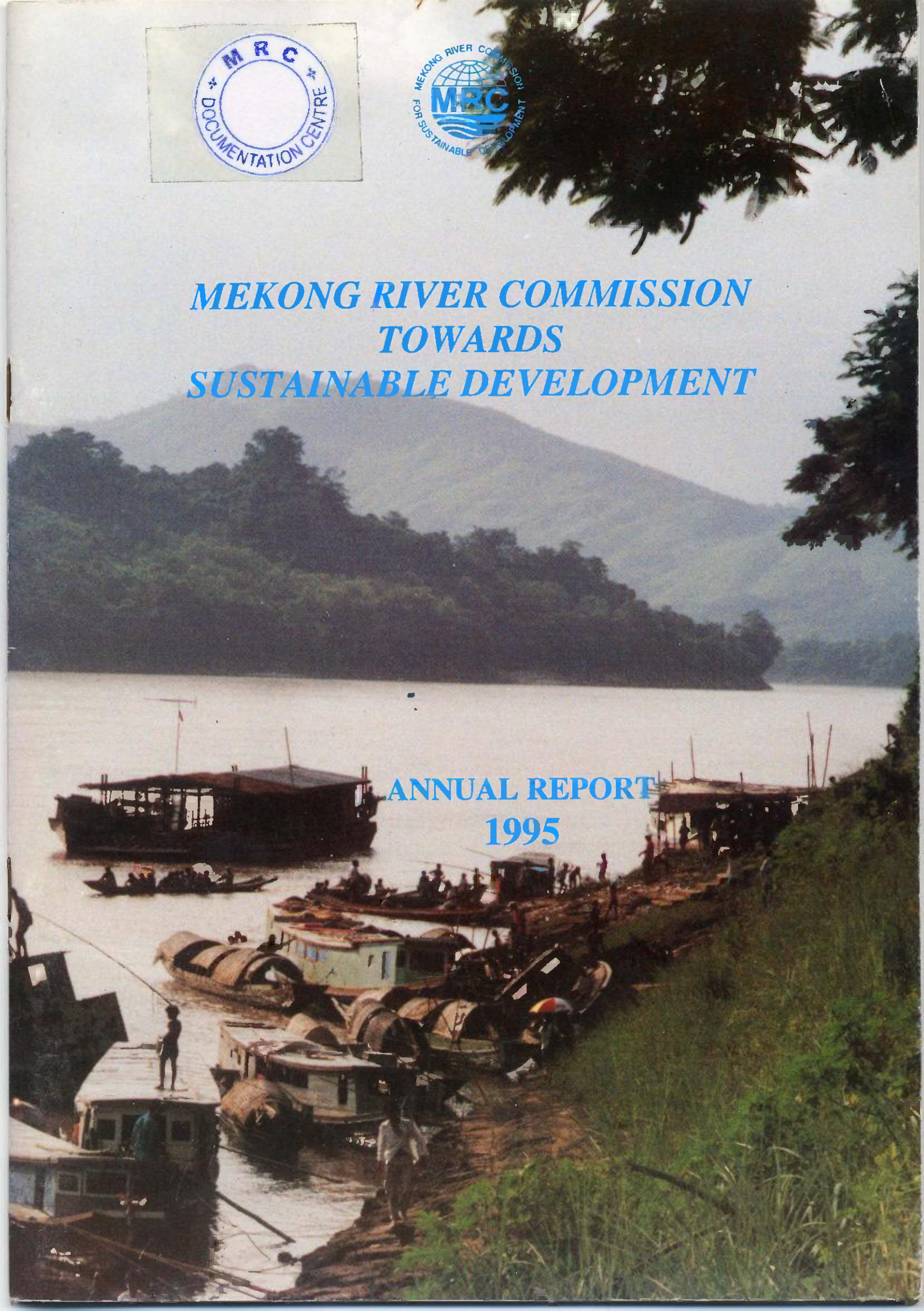


# ***MEKONG RIVER COMMISSION TOWARDS SUSTAINABLE DEVELOPMENT***

**ANNUAL REPORT  
1995**





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## AN OVERVIEW OF 1995

1995 was a year of promising developments for the Mekong River Commission. Many events have occurred which include the historic Signing Ceremony in Chiang Rai of the *Agreement on Cooperation for the Sustainable Development of the Mekong River Basin* which established the Mekong River Commission (MRC) on 5 April. Following the ceremony, an informal Joint Committee Meeting, a Council Meeting and a Donor Meeting were held. During 1995 there have been three MRC Joint Committee Meetings and one Council Meeting. All of these meetings are essential to the new existence of the MRC, which is governed by a peer system, i.e., Council, Joint Committee and Secretariat, because they discussed the directives and clarified all administrative as well as planning matters. In addition, there were other meetings, workshops, seminars and various regional events that are directly or indirectly involved with the MRC Secretariat's activities and are highlighted below.

### Sub-Committees under the Joint Committee

To comply with the task as stipulated in the new Mandate of the Mekong River Commission, different Sub-Committees under the supervision of the Joint Committee have been set up with a particular mission to work out rules and guidelines related to the Articles of the Agreement. Activities of these Sub-Committees are described in further detail in the following pages.

### Donor Support

After a few years of uncertainty concerning the future of the MRC, the signing of the Agreement and the establishment of a Donor Consultative Group gave impetus to donors to contribute to the development activities of the MRC. Subsequently, on various occasions donors including UNDP and ESCAP have pledged continued assistance to the MRC's activities.

During 1995, the MRC implemented 46 ongoing projects (of which 15 are partially funded), out of a total of 79 projects in the Work Programme 1994/95. Financial assistance has been provided by 17 donors, 10 of which have financed 14 new/extended projects/programmes. It could be noted that Denmark is the biggest donor with two new projects amounting to US\$20.3 million. The Upgrading of the Ferry Facilities in Cambodia project alone amounts to US\$18.6 million. Other newly financed projects include:

- Feasibility Study for the Improvement of the Access Channel to the Bassac River (Belgium)
- Action Plan for Water Resources Development in Upper Srepok Basin, Phase III (Denmark)
- EIA Process and Procedures (Canada)
- Feasibility Study of the Ya-Soup Multipurpose Project (Republic of Korea)
- Sustainable Protection of Resources in the Lower Mekong Basin (Germany)
- Watershed Classification Project (Switzerland)

- Improvement of the Hydrometeorological Network (Japan)
- Training in Legal Aspects of International Cooperation for Water Resources Development (Japan)
- Role of Women in Water Resources Development in the Lower Mekong Basin (New Zealand), and
- Technical/Project/Programme Support [Japan, Sweden, Switzerland, and Israel (in-kind contribution)]

New donor commitments during 1995 amounted to approximately US\$27 million.

### Planning for the Future

The *Mekong Work Programme* serves as an important annual rolling action plan of the MRC. The annual review of the Mekong Work Programme by the national agencies concerned ensures that it reflects the development priorities of the riparian countries and is in conformity with their national development plans. Toward the end of 1995, the *Mekong Work Programme 1996* was completed and approved by the Joint Committee and the Council. By its comprehensive nature, the Work Programme 1996 is expected to facilitate cooperation between donors, prospective donors and members of the MRC and to respond to the regional political and development realities.

The Work Programme 1996 consists of four major areas of work, namely; (1) Policy and Planning; (2) Environment and Monitoring; (3) Resources Development and Management; and (4) Programme Support. These four areas cover 97 projects and activities, including 4 new programmes and 18 project proposals. There are 48 ongoing projects, of which 21 are partially funded/operational. Funds are being sought for the remaining 49 projects. Total project cost amounts to US\$217.17 million, of which US\$25.87 million represent national contributions and US\$191.30 million external funding. Of the total amount of external funds required, US\$72.9 million have been secured. The corresponding financial requirements for the basinwide and national projects are US\$148.95 million and US\$68.22 million (or 68.6% and 31.4% of the total US\$217.17). This figure reflects a continuous shift from national to basinwide/regional projects.

Since uncoordinated exploitation of the resources of the lower Mekong basin will lead to complete depletion and destruction, the MRC intends to follow the path of "sustainable development", which led to the inclusion several years, of a comprehensive Environment Programme in the Mekong Work Programme. The Hydrology and Environment Programmes are the first attempt at applying a "programme approach" to the planning process, followed by the fisheries, human resources development and water resources and hydropower programmes in 1995.

The Basin Development Plan will play an important role in planning efficiently the activities of the MRC in the near future (see page 10 for further details).

## EVENTS AND ACTIVITIES OF 1995

### *Major Meetings*

- April**      Signing Ceremony of the Agreement in Chiang Rai (5 April); and  
Fifty-First Session of the Economic and Social Commission for Asia and the Pacific, Bangkok  
(24 April-1 May 1995)
- June**      First Joint Committee Meeting, Ho Chi Minh City (29 June-1 July)
- July**      Viet Nam becomes the seventh member of ASEAN in Brunei
- August**    First Council Meeting, Phnom Penh (1-4 August)
- September**    Second Joint Committee Meeting, Bangkok (25-26 September)
- October**    Workshop on Sub-Regional Environmental Monitoring and Information Systems, organized by  
the ADB in Manila (3-4 October);  
Conference on Power Generation Thailand 95, Bangkok (5-6 October);  
ADB/NACA Regional Study and Workshop on Aquaculture Sustainability and Environment,  
Beijing (6-12 October);  
Fourth Asian Fisheries Forum, Beijing (16-20 October); and  
"Fishways '95", Gifu, Japan (24-26 October)
- November**    Second Meeting of ESCAP Committee on Transport and Communication, Bangkok  
(6-10 November);  
Workshop on Integrated Managements of River Basins organized by the 'Reseau Francophone de  
Gestionnaires d'Ecosystemes Fluviaux et Lacustres', Cabourg, France (6-10 November);  
Fifth Conference on Greater Mekong Sub-Regional Cooperation organized by the ADB, Manila  
(9-10 November);  
First Meeting of Sub-Committee on Riparian Technical Staff, Bangkok (14 November);  
Expert Group Meeting on EIA for Inland Water Transport Development Projects in Upper  
Mekong Subregion, ESCAP (14-16 November);  
Meeting of the Task Force on the Donors' Consultative Group (16-17 November);  
MRC Joint Committee Special Session and Donors' Meeting, Ho Chi Minh City  
(20-21 November); and  
Mekong Opportunities for Sustainable Development, organized by the International Crane  
Foundation, Washington, D.C. (28 November-3 December)
- December**    Third Princess Chulabhorn Science Congress on Water and Development: 'Water is Life  
(Symposium on the Mekong River), Bangkok (11-15 December);  
Second Meeting of Sub-Regional Electric Power Forum, organized by the ADB, Vientiane  
(12-13 December);  
Women's Participation in Decision-Making, organized by ESCAP (18-19 December); and  
Greater Mekong Sub-Region Tourism Sector, organized by ESCAP and the ADB, Vientiane  
(18-21 December)

### *Personnel Changes*

- March**      Mr Sompongse Chantavorapap from Thailand, appointed as Director, Policy and Planning  
Division (until October)
- June**      Mr Saykham from the Lao PDR, MRC Secretariat Officers-in-Charge, retired
- July**      Mr Thevet Insisienmay from the Lao PDR, appointed as Director, Technical Support Division
- September**    Mr Yasunobu Matoba from Japan, joined the Secretariat as Chief Executive Officer



## NEW ERA OF MEKONG COOPERATION

The *Mekong Committee*, with the mandate in its 1957 Statute "to promote, coordinate, supervise and control water resources development projects in the lower Mekong basin" has entered into a new era and is facing new challenges after its nearly 40 years of operation, i.e., since 1957 when it was established under the umbrella of the United Nations Economic Commission for Asia and the Far East (ECAFE, the forerunner of ESCAP). With support and assistance from the donor countries, international organizations and agencies, it has undertaken a large number of projects and activities. However, much of the potential from the Mekong's water and related resources is still untapped and needs to be managed for the welfare of the people and sustainable development of the riparian countries. Over the years, although the Committee had to struggle through many difficult periods of social and political turmoil, thanks to the continued support from the donor community, it has never ceased its operation. During 1975-78, for example, its work was severely hampered by the political changes in its three member countries, namely, Cambodia, the Lao PDR and Viet Nam and, therefore, had to be scaled down to a minimum level.

In 1978, as Cambodia failed to continue its participation, the Lao PDR, Thailand and Viet Nam jointly decided to establish the *Interim Mekong Committee* with the mandate to promote the development of water resources of the lower Mekong basin and also to carry out basic studies and investigations as was done earlier by the full Committee. With the situation improving in the early 1990s, Cambodia submitted its request to rejoin the Committee. The great political, economic and social changes that have taken place in these countries of the region during this period of time necessitate efforts to re-assess, re-define and establish the future framework for cooperation.

In response to the above, the Mekong Working Group (MWG) consisting of representatives from the four riparian countries was initiated in December 1992 to undertake a review of the existing Statute and mandate of the Committee and carry out the necessary preparations for the establishment of the *Mekong River Commission* under a new cooperation framework. It was a logical consequence of the new situation in the region, e.g., the peaceful climate and the increased economic growth thanks to the changing mechanism from centralized to market-oriented economy of the Indo-China countries. Under the chairmanship of UNDP, the MWG met five times and its last meeting was held in November 1994 at Ha Noi where it also initialled the draft *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin*. The *Agreement* was signed by the plenipotentiaries from Cambodia, the Lao PDR, Thailand and Viet Nam at Chiang Rai, Thailand on 5 April 1995. With 42 important articles forming a legal framework for cooperation, it provides principles for sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin, and institutional, financial and management issues relating to the mechanism of coordination between the member countries. As a whole, the *Agreement* aims at promoting sustainable development together with environment management and cultural enrichment on a regional, cooperative and equitable basis, and considers economic and social factors affecting the people, leading to the enhancement of the overall quality of life of the people in the basin. This historic *Agreement* immediately established the *Mekong River Commission* replacing the former Mekong Committee (1957) and the subsequent Interim Mekong Committee (1978). It also marked a new era of Mekong cooperation.



From left, 1st row: H.E. Mr Ing Kietth, Deputy Prime Minister and Minister of Public Works and Transport, Kingdom of Cambodia; H.E. Mr Somsavat Lengsavad, Minister of Foreign Affairs, the Lao People's Democratic Republic; H.E. Mr Chuan Leekpai, the then Prime Minister of the Royal Government of Thailand; H.E. Dr Krasae Chanawongse, the then Minister of Foreign Affairs, Kingdom of Thailand; H.E. Mr Nguyen Manh Cam, Minister of Foreign Affairs, Socialist Republic of Viet Nam; and Dr Nay Htun, United Nations Assistant Secretary-General and Assistant Administrator and Director of the Regional Bureau for Asia and the Pacific, UNDP, New York.



## THE MEKONG RIVER COMMISSION AND ITS ACTIVITIES

As a newly established inter-governmental organization in the region, the MRC has three permanent bodies, namely, *the Council*, at Ministerial/Cabinet level to formulate policies, *the*

*Joint Committee*, at Head of Department level to carry out these policies, and the *Secretariat* to provide technical and administrative support to the Commission (see Annex VI).



*First meeting of the Mekong River Commission Council, Phnom Penh, 1-4 August 1995*

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

Besides organizing meetings of the Council, Joint Committee, Sub-Committees, Task Forces, Donor Consultative Group and participating in the activities of international as well as regional organizations and others, the MRC also implements and monitors ongoing development projects in the riparian countries. Details of its funded and unfunded projects and programmes are shown in the annual "*Mekong Work Programme*".





## THE MEKONG RIVER COMMISSION AND ITS ACTIVITIES (cont'd)

### Development Initiatives

With the new mandate, the MRC will carry on the important role of its forerunner, the Mekong Committee, to coordinate water resources development, management and environment protection in the region. In addition, it would strengthen relationship with other international organizations throughout the nearly four decades of the Mekong Committee's existence and with other regional development efforts, such as the Quadrangle Economic Zone, the ADB's Greater Mekong Sub-Regional Initiatives, the Indochina Comprehensive Development Programme (Japan), UNDP, UNEP and ESCAP regional activities and World Bank activities etc., whose goal is to further promote regional cooperation and economic development.

Contacts have been initiated to exchange experience with other River Basin Commissions in the

world, such as the Murray Darling Basin Commission, the Aral Sea Commission etc.

Developing the resources of the basin in a sustainable manner requires coordinated effort, not only among the riparian countries directly involved, but also with possible development activities upstream. The MRC has, therefore, continued to maintain contacts with the upstream riparian states, the Peoples' Republic of China and the Union of Myanmar, in order to improve the exchange of technical data and information. In conjunction with the Special Session of the Joint Committee, an Exploratory Meeting was organized for these countries to discuss on cooperation in the whole Mekong basin.



*The first Prime Minister of Cambodia H.R.H. Prince Norodom Ranariddh (6th from left) and delegates of the first Council Meeting, Phnom Penh, 1-4 August 1995, from left: H.E. Dr Mok Mareth, Minister of Environment and Alternate Member of the MRC Council for Cambodia; H.E. Mr Ung Huot, Minister of Foreign Affairs of Cambodia; H.E. Dr Phan Sy Ky, Vice-Minister of Agriculture and Rural Development of Viet Nam and Chairman of the MRC Joint Committee for 1995/96; H.E. Mr Sitaheng Rasphone, Vice-Minister of Agriculture and Forestry and Member of the Joint Committee for the Lao PDR; H.E. Mr Nguyen Canh Dinh, Minister - Chairman of the Viet Nam National Mekong Committee and Member of the Council for Viet Nam; H.R.H. Prince Norodom Ranariddh, H.E. Dr Kithong Vongsay, Vice-Chairman of the Committee for Planning and Cooperation and Member of the Council for the Lao PDR; H.E. Mr Ing Kieth, Deputy Prime Minister of Cambodia, Minister of Public Works and Transport and Chairman of the MRC Council for 1995/96; H.E. Mr Yingpan Manusikarn, Minister of Science, Technology and the Environment and Member of the MRC Council for Thailand; Dr Prathes Sutabutr, Director-General, Department of Energy Development and Promotion and Member of the MRC Joint Committee for Thailand; and Mr Roger Guardia, Resident Representative, UNDP Phnom Penh.*



## IMPLEMENTATION OF THE 1995 AGREEMENT FOR SUSTAINABLE DEVELOPMENT COMPLETED IMPLEMENTATION (Arts. 15, 16, 21, 22, 31 and 32)

### COMPOSITION AND CHAIRMANSHIP OF THE MRC COUNCIL



**H.E. Mr Ing Kieth**, Deputy-Prime Minister of the Kingdom of Cambodia, Minister of Public Works and Transport, Member of the MRC Council for the Kingdom of Cambodia and Chairman of the MRC Council for 1995/96.



**H.E. Mr Yingpan Manasikarn**, Minister of Science, Technology and the Environment and Member of the MRC Council for the Kingdom of Thailand.

**H.E. Dr Kithong Vongsay**, Vice-Chairman of the Committee for Planning and Cooperation, Chairman of the Lao National Mekong Committee and Member of the MRC Council for the Lao People's Democratic Republic.



**H.E. Mr Nguyen Canh Dinh**, Minister-Chairman of the Viet Nam National Mekong Committee and Member of the MRC Council for the Socialist Republic of Viet Nam.



### COMPOSITION AND CHAIRMANSHIP OF THE MRC JOINT COMMITTEE



**H.E. Dr Phan Sy Ky**, Vice-Minister of Agriculture and Rural Development, Member of the MRC Joint Committee for the Socialist Republic of Viet Nam and Chairman of the MRC Joint Committee for 1995/96.



**H.E. Mr Sitaheng Rasphone**, Vice-Minister of Agriculture and Forestry, Vice-Chairman of the Lao National Mekong Committee and Member of the MRC Joint Committee for the Lao People's Democratic Republic.

**H.E. Mr Khy Taing Lim**, Former Minister, Vice-Chairman of the Cambodia National Mekong Committee and Member of the MRC Joint Committee for the Kingdom of Cambodia.



**Dr Prathes Sutabutr**, Director-General, Department of Energy Development and Promotion, Ministry of Science, Technology and the Environment and Member of the MRC Joint Committee for the Kingdom of Thailand.



### APPOINTMENT OF MRC SECRETARIAT CHIEF EXECUTIVE OFFICER AND ASSISTANT CHIEF EXECUTIVE OFFICER



**Mr Yasunobu Matoba**, appointed by the MRC Council as the Chief Executive Officer of the Mekong River Commission Secretariat, took up his post on 1 September 1995.



**Dr Le Van Minh** was appointed by the MRC Joint Committee in September 1995 as Assistant Chief Executive Officer in addition to his current position as Director, Resources Development Division, MRC Secretariat.



## IMPLEMENTATION OF THE 1995 AGREEMENT FOR SUSTAINABLE DEVELOPMENT ONGOING IMPLEMENTATION (Arts. 2, 18 and 26)

### DONOR CONSULTATIVE GROUP (Art. 18)



*The first Donors' Meeting was organized by the Joint Committee on 22 November 1995 at Ho Chi Minh City, Viet Nam, in conjunction with its Special Session from 20 to 21 November.*

One of the clear goals of the Mekong River Commission (MRC) is to mobilize a flow of substantial resources in order to achieve sustainable development of the Mekong River Basin and to secure financial viability of the Commission itself and of its Secretariat. The challenge is how the MRC can best secure the type and quantity of resources its members require to attain their goals and the collective objectives of the Mekong Agreement. A solid history of success and a precedent for mobilizing resources already exists. Throughout the nearly four decades of the Mekong River Basin development programme, contributions in cash and in-kind have been obtained from generous bilateral and multilateral donor partners, in addition to the inputs from the member countries themselves.

The international donor community is already knowledgeable about and supports the Mekong region's development. Likewise, international and domestic investors are increasingly interested -even competing- to finance good development projects in the Mekong Basin area. A process of improved donor consultations and resources mobilization has been foreseen by the riparian governments. The need was affirmed officially at the meetings of the Joint Committee and the Council in April 1995 at Chiang Rai. UNDP was requested by the riparian governments to assist the MRC and prepare a proposal for the establishment of a Donors' Consultative Group (DCG), taking into account its extensive experience in organizing and conducting donor coordination and consultation meetings, and because of its unique position and neutrality. As suggested by the Joint Committee at its first meeting in July 1995 at Ho Chi Minh City, and following the resolution of the Council at its first meeting on 1-4 August 1995 at Phnom Penh, a Sub-Committee (referred to as the Task Force) comprising four designated members, one from each

riparian country, was established to review the UNDP proposal for the establishment of the Donors' Consultative Group. The Joint Committee at its special session held on 20-22 November 1995 at Ho Chi Minh City endorsed the UNDP proposal for an early establishment of the DCG and the Task Force's proposal to have an Inaugural Meeting of the DCG in early 1996. The Council during its second meeting at Phnom Penh on 30-31 January 1996 adopted the objectives for the establishment of the DCG, which are as follows:

#### Overall Objectives

1. Accelerate sustainable development and growth in the Mekong River Basin in accordance with the Mekong Agreement, Basin Development Plan (BDP) and *Mekong Work Programme*; and
2. Form close partnership with, and constituencies among, the donor community to the above end.

#### Immediate Objectives

1. Foster mutual understanding and consensus among donors, through dialogues and exchange, regarding policies, priorities and strategies, and long and short-term plans for basin development;
2. Mobilize donor support for MRC's priority development programmes and projects, and for effective functioning of MRC and its Secretariat; and
3. Ensure coordination for more effective utilization of development resources through facilitating coordination and avoiding duplication among MRC donors and with other (non-MRC) programmes.

It also endorsed that the *regular/annual meeting* of the DCG be held in October, in conjunction with the Council Meeting.



## FORMULATION OF THE MEKONG BASIN DEVELOPMENT PLAN (Art. 2):

Basin development planning has always been accorded priority within the programme of Mekong cooperation. The signing of the *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin* by the four riparian countries on 5 April 1995 marked a new direction in the development planning of the Mekong basin with a new vision of Mekong cooperation and strong vitality.

With the new vitality and added momentum of cooperation, the Joint Committee approved in 1995 a new project proposal to formulate the Mekong BDP and established the first permanent technical Sub-Committee in June 1995 to assist in monitoring the formulation of the BDP. The BDP formulation would be carried out in two phases. Phase I was to prepare detailed Terms of Reference, methodology, work plan, formulation modalities and required budget for the actual formulation work in Phase II. The Government of Sweden provided a total amount of US\$250,000 for Phase I and work started in June 1995. At its first two working sessions in 1995, the Sub-Committee on the Basin Development Plan (BDP) identified five key issues that need to be addressed during the formulation process and adopted six conceptual elements to be established in the BDP to ensure its practicability.

### Six Conceptual Elements of the Mekong BDP

1. Comprehensive framework of water resources development;
2. Common goals for socioeconomic achievements in basin development;
3. Common and national strategies for basin development;
4. Priority short and long-term programmes of action (including study and development) and mechanism to implement and update them;
5. Dynamic cooperation framework conducive to basin development depending on the levels of development; and
6. Facilities and information systems to support basin planning work.

The **Basin Development Plan**, as defined in the 1995 Mekong Agreement, is the general planning tool and process that the Joint Committee would use as a blueprint to identify, categorize and prioritize the programmes and projects to seek assistance for and to implement the plan at the basin level.

### Five Key Issues of BDP Formulation

1. Active participation of the riparian countries;
2. Continuity and consistency of the basin planning work;
3. Advanced technology and latest achievements in basin/national planning;
4. Solid foundation of the basin development knowledge; and
5. Core human resources elements for the basin development planning process.

SECOND MEETING OF THE SUB-COMMITTEE  
ON MEKONG BASIN DEVELOPMENT PLAN  
HA NOI, 12-13 SEPTEMBER 1995



To address the key issues of the formulation process, the National Mekong Committees established national BDP Teams of riparian experts to support the Sub-Committee in detailed technical aspects, to provide inputs for international experts and to ensure effective exchange of key information on basin development among the countries and efficient transfer of planning technology.

Apart from inputs by the Sub-Committee members and the national BDP expert teams, the Joint Committee members exchanged views and ideas for more effective cooperation. These inputs enabled the MRC Secretariat to draw up an overall framework and identify important elements for Phase II of the project and submit these to the Third Sub-Committee Meeting held in January 1996. Important findings included the basis for the BDP planning process, the BDP vision statement and the draft list of elements of the MRC shared vision on basin development. Phase II is expected to start during the first half of 1996.

FIRST MEETING OF THE SUB-COMMITTEE  
ON BASIN DEVELOPMENT PLAN  
Bangkok, 19-20 June 1995





## A Vision for More Effective Cooperation and Future Development

### Basis of the BDP Planning Process

- To be based on the development perspectives of the riparian countries;
- To develop a shared vision on Mekong basin development; and
- To include four principal components: overall basin planning programme (OBPP), sectoral programmes, cross-sectoral programmes and institutional-strengthening programme.

### Overall Shared Vision on Mekong Basin Development

The overall shared vision can be described by the following terms, based on the new Mekong Agreement:

- (1) Development of the **full potential of sustainable benefits** of the basin's water and related resources to **all riparian States** for the **economic and social well-being and living standards of their peoples** (Art. 2);
- (2) Maintenance of the **ecological balance** exceptional to this river basin (Art. 3);
- (3) **Interdependent sub-regional growth** (Preamble) and
- (4) An adequate, efficient and functional joint organizational structure (Preamble).

### Specific Shared Vision

#### Group 1: Overall basin development

1. Development of the full potential of sustainable benefits of the Mekong land and water resources to render the Mekong basin one of the world's major agricultural regions, including being the most important rice-exporting region;
2. Development of the full sustainable benefits of the basin's hydropower potential;
3. The Mekong River system as one of the world's most productive aquatic ecosystems;
4. Development of the full potential of the Mekong water and related resources to establish necessary infrastructure for all related sustainable social and economic benefits relating to basin development;
5. Provision of the full potential of sustainable social benefits and maximum possible social security against natural and man-made disasters to the Mekong peoples; and
6. Creation of a suitable environment for the best quality of life for all the Mekong peoples in the riparian States.

#### Group 2: Environment conservation

1. Maintenance and development of Mekong protected areas;
2. Maintenance of the ecological balance of all the important Mekong basinwide ecosystems, such as the Great Lake and the Mekong estuarine ecosystem; and
3. Protection of the Mekong biodiversity.

### Vision Statement of the BDP

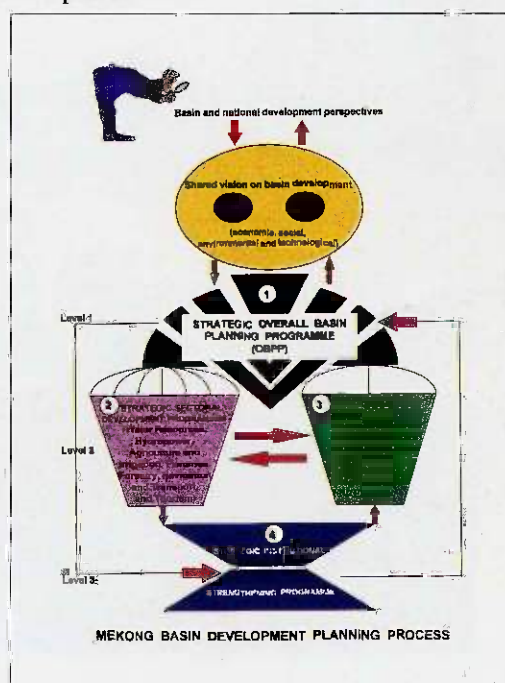
The **BDP** is the **key tool** to enable the MRC to function as the **leading sub-regional organization** that **ensures sustainable development of the Mekong River Basin**. It would also enable the MRC to **promote and facilitate interdependent sub-regional growth** and initiate key activities required for such a purpose.

#### Group 3: Interdependent sub-regional growth

1. Development of an extensive sub-regional network of transport and corresponding multimodal system;
2. Development of an integrated sub-regional network of electric transmission and necessary service system for the best synergy of all national electric power systems;
3. Development of the Greater Mekong Sub-Region into a major market to support diversification of the basin agricultural development;
4. Development of the Greater Mekong Sub-Region into a major network of tourism; and
5. Development and management of a sustainable human resources system to support the Mekong Basin development.

#### Group 4: Institutional strengthening

1. Development of an effective network of Mekong riparian institutions to support an adequate and efficient Mekong River Commission to support, promote and coordinate the integrated development of the Mekong River Basin;
2. Development of compatible legal systems to guide, promote, support and control overall Mekong Basin development; and
3. Development of an effective and efficient system for comprehensive monitoring of basin development.





## PREPARATION OF THE MEKONG RIVER COMMISSION RULES FOR WATER UTILIZATION AND INTER-BASIN DIVERSIONS (Art. 26)

The new Mekong Agreement signed by the lower Mekong countries at Chiang Rai on 5 April 1995 calls for the establishment of MRC Rules for Water Utilization and Inter-Basin Diversions (Art. 26 of the Agreement). Establishment of such rules needs to be based on the common understanding and mutual benefits among the riparian countries in order to ensure that the resulting guidelines and mechanisms would promote sustainable development of the Mekong water resources. It is necessary that establishment of the Rules be coordinated with the preparation of the Mekong Basin Development Plan and implementation of ongoing planning and development activities and that active participation of all parties concerned in the riparian countries and support from the donor community be sought.

Pursuant to Article 26, the Joint Committee (in its first formal session, held at Ho Chi Minh City, Viet Nam from 29 June to 1 July 1995) has agreed to establish a permanent Sub-Committee on Water Utilization and Inter-Basin Diversion to assist the Joint Committee in preparing *Rules for Water Utilization and Inter-Basin Diversions pursuant to Articles 5 and 6, including but not limited to: (1) establishing the time frame for the wet and dry seasons; (2) establishing the location of hydrological stations, and determining and maintaining the flow level requirements at each station; (3) setting out criteria for determining surplus quantities of water during the dry season on the mainstream; (4) improving upon the mechanism to monitor intra-basin use; and (5) setting up a mechanism to monitor inter-basin diversions from the mainstream*, in coordinating and monitoring implementation of the Rules and in regularly updating them.

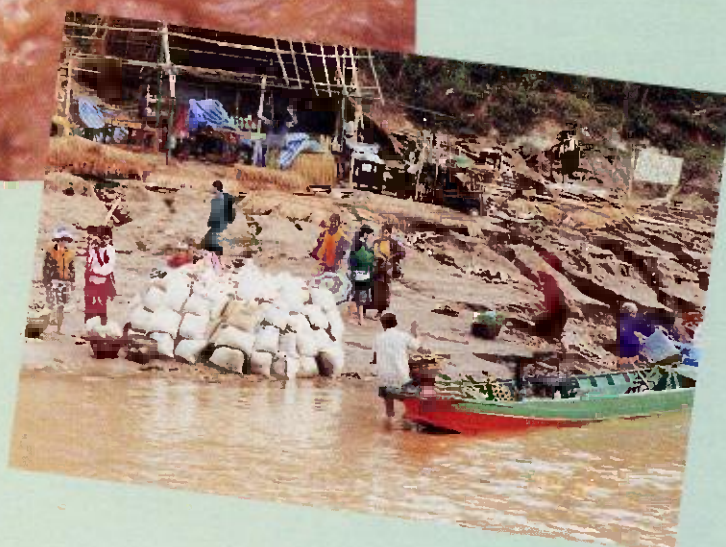
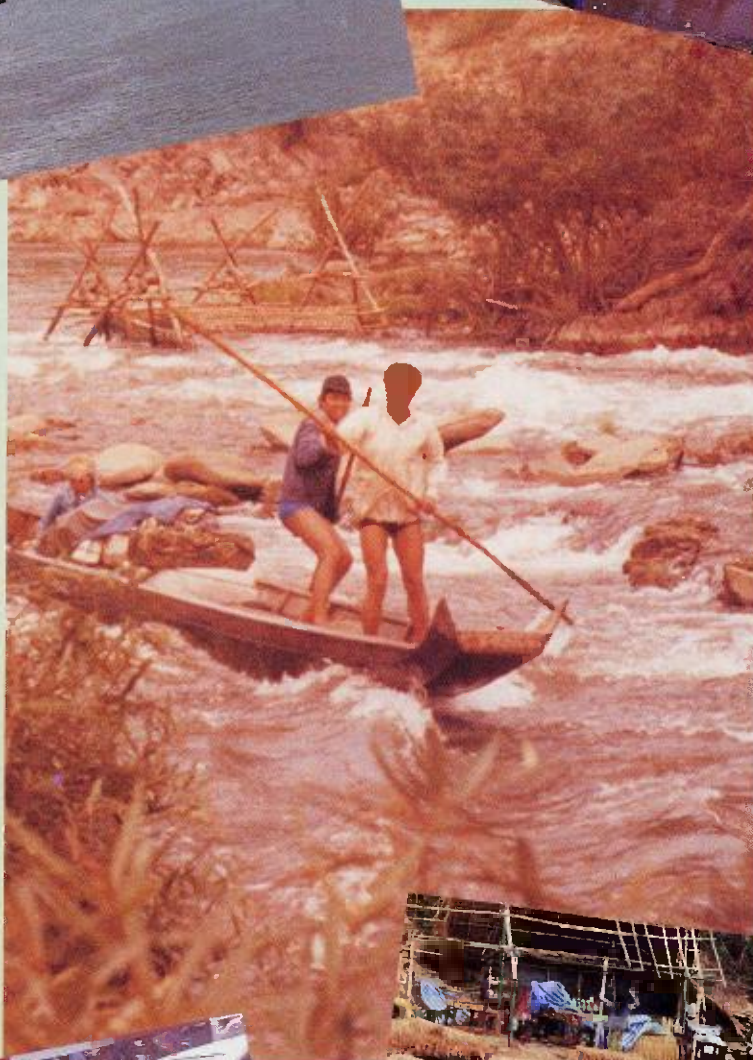
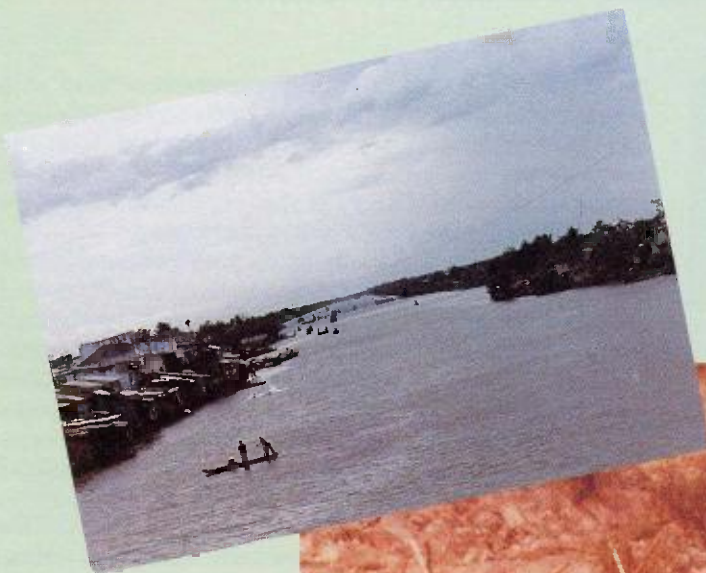
The Sub-Committee held its first session at Bangkok in October 1995 to discuss: (1) detailed Terms of Reference of its operations; (2) a project proposal aiming to prepare the Rules and to mobilize necessary financial and technical assistance from the cooperating countries and international organizations; and (3) a programme of urgent activities. All the Sub-Committee's findings were approved by the Joint Committee at its special session, held at Ho Chi Minh City in November 1995. It was agreed that the ultimate objective of the project would be to ensure that the Mekong countries would *"utilize the waters of the Mekong River system in a reasonable and equitable manner in their respective territories"* for the sustainable development of the Mekong River Basin.

The following short-term objectives were adopted: (a) to prepare draft MRC Rules for Water Utilization and Inter-Basin Diversions; (b) to establish a minimum relevant network and related programme for river monitoring to ensure effective implementation of Article 26 of the *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin* (the Agreement); and (c) to strengthen the institutional framework for implementation of Article 26 of the Agreement.

Initial financial assistance amounting to US\$200,000 has been provided by the Government of Japan to commence the work. The project is expected to be completed in three years, requiring a total amount of external funding estimated at US\$2.7 million.









## MEKONG POWER GRID: Linking the Power-Generating Capacity in the Riparian Countries

Since June 1995 with financial assistance from the Government of Japan, the Mekong River Commission Secretariat has commenced a Mekong Integrated Transmission System Study or, in short, a Mekong Power Grid. This would link various power systems of the six Mekong riparian countries in the decades to come. Energy demand in the Mekong countries, especially Thailand and Viet Nam, is increasing at a very high rate and the power interconnection is considered to be an important complementary programme to economize the expansion of the power-generating capacity in the riparian countries. Since the Mekong Power Grid was included as a part of the Asian Development Bank (ADB)'s Greater Mekong Sub-Regional Economic Cooperation Programme, the MRC Secretariat's study has been conducted in close cooperation with the ADB.

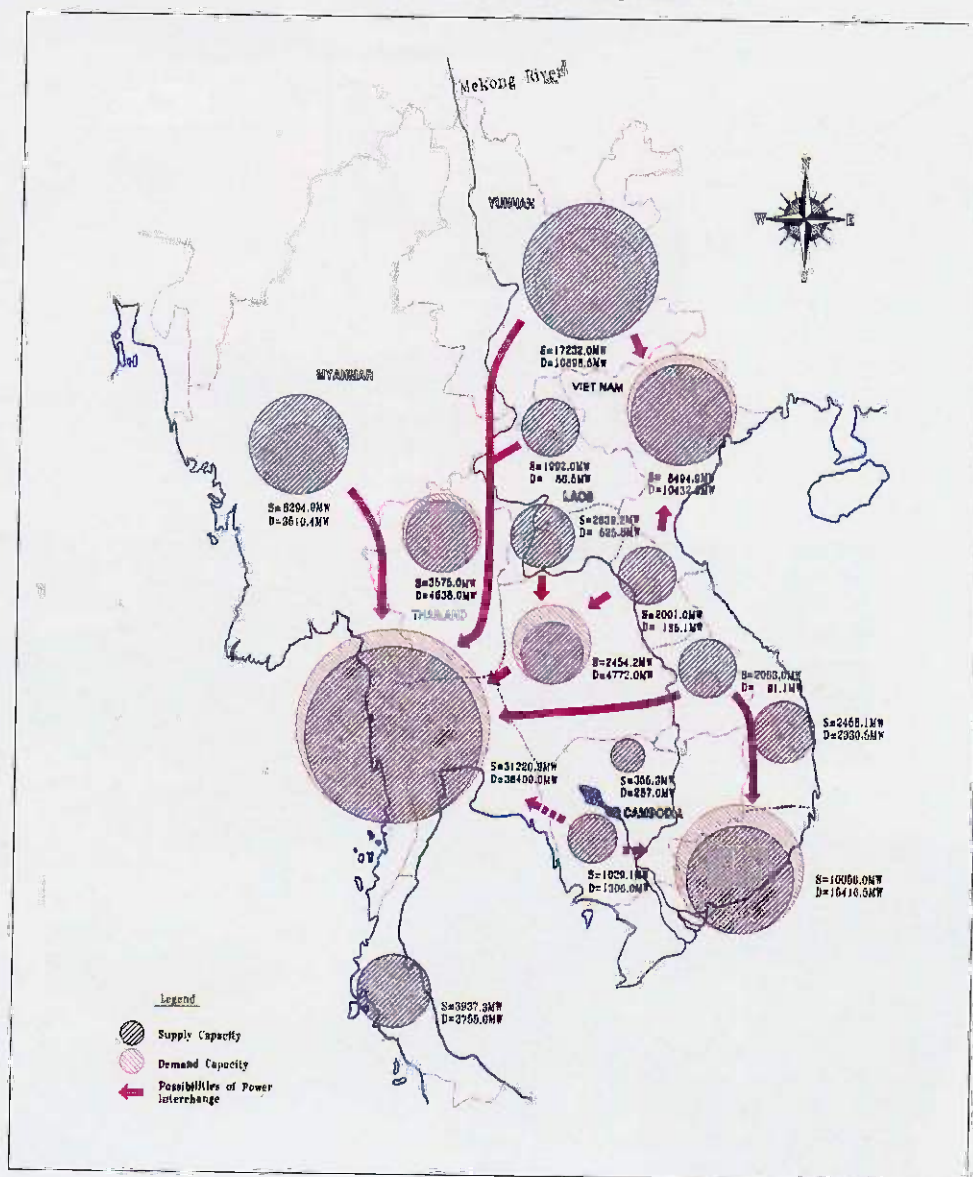
The MRC Secretariat participated in meetings of the ADB's Electric Power Forum (EPF) in Yangon, Myanmar, and in Vientiane, Lao PDR in April and December 1995, respectively. Progress reports were presented for discussion at these fora. The final results of this study will be reported to the Third EPF in Kunming, People's Republic of China, in the fourth quarter of 1996.

The study comprises of two parts: (i) the formulation of an overall Mekong transmission network, or a master plan, and the identification of priority linkages based on the national power demand and supply scenarios and the power balance among the countries; and (ii) the preparation of a prefeasibility study of the selected interconnections agreed upon by all riparian countries. Strengthening the capability of technical personnel concerned in the riparian countries and the MRC Secretariat in planning and managing the integrated transmission system is another important component of the project.

In September 1995, the first workshop on the study's Inception Report was held at Bangkok with the

participation of over 40 representatives from the riparian countries, the Embassy of Japan in Thailand and the Asian Development Bank, as well as international consultants and MRC Secretariat staff. Based on the consultation at this workshop, the study was formulated jointly.

Since then, various studies on power demand forecasts, supply scenarios from both hydropower and thermal sources, power balance, technical, environmental, economic, financial and institutional analyses were performed to identify possible interconnections for various time frames in the years 2000, 2005, 2010, 2015 and 2020, and priority linkages. These will be reviewed at the second workshop held at Da Nang, Viet Nam in March 1996, to determine priority interconnections for prefeasibility studies and eventual implementation. The Mekong Integrated Transmission System Study will be completed in September 1996.



Possibilities of Power Interchange for 2020



## EAST-WEST TRANSPORT CORRIDOR STUDY (LAO PDR-THAILAND-VIET NAM): Development of an Extensive Sub-Regional Network

The development of the East-West Transport Corridor was adopted as a priority project of economic cooperation by the Ministerial Conferences on Sub-Regional Economic Cooperation in the Greater Mekong Sub-Region. The East-West Transport Corridor Study among the Lao PDR, Thailand and Viet Nam is being funded by the Government of France and administered by the Asian Development Bank (ADB). The Mekong River Commission Secretariat was entrusted by the ADB and the three countries to execute the study.

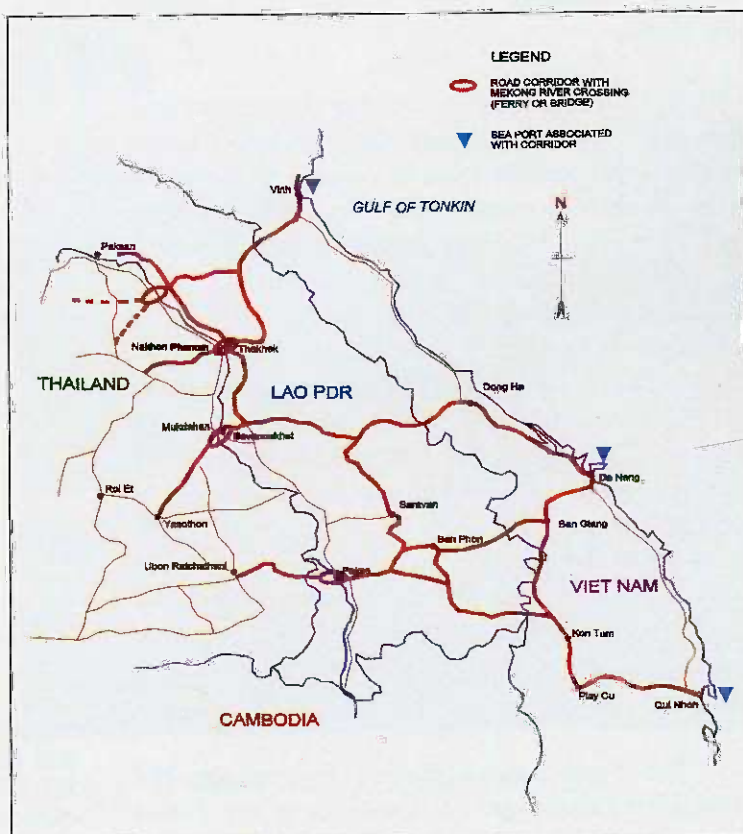
The Corridor Study aims to establish a clear strategy together with a specific programme of action on development of key infrastructure facilities, based on detailed studies and investigations to be carried out in this project at the feasibility study level, along the three selected Routes: Roads Nos. 8, 9 and 18 linking Thailand with the Lao PRD and to related seaports in Viet Nam. With the intention to ensure continuity and consistency of the cooperative efforts, the MRC Secretariat is also responsible for the coordination of on-the-job training activities to strengthen the human resources elements to support relevant activities required for the implementation of the corridor development strategy. Within the framework of the current study, emphasis is being made to support the counterparts in the member countries, especially in the Lao PDR and Viet Nam in their efforts to strengthen technical capabilities.

To ensure that the project which started in May 1995 will provide necessary support to the national programmes for sub-regional economic cooperation, a Project Steering Committee (PSC) has been established to provide direction to the study. The Governments of the Lao PDR, Thailand and Viet Nam have each appointed three senior officials from the related ministries and social and economic planning agencies as their respective representatives in the PSC. During 1995, the PSC held two meetings, the first in August at Ubon Ratchathani and the second in December at Vientiane. Two more meetings are scheduled to be held in February and April 1996. During the planning process, the PSC considered 13 options identified by the Consultants. On the basis of technical, social, economic and environmental considerations, the PSC agreed that the three corridors formed by the three selected routes, which have different complementary functions in the Mekong sub-region, need to be developed in stages. For this purpose, 25 projects were identified. An initial economic appraisal of these projects provided the following results:

Identified Projects	Short-term	Medium-term	Total
Northern Corridor (Route 8)	4	4	8
Central Corridor (Route 9)	5	2	7
Southern Corridor (Route 18)	5	5	10
<b>Total</b>	<b>14</b>	<b>11</b>	<b>25</b>

The above findings are to be considered at the Third PSC Meeting held in Da Nang, Viet Nam in February 1996. At the Third PSC Meeting, it is planned that expert services on software issues related to cross-border problems provided by ESCAP will present information on related international conventions and propose a follow-up programme to ensure the efficient use of resources in developing these sub-regional transport corridors. During 1995, the on-the-job training programme was conducted by the Consultants from September to December 1995 at Vientiane for one Laotian and two Vietnamese engineers.

The study is expected to be completed in April 1996 and followed by an engineering and detailed design phase. Funds for the related technical assistance of the follow-up phase are expected to be available through the ADB.



*East-West Transport Corridor Possibilities*



## MEKONG WATERSHED ASSESSMENT AND MANAGEMENT PROGRAMME:

Currently the Watershed Management and Forestry Sector is carrying out three basinwide projects in this field that are closely coordinated and complement each other:

- *Mekong Watershed Classification* (funded by the Government of Switzerland; total budget: US\$800,000; time frame: 1992-96)
- *Assessment and Monitoring of the Mekong Basin Forest Cover* (funded by the Government of Germany; total budget: US\$4 million; time frame: 1993-98)
- *Sustainable Management of Resources in the Lower Mekong Basin* (funded by the Government of Germany; total budget for Phase I: US\$2 million; the first phase: 1996-97)

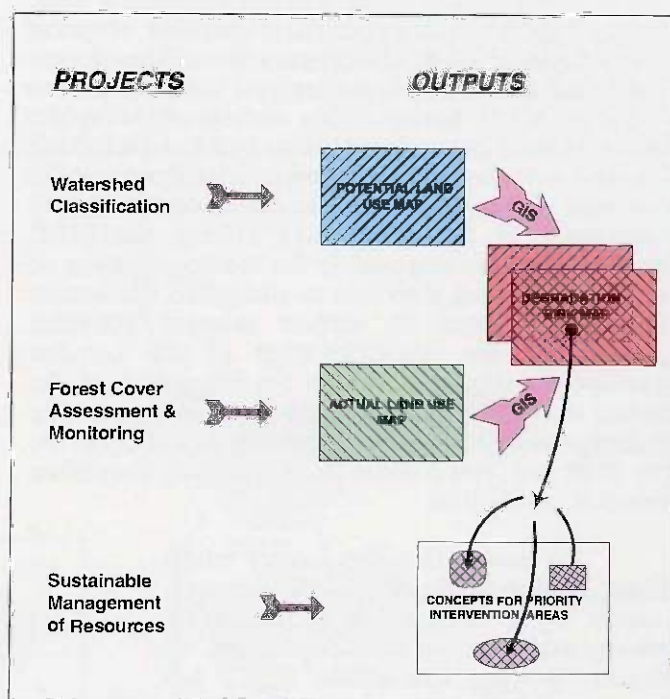
The *Watershed Classification Project* was designed to make an assessment of the lower Mekong basin with regard to constant geophysical aspects and their inherent degradation risks for soils and hydrological factors. Based on an array of variables such as slope and land form, it classifies the watershed of the lower Mekong basin according to the suitability of the major land uses for sound watershed management. The project involves advanced GIS technology, including the generation of a digital terrain model.

In contrast, the *Forest Cover Assessment and Monitoring Project* addresses the vegetation cover (with particular consideration of forests) in the lower Mekong basin. In recent years this cover has been dramatically altered through human impact, exposing many upland areas to serious soil and water degradation processes. To date there is no reliable information available on the extent and the dynamics of these changes. In order to address this shortcoming, the Forest Cover Assessment and Monitoring Project is reviewing the prevailing condition of the existing vegetation cover. In a second step it will establish a basinwide system for monitoring its dynamics. The overlay of the information generated by this project with data of the Watershed Classification Project will reveal critical areas that require immediate attention in order to sustain and/or rehabilitate the multiple functions of the watersheds.

The third project in this Programme, the *Sustainable Management of Resources in the Lower Mekong Basin Project*, is addressing the above identified problem areas on the ground. It aims at

identifying and developing appropriate participatory approaches to land use planning and watershed management in critical upland areas. Promising concepts will be tested in pilot areas.

The following chart illustrates in a very simplified and schematic way how these projects relate to each other and how the Watershed Assessment and Management Programme works.



For 1996 the implementation of a strategy study is planned which will develop a comprehensive medium to long-term watershed management/forestry programme for the MRC Secretariat.

### Project Progress

#### Watershed Classification Project

The work during 1995 concentrated on:

- preparation of a digital terrain model (DTM); and
- training of riparian staff.

Generating a DTM at the scale of 1:50,000 for the lower Mekong basin is a technically challenging and time-consuming job; very little experience exists for DTM's of this magnitude. However, emerging difficulties are being overcome and the GIS work is approaching a final stage with the plotting of the watershed classification maps.



Making watershed classification work has been the other theme around which the activities in this project evolved during the past period. Training of riparian staff is considered to be the most effective approach in this respect. The Swiss donor agreed to augment the budget for this purpose and to fund a series of seminars and workshops on classification methodology, GIS operations and applications of the classification.

In the first half of 1996 the DTM will be completed and the classification maps printed. Training of technical staff will continue and national workshops for the introduction of the final results of the project to executives of the agencies concerned will be held. A final evaluation of the project will be carried out in March 1996. Based on the results of the evaluation SDC will consider an extension beyond June 1996 for refinement of the classification and to put the results into practice.

### Forest Cover Assessment and Monitoring Project

The assessment of the forest cover is now in an advanced stage. It has been accomplished through the interpretation of satellite images, GIS operations and the establishment of a numerical database. All activities have been carried out by national project teams with the assistance of technical advisers. The second phase includes training of the national project teams for the transfer of technology of the above listed activities.

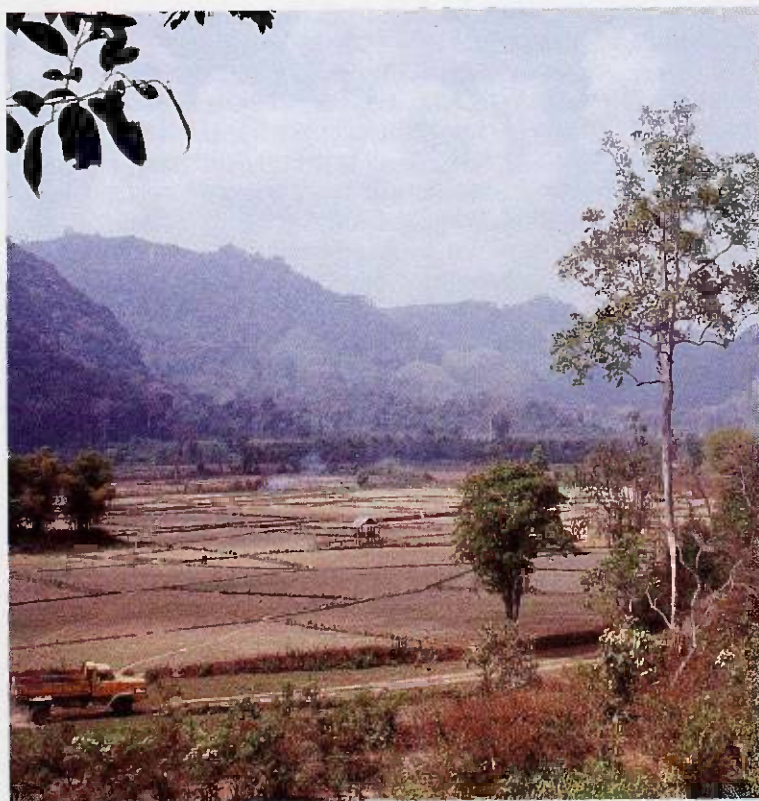
Following a mid-term review of the project, which has now been operating for three years, the Government of Germany agreed to extend its support for another three years. The work of the second phase will concentrate on the design and establishment of a basinwide forest cover monitoring system.

A joint basinwide Mekong Watershed Classification and Forest Cover Seminar was held at Bangkok in November 1995. It was attended by representatives on the executive level of all agencies involved in land use and water resources planning, such as the departments of agriculture, forestry, water resources, irrigation, environment and energy. The feedback from this event indicates that the results of the projects are well received and that across the above mentioned sectors there is great interest to apply and further develop watershed classification and forest cover assessment and monitoring in the lower Mekong basin.

### Sustainable Management of Resources Project

This project was successfully launched at the end of 1995. The Chief Technical Adviser (CTA) took up his assignment at the project headquarters in Hanoi. Major activities during the reporting period were the finalization of the implementation agreement between the German donor and the MRC Secretariat, assignment of a counterpart agency in Viet Nam (Department of Forestry Development, Ministry of Agriculture and Rural Development) and the selection and fielding of the CTA.

In 1996 the project will focus on consolidating the operational basis of the project. The objectives and expected results will be jointly reviewed in a planning session with the collaborating agencies of the four riparian countries. For the implementation of promising concepts a pilot site in the Central Highlands of Viet Nam will be selected. Interdisciplinary riparian and international teams for the identification, collection and analysis of relevant data and information will be set up in all four riparian countries.



*Typical watershed in northern Lao PDR*



## IMPROVEMENT OF THE HYDROMETEOROLOGICAL NETWORK: Towards Generating Accurate and Useful Data

Hydrometeorological data collection, one of the core functions of the Mekong River Commission, has been carried out uninterruptedly since the inception of the Mekong Committee more than three decades ago. The collected data are not only used for planning and management of water resources projects, but also for assessing and monitoring the environmental conditions due to human interference.

The hydrometeorological data are collected from the existing hydrometeorological network within the Mekong basin (455 hydrologic stations and 350 meteorological stations) operated by the national hydrologic and meteorological services of the member countries. The operating and maintenance costs are either entirely or partly financed by external resources provided by donors through the Commission. The main donors, such as UNDP, Australia, New Zealand, the Netherlands and Sweden, used to provide assistance for quite some time, but have reduced their contributions recently.



*Joint Discharge Measurement Team Meeting at  
Khong Chiam on 23-24 May 1995*

As the operation of the hydrometeorological network is a series of continuous activities for data collection and due to the financial constraint of some member countries, it is necessary to request assistance from external sources to support the member countries to sustain the network operations. With the urgent need to rehabilitate the network in Cambodia, the Secretariat prepared a comprehensive project proposal in 1990 entitled, "Improvement of the Hydrometeorological Network" for financial assistance.

This three-year project will deal with the rehabilitation and/or construction of an adequate number of hydrometeorological stations in Cambodia and reinforce the priority of existing basinwide stations to ensure an effective physical network for data collection, the development of regular measurements, collection and dissemination procedures for hydrometeorological data with a time-lag closer to real time; and the improvement of the data collection network, the interpretation and use of data of national agencies through adequate training.

The Government of Japan provided US\$608,000 representing the first year against the total budget of US\$1,940,000 for executing the project starting July 1995.

In 1995 Laotian and Thai agencies commenced joint discharge measurements on the Mekong mainstream at Khong Chiam/Ban Mai Sing Samphan, Chiang Khan/Sanakham stations and on the Nam Heung at Ban Pak Huai/Muong Ken Thao station. The operation was made possible by funds from UNDP. Furthermore, New Zealand continued to provide assistance for the printing of the 1992 *Hydrologic Yearbook*.

The hydrologic condition of the lower Mekong River in 1995 was considered as a high flow year. The water levels at stations downstream from Vientiane to Pakse were above flood stages for several days during the first half of September. At Phnom Penh the water level was below flood stage whereas at Chau Doc and Tan Chau the water levels were slightly above flood stages during mid-September to mid-October. It was interesting to observe that in 1995 the flood in the middle reach was higher than in 1994, but in the Delta the 1994 flood was higher than in 1995.



*Preparation for discharge measurements*



## MANAGEMENT OF RESERVOIR FISHERIES IN THE MEKONG BASIN: Towards Increasing Sustainable Reservoir Fisheries Production

Reservoirs created by damming of rivers to generate hydropower and/or irrigation development may destroy natural fishing grounds, fish migration and fish habitats. However, they may also provide an opportunity for fisheries development of a different kind, namely fishery in a closed water body. Several of the reservoirs in the Lao PDR, Viet Nam and - to a lesser extent - Thailand may be considered under-utilized in the sense that optimal production and productivity have not been achieved.

To further develop these reservoir fisheries, the MRC Secretariat formulated a basinwide project on Management of Reservoir Fisheries in the Mekong Basin. The objectives of Phase I (three years) of the project are: (i) increased production from reservoir fisheries through enhanced capacity of government fisheries agencies to plan and manage reservoir fisheries on a sustainable basis; and (ii) development of community-based fisheries management institutions.

In December 1994, the Government of Denmark signed a financing agreement with the MRC Secretariat providing US\$3.5 million for Phase I of the project. The project was started in mid-August 1995 with the assignment of two Chief Technical Advisers, one based at Nha Trang in Viet Nam and one based at Nam Ngum in the Lao PDR to also cover activities in Thailand.

In the Lao PDR, the national project office was set up in Lake Nam Ngum (approx. two hours drive from the capital of Vientiane), virtually positioned on stilts on the very lake in the offices of the former fishermen's community project. The

Department of Veterinary, Livestock and Fisheries and the Province of Vientiane are responsible for implementation of the national project component.

In Viet Nam, project activities have been concentrated in the Central Highlands, starting with research and surveys around Lake Ea Kao and Lac Lake. Project activities were, at the start, managed by the Research Institute for Aquaculture No. 3 at Nha Trang. After some months of project implementation, a national project office was set up at Buon Me Thuot in the Central Highlands. The Ministry of Fisheries is responsible for implementation of the project in Viet Nam.

The Sirithorn Reservoir in Ubon Ratchathani province was selected for inclusion in the project as the Thai component during a workshop in December 1995 with the Department of Fisheries at Khon Kaen. The Department of Fisheries is responsible for implementing the project.

The three national sub-projects (or components) will work closely together and share technical assistance, personnel, workshops and training courses. Cambodia, short of reservoirs, may participate in workshops and training courses throughout the implementation of the project.

The project, once completed, is expected to increase the sustainable fish production from the reservoirs in the lower Mekong basin and involve the fishing communities around the reservoirs in the management of the fisheries. It will emphasize capacity-building and policy advice.



*Lake Nam Ngum Project Office, the Lao PDR*



## PREPARATION OF A DIAGNOSTIC STUDY FOR THE MEKONG RIVER BASIN: Measuring the Health of the River to Identify Mitigation Measures