation. Since then, a great deal of effort has been made to enhance stakeholder participation and to further strengthen the confidence building process. The signing of the 1995 agreement is testimony to the shift in focus from mainly technical and engineering aspects towards strengthening the process of cooperation and joint development. It is expected that this shift will facilitate decision making in the increasingly complex situation of development in the Mekong River Basin.

In recent years the socioeconomic situation in the Mekong subregion has changed quickly. Southeast Asia has been the region with the highest economic growth in the world. Thailand recorded the highest economic growth rate of the four riparian countries. The economic situation in the other three was different. If one refers to the development needs of the four countries at the time of establishment of the Mekong Committee, the changes in development needs are drastic. The much greater difference in the economic development status among the riparian countries

than was the case in 1957 should be considered as an important element of the modern Mekong cooperation. This difference should be viewed as an added value to the cooperation equation rather than an obstacle to equitable and fair association. In order to ensure that this added value is fully utilized in cooperation, the expectations of each member country must be known. In fact, with the globalization of economic development, requirements for close cooperation among neighboring countries have put more emphasis on expanding the scope for cooperation on systematic development of land and water resources, as well as for protection of natural resources for future generations. To achieve that end, adaptive planning methodologies are required to derive better options for development and more pragmatic policies of cooperation.

4.6.2. Approaches to Development

By making use of the reference materials on other river basin commissions, regional cooperation at different levels can be approached in different ways, for example:

- Cooperation for comprehensive development of the water resources in order to optimize the use of water in a sustainable way, or
- Cooperation in allocating water for the riparian countries' development individually. However, it should be taken into consideration that this may have certain environmental effects because efforts cannot be coordinated.

These approaches are quite different from each other, and may lead to different policies in cooperation among riparian countries. Depending on the economic interests of the basin states, and on the benefits that they will gain through their cooperative efforts, an appropriate policy framework and legal framework should be set up.

Under the ongoing Water Utilization Program (WUP) supported by the Global Environmental Facility (GEF), "rules" for water utilization between the four riparian countries will be developed in accordance with Article 26 of the MRC 1995 Agreement over a period of six years (1999–2005). In the meantime, at its ninth annual meeting in Ho Chi Minh City on November 11 and 12 2002, the MRC Council adopted "Preliminary Procedures for Notification, Prior Consultation and Agreement" regarding proposed uses of Mekong water.

4.7. Emerging Issues of Potential Conflict and Opportunities for Enhanced Cooperation

It has to be recognized that the member countries have different political systems and are at different stages of social and economic development. As a consequence, there are different priorities in the political and development programs for each individual member, and they have different perceptions of natural phenomena and the consequences of human interventions on the river ecosystems. River works such as bank protection walls, river ports, and extraction of sand and gravel from river beds could be considered to have caused changes in the flow regime (especially during the high flow season), erosion, and sedimentation pattern, thereby adversely affecting the neighboring countries. However, with many similarities in traditions and cultures, the current cooperation among the countries under the 1995 agreement is quite satisfactory to a certain level. The 1995 agreement sets objectives, principles, procedures, functions, and structures to implement this agreement and other related projects, programs, and activities, and to address and resolve issues and problems that may arise from the development of water and related resources of the Mekong River Basin. It seeks to achieve the "sustainable development, utilization, management, and conservation" of the Mekong River Basin water and related

resources. Its underlying principles are those of sustainable development and equity, derived from the following key principles:

- sustainable development
- social and economic development consistent with the needs for environmental protection and maintenance of ecological balance
- cooperation and mutual benefits
- basin-wide management
- equitable use.

The term “water and related resources of the Mekong River Basin,” spelt out in the agreement itself, reflects the commitment to provide legitimacy for integrated river basin management, and itself is the greatest challenge for the MRC as an organization.

The 1995 agreement was designed as a “framework” agreement approach. It spells out general principles, procedures, obligations, and organizational arrangements, but the framework agreement requires that state parties work out other detailed sub-agreements through further processes – such as the development of water utilization rules, required standards and guidelines, and other by-products of the basin development planning process. In addition, the MRC member countries will have to agree upon more detailed principles for water use, such as the maintenance of flow levels during dry season and flooding flows, and the maintenance of reverse flows into the Tonle Sap during the wet season. Though these principles set measurable criteria, the risk is there that they may be subject to different interpretation.

Another potential issue is how to ensure that “use and development of water and related resources” are consistent with the needs “to protect, preserve, enhance, and manage the environment and aquatic conditions and maintenance of the ecological balance.” Even in one riparian country, there are at least two polarized opinions as to the priority or balance between development and protection or preservation of the environment. Some commentators suggested that the 1995 agreement was based fundamentally on the primary need for environmental protection, but cooperation also needs to be of mutual benefit among all cooperating countries for the well-being of the peoples of the present and future generations. The implied mutual benefits are to develop and manage the natural resources in a way that would ensure long-term and sustainable use. How this may be achieved remains an open question, and can be a source of conflict.

Although great emphasis has been placed on the need to prevent conflict from happening in the first place, the 1995 agreement also provides a mechanism for conflict resolution; an understanding that with growing needs for development and stress on the environment, transboundary conflict is inevitable. The MRC member countries have recently developed an interesting set of programs, such as the Water Utilization Program, Environment Program, Basin Development Plan, Flood Management Program, Data and Information System Development, and Integrated Capacity Building Program. These programs are based on the primary objectives set in the 1995 agreement, although their respective objectives may be subject to different if not conflicting interpretation. According to Sokhem (2003), the future looks promising – and exciting. The political commitment to collaboration will be put to the test during the next two to three years, when the tough decisions to which the member countries have committed in the context of MRC programs have to be made.

5. OBSERVATIONS ON THE MEKONG FRAMEWORKS FOR NEGOTIATION AND MEDIATION

5.1. The Mekong Spirit: International Recognition of the Mekong Cooperation

On the basis of the potentials identified, national, bilateral, and multilateral efforts were made to develop these resources to meet the development needs of the subregion. Among the sub-basins in the Mekong Basin, the northeast of Thailand was the region having the highest development rate during the 1960s and 1970s. This rate was attributed to the opportunity created by the Mekong cooperation, as acknowledged by a senior Mekong official, Dr Boonrod Binson, a former Member for Thailand on the committee, when commenting on the role of the committee in development of Thailand:

In the 1950s, development of the northeast was considered to be of a lower priority than the other regions, especially the Central Plain, because of its remoteness and underdeveloped status. The establishment of the Mekong Committee attracted many donors to this region of Thailand. As a consequence, the northeast has obtained good financial support from both outside and inside to attain its position today.

(Lecture by Dr Binson on the occasion of the first anniversary of the Integrated Energy Development Institute of Thailand, April 17 1992).

Twenty-six donor countries and nineteen international organizations have recognized the common efforts of the riparian countries in the Lower Mekong Basin. The recognition of the Mekong spirit of cooperation resulted in an important flow of assistance and investment to the subregion – to the tune of 1,600 to 2,000 million up to 1987 (Phan, 1994) – and was manifested with the award of Magsaysay in 1968.

In recognizing the importance of human resources development in the mission to develop the Mekong River Basin, emphasis was placed on the training of riparian personnel in various fields of cooperation, as an important element contributing to sustainable cooperation and sustainable development of the Mekong River Basin. The human resources development program was implemented over the years, with great efforts devoted to the riparianization of cooperation (that is, depending less and less on expatriate technical staff) and to disseminating the spirit of the Mekong cooperation.

5.2. Foundation of the Mekong Spirit (IMC, 1993)

The establishment of the Mekong Committee in 1957 laid down one of the most important foundations for cooperation among the riparian countries. This foundation is based on the principle of mutual accommodation for the betterment of the Mekong people in building up confidence and trust. It continued to be manifested in the many resolutions on principles and criteria for use, allocation, conservation, and development of the Mekong water resources. The legal framework of cooperation continued to evolve on the basis of this foundation into an increasingly complete form of the "Mekong spirit" of cooperation. This spirit began with the two principles adopted in 1957:

- As a result of the projects recommended, the existing low water discharge of the Mekong would not be reduced in any way at any site.
- The supplies to be diverted for irrigation purposes would be met by some storage of flow during high stages of the river.

Cooperation among the Mekong riparian countries has therefore been built on the foundation of mutual benefits among the riparian countries, creating opportunities for development, mobilizing international assistance, and promoting stability of peace in the subregion.

5.3. Evolution of the Mekong Spirit

Ever since 1957 the Mekong spirit has continued to develop and evolve in joint development efforts and cooperation. The evolution of the Mekong spirit is necessary to keep pace with the increasing complexity of the development process, to continue to support and coordinate development activities effectively, and to guide common efforts in overcoming short-term issues. Such evolution continues to solidify the foundation of cooperation. The important features of achievements from the evolution could be summarized in the following key words: shared vision, mutual understanding, mutual trust, and common goals.

5.3.1. Shared Vision of Cooperation

The introduction of integrated development and detailed investigation programs initiated by UNESCAP (then ECAFE) at the early stage of the Mekong cooperation program had provided necessary inputs to firmly establish a shared vision of cooperation among the riparian countries. The milestone was reached when the first Indicative Basin Plan was published in 1970 (widely known as the 1970 IBP) to provide details of possible schemes to develop the Mekong potential. With the 1970 IBP, the Mekong River has since been known as a "river of promise" of Southeast Asia (Kieth, 1995).

5.3.2. Mutual Understanding

The first regional project sponsored by the Mekong Committee in 1957 was the establishment of a basin-wide network of hydro-meteorologic stations for regular collection of data. The network started with only few stations in 1957 and had grown to some 400 stations by 1975. Efforts were also made to reconstitute the record to the beginning of this century. Collection of data continued and gained momentum in the early 1960s, with major field investigations on hydrography (for navigation and water resource development of the mainstream); socioeconomic surveys for planning to establish benchmarks for development and to determine the most important areas for improvement; and investigations of other resources. This program continued to be carried out almost continuously throughout the history of cooperation, even during various difficult periods, and the information was disseminated to all the member countries in the Lower Mekong Basin. The dissemination of information was further strengthened with the implementation of annual flood forecasting operations since 1970. The *free flow of information* has thus ensured *equality in access to information* and contributed to strengthening mutual understanding among the riparian countries.

5.3.3. Mutual Trust

In order to lay the foundation for the mobilization of technical and financial support for Mekong development, the committee identified four important tributary projects in the four countries: Prek Thnot in Cambodia, Nam Ngum in Laos, Nam Pong in Thailand, and Yali Falls in Viet Nam. Among the initial projects, the construction and completion of the Nam Ngum hydropower project marked an important step in the direction of cooperation. It was a dam built with contributions from the riparian countries and donors in one country, Laos, to supply nearly 80 percent of its energy to its neighbor, Thailand. Since its completion in 1971, the Lao Nam Ngum project has supplied electricity to the Thai power market without interruption, even during several critical periods in the

relationship between the two countries. The experiences of this joint undertaking provided an important foundation and vivid lesson on how various important and difficult steps could be taken in water resources development for international cooperation. This exemplary achievement solidified mutual trust among the countries, and provided the committee with a good showpiece for further mobilization of financial support and investment. There are also other joint studies and undertakings of the Mekong Committee that have been instrumental in strengthening mutual trust among the riparian countries, such as the Friendship Bridge, Mekong Irrigation Program, Mekong Ferry Crossing, and Inland Navigation Program.

5.3.4. Common Goal: The River of Prosperity

In the words of the chair of the MRC Council for 1995–6, the Mekong cooperation process has reached a stage of maturity for integrated development to turn the Mekong River Basin into an area of prosperity.

Looking back to the past thirty-eight years of Mekong cooperation, the assistance and support provided by the donor community has contributed not only to improvement of social and economic conditions of the many millions of the Mekong inhabitants, but also to strengthening of the Mekong cooperation and mutual understanding and trust among the riparian countries. The foundation of a river of cooperation has now been firmly established, let us look forward to turning the river of promise into a river of prosperity: an important goal of the Mekong River Commission.

(Kieth, 1995)

As part of the common efforts, a new concept of basin development planning was adopted in the new Mekong Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin (signed in 1995) to lead to subregional interdependent economic growth and sustainable development. As stipulated in the 1995 agreement, BDP is “the general planning tool and process that the Joint Committee would use as a blueprint to identify, categorize, and prioritize the projects and programs to seek assistance for and to implement the plan at the basin level” (Definition of Terms of the MRC 1995 Agreement.) It was therefore expected that with a new BDP, the MRC could play a leading role in ensuring sustainable development of the Mekong River Basin and contribute to prosperity of the Mekong peoples.

It should be noted that the Mekong Committee has been recognized as a successful example of efforts to adopt a “comprehensive approach” which evolved over time, as remarked in an assessment of the donor community recently: “If the MRC had not been in existence, then we would have to create it” (Kristensen and Lien Nguyen Duc, 2000). In addition, the report “River Basins: Institutional Framework and Management Options” from the World Commission on Dams (Millington, 2000, p. 43), has made the following observation: “It is fair to say that, after a slow start, the MRC is now emerging as a good model for developing countries to follow in International River Basin Management (IRBM). Perhaps it should be used as a case study in any guidelines prepared by WCD.” During its existence of over four and a half decades, MRC has been recognized internationally through the receipt of several international awards, including the Magsaysay Award for regional cooperation and development in 1967, and the Thiess Services International River prize for Outstanding Achievements in River Management in 2001.

5.4. Remarks

The foundation of the Mekong spirit (discussed above) has continued to figure strongly throughout the past four decades of Mekong cooperation, including the many

occasions of negotiation and mediation. On these occasions, the two fundamental principles discussed in Section 5.2 were further refined with the aim of ensuring mutual benefits among the riparian countries, creating opportunities for development, mobilizing international assistance, and promoting stability of peace in the subregion to suit the new socioeconomic conditions prevailing at the time of negotiation. Of interest is the transformation of these two principles into different clauses in the 1995 agreement, particularly Article 5 (on reasonable and equitable utilization of water), Article 6 (on maintenance of flows on the mainstream), and Article 26 (on rules for water utilization and inter-basin diversions), which could be seen from different perspectives. From the point of view of Mekong cooperation, the related clauses in the 1995 agreement demonstrated two important aspects of the above-mentioned foundation: mutual accommodation and a common determination to further the Mekong spirit through strengthening mutual trust so as to work out a practical and dynamic process of water utilization, specific to the Mekong River Basin, based on the internationally accepted principles of water sharing.

5.5. Conclusions

For decades the Mekong River has been a natural symbol of regional cooperation among its riparian countries. The Mekong River Commission (and its predecessors) is one of only very few regional institutions to survive the difficult period of cold war and ideological confrontation. It has provided the necessary foundation for preventing potential conflict among member countries. However, in spite of a very promising outlook, the Mekong River Commission as an organization has many daunting tasks ahead of it. In particular, it remains to be seen if its member countries can demonstrate a higher level of political commitment and support to make the laudable objectives enshrined in the 1995 Agreement a reality in the post-cold-war era.

One of its daunting tasks is to ensure that the two upper-stream countries – China and Myanmar – become more actively involved in international cooperation for an environmentally sound and sustainable development and management of the transboundary river basin. The strong desire of the four Lower Mekong countries to have China and Myanmar as MRC member countries has been clearly expressed beyond any doubt. The MRC member countries see that the lack of full participation of all Mekong riparian countries in the MRC is still a significant problem for a regional organization seeking to promote sustainable development of the transboundary river basin. The completion of two major dams on the Chinese part of the Lancang-Mekong mainstream, and the prospect of six or seven more hydropower dams in that area, coupled with the recent improvement in navigability along the Mekong from Jinghong, Yunnan province of China (by blasting the rapids and rocks) underline the urgent need to build an appropriate legal framework and to formulate technical guidelines conducive to turning these potential conflicts into opportunities for sharing benefits. This requires the full participation of all Mekong riparian countries. In fact, both upstream countries have been official dialogue partners of the MRC since 1996. In coming years, greater efforts must be made to raise this low level of technical cooperation to a more substantial level with China and Myanmar.

Furthermore, with the recent increase of interest in integrated water resources management, particularly for international river basins in general, and with good progress made on the development of the basin development plan and the flood management program, a window of opportunity is open for more investment in the region. One important pillar in the new approach of the MRC is to open up and embrace participatory planning – within which several recent planning exercises of the MRC were carried out – through broad, participatory processes. While costly and time-consuming, this has proved invaluable in creating the necessary agreement on priorities and ownership of the programs at all levels of national governments, to build

consensus and prevent conflicts. In this connection, it is noteworthy that partnership agreements have recently been established with major international organizations and NGOs.

BIBLIOGRAPHY

- ADB-GMS.1993. Cooperation in the Greater Mekong Subregion. Proceedings of the Second Conference on Subregional Economic Cooperation Among Cambodia, Lao People's Democratic Republic, Myanmar, Thailand, Viet Nam and Yunnan Province, PR of China. Manila, Asian Development Bank. www.adb.org.
- Anukularmphai, A. 2003. *Inputs for the Mekong Case Study*. Prepared for the Water Resources Section, January. Bangkok, UNESCAP.
- Anukularmphai, A. et al. 1998. *Overview of the Integration of Water Resources Management into Economic and Social Development based on Thai Experiences*. UNESCAP Ad hoc Expert Group Meeting on Integration of Water Resources Management into Economic and Social Development Plan, Bangkok, 2–4 June 1998. Bangkok, UNESCAP.
- _____. 2002. Extracted mainly from *Study of Development Needs and Related Policies in Thailand*, MRC Secretariat, PPD/IBP/9403, June 1994, and *National Water Vision to Action: A Case Study on Thailand*, Office of National Water Resources Committee of Thailand for UNESCAP and FAO-RAPA, July 2000.
- Binson, B. 1993. Verbal communication with Dr Boonrod Binson, former Member for Thailand in the Mekong Committee, with Ti Le-Huu. Bangkok, UNESCAP.
- Binson, B. and van der Oord, W.J. 1972. *Planning the Development of the Water Resources of the Lower Mekong Lower Mekong Basin*. Symposium on Planning of Water Resources Development, Mexico City. Phnom Penh, Mekong River Commission.
- Boualapha, C.; Southalack, P.; and Phiathep, O. 2002. Extracted from *Strategic Planning and Management of Water Resources in Lao PDR*. Country paper presented at Subregional Workshop for Southeast Asia on Application of the Guidelines on Strategic Planning and Management of Water Resources, jointly organized by UNESCAP and MRC in Phnom Penh, July 16–19 2002. Bangkok, UNESCAP.
- Do Hong Phan. 1994. *Infrastructure Projects in Thailand*. Statement at the International Workshop on Infrastructure Project, Bangkok, May 11–12 1994. Phnom Penh, Mekong River Commission.
- _____. 2003. *Inputs for the Mekong Case Study*. Prepared for the Water Resources Section, UNESCAP, January 2003. Bangkok, UNESCAP.
- ECAFE. 1957. *Development of Water Resources in the Lower Mekong Basin*. Flood Control Series No. 12. Bangkok, UNESCAP.
- FAO. 1959. *A Survey of the Investigations Required for Planned Development of Agriculture, Forests, and Fisheries in the Lower Mekong Basin*. FAO/59/2/938. Rome, FAO.
- Hatda An Pich and Hak Mao. 2002. Extracted from *Strategic Planning and Management of Water Resources in Cambodia*. Country paper presented at Subregional Workshop for Southeast Asia on Application of the Guidelines on Strategic Planning and Management of Water Resources, jointly organized by UNESCAP and MRC in Phnom Penh, July 16–19 2002. Bangkok, UNESCAP.
- IMC. 1988. *Contributions to the Mekong Committee, 1958–85: Perspectives for Mekong Development, Summary Report, Revised Indicative Plan (1987) for the Development of Land, Water and Related Resources of the Lower Mekong Basin*. Bangkok, IMC.
- _____. 1989. *A Historical Account (1957–89)*. Bangkok, Phnom Penh, Mekong River Commission.
- _____. 1993. *An Overall Analysis of the Legal and Institutional Aspect of the Mekong Cooperation, by the Legal Study Team, Policy and Planning Division* Bangkok, Phnom Penh, Mekong River Commission.
- Japan Government. 1961. *Comprehensive Reconnaissance Report on the Major Tributaries of the Lower Mekong Basin*, by the Mekong Reconnaissance Team. Japan, Phnom Penh, Mekong River Commission.
- Kieth, Ing 1995. Closing Statement of H.E. Mr Ing Kieth, Vice Premier of the Royal Government of Cambodia and Chairman of the MRC Council for 1995/1996, Informal Meeting of the Donor Consultative Group. Ho Chi Minh City, Viet Nam, Phnom Penh, Mekong River Commission.

- Kristensen, J. and Lien Nguyen Duc, 2000. *Experience in International Cooperation for Planning and Sustainable Development of the Mekong River Basin*. Fourth Regional Consultation of the World Commission on Dams, Hanoi, Viet Nam, February 26–27 2000. Phnom Penh, Mekong River Commission.
- Maiklad Pramote et al. 1999. Development and Achievements in Flood Control and Management in Thailand. *Regional Cooperation on Flood Control and Management in the Twenty-first Century in Asia and the Pacific*. UNESCAP, ST/ESCAP/1948.
- MC, 1962. *Annual Report of the Committee for Coordination of Investigations of the Lower Mekong Basin to the UNECAFE (E/CN.11/577)*. Phnom Penh, Mekong River Commission.
- _____. 1970. *Report of the Indicative Basin Plan for the Lower Mekong Basin*. Bangkok, Phnom Penh, Mekong River Commission.
- Millington, P., 2000. *River Basin Management: Its Role in Major Water Infrastructure Projects*. Thematic Review V.3 prepared as an input to the World Commission on Dams, Cape Town. www.dams.org
- Mosley, M.P. and Linklaen Arriens, W.T. 1995. *Towards a Policy for Water Resources Development and Management in the Asian and Pacific Region, Issues and Opportunities*. Manila, Asian Development Bank.
- MRC. 1995. *Mekong River Commission Agreement, April 1995*. Bangkok, Thailand.
- _____. 1998. *MRC Strategic Plan*. Phnom Penh, Mekong River Commission.
- _____. 2002. MRC home page. Phnom Penh, Mekong River Commission.
- NEDECO. 1987. *Revision of the Indicative Basin Plan for the Lower Mekong Basin, Inception Report (Mar 1987) and its Addendum (May 1987)*. Phnom Penh, Mekong River Commission.
- _____. 1988. *Perspectives for Mekong Development (Revised Indicative Basin Plan-1987), Annex K: The Control of the Water Resources of the Mekong River*. Phnom Penh, Mekong River Commission.
- _____. 1988. *Perspectives for Mekong Development, Working Documents, Annex A, Food Balance Study*. Phnom Penh, Mekong River Commission.
- Phonekeo Khammone. 2003. *Inputs for the Mekong Case Study*. Prepared for the Water Resources Section, UNESCAP, January. Bangkok, UNESCAP.
- Radosevich, G. and Olson, D. 2000. *Existing and Emerging Basin Arrangements in Asia: Mekong River Commission Case Study*. Paper presented at Third Workshop on River Basin Institution Development. Washington, D.C., World Bank.
- SNC-LAVALIN. 1994. *Flood Action Plan, Northeast Regional Water Management Project (FAP6), North-east Northeast Regional Water Management Plan: Final Report*. SNC-LAVALIN International-Northwest Hydraulic Consultants.
- Sokhem Petch. 2003. *Inputs for the Mekong Case Study*. Prepared for the Water Resources Section, UNESCAP, January. Bangkok, UNESCAP.
- To Trung Nghia. 2001. *Vision on Viet Nam's Water, Life, and Environment in the Twenty-First Century*. Bangkok, UNESCAP.
- United Nations. 1992. *Agenda 21, Rio Declaration Forest Principles (Draft)*. Earth Summit, June 3–14 1992, Rio de Janeiro. New York, United Nations.
- Webster, D. 1995. *Note on Preparation of a Mekong Basin Development Plan*. Phnom Penh, Mekong River Commission Secretariat.
- Wheeler, R.A. 1958. *Program of Studies and Investigations for Comprehensive Development: Lower Mekong Basin*. United Nations Technical Assistance Mission, headed by Lt. Gen. R.A. Wheeler (TAA/AFE 3). Bangkok, UNESCAP.
- White Gilbert, F.; de Vries, E.; Dunkerley, H.B.; and Krutilla, J.V. 1962. *Economic and Social Aspects of Lower Mekong Development*. Bangkok, UNESCAP.
- World Bank. 1993. *Viet Nam Transition to the Market: An Economic Report*. Report No. 11902-VN, Country Department I, East Asia and Pacific Region. Washington D.C., World Bank.
- _____. 2001. *Viet Nam, Country Assistance Evaluation*. Report No. 23288, Operations Evaluation Department. Washington D.C., World Bank.
- _____. 2002. *UNESCAP and FAO-RAPA, 2000 and Viet Nam, Country Assistance Evaluation*. Report No. 23288. Washington D.C., World Bank.
- Yv Chan Tong and Associates. 1994. *Study of Development Needs and Related Policies in Cambodia*. PPD/IBP/9404. Phnom Penh, Mekong River Commission.
- Zhang Hai-Lun. 2003. *Inputs for the Mekong Case Study*. Prepared for the Water Resources Section. Bangkok, UNESCAP.

Index entries: basin development plan, benefits of cooperation, Cambodia, China, conflict resolution, decision making, integrated water resources management, Lao PDR, Mekong achievements, Mekong cooperation spirit, Mekong legal and institutional framework, Mekong River , potential conflicts, shared vision , strategic planning, system analysis, Thailand, Viet Nam, Yunnan, China

Contacts:

UNESCO

Division of Water Sciences

1, rue Miollis
F-75015 Paris, France

Tel: (+33) 1 45 68 41 80

Fax: (+33) 1 45 68 58 11

E-mail: pccp@unesco.org

Website: www.unesco.org/water/wwap/pccp

Cover: Mario Haas - Le Pré St Gervais - France

Credits Photos:

1. UNESCO / Sébastien Le Huédec & UNESCO / Dominique Roger
2. UNESCO / Dominique Roger
3. UNESCO / Dominique Roger
4. UNESCO / Francis Bequettin
5. UNESCO / Bénédicte Peck
6. Andrea Székely-Nagy
7. UNESCO / Dominique Roger
8. UNESCO / Georges Malençon
9. UNESCO / Dominique Roger
10. UNESCO / Dominique Roger
11. Dr. Geronimo Konstantis Y.
12. UNESCO / B. van Drieste
13. János Rogánfi
14. UNESCO / J.W.Thorvald
15. Uri Stanir
16. UNESCO / Dominique Roger
17. UNESCO / A.Varentsov
18. UNESCO / Ingrid Senajón
19. UNESCO / Dominique Roger
20. UNESCO / Georges Malençon
21. UNESCO / Dominique Roger
22. UNESCO / Dominique Roger
- 23 & 24. UNESCO / Daniel Riffic & UNESCO / Dominique Roger
25. UNESCO / Andra / CZAP / AZA
26. UNESCO / Alena Varentsov
27. UNESCO / Andra/Abba

Printed by: UNESCO - Paris - France

Constitution of UNESCO (excerpt)

London, 16 November 1945

The Governments of the States Parties to this Constitution on behalf of their peoples declare:

That since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed;

That ignorance of each other's ways and lives has been a common cause, throughout the history of mankind, of that suspicion and mistrust between the peoples of the world through which their differences have all too often broken into war;

That the great and terrible war which has now ended was a war made possible by the denial of the democratic principles of the dignity, equality and mutual respect of men, and by the propagation, in their place, through ignorance and prejudice, of the doctrine of the inequality of men and races;

That the wide diffusion of culture, and the education of humanity for justice and liberty and peace are indispensable to the dignity of man and constitute a sacred duty which all the nations must fulfil in a spirit of mutual assistance and concern;

That a peace based exclusively upon the political and economic arrangements of governments would not be a peace which could secure the unanimous, lasting and sincere support of the peoples of the world, and that the peace must therefore be founded, if it is not to fail, upon the intellectual and moral solidarity of mankind...



International
Hydrological Programme



World Water
Assessment Programme
www.unesco.org/wha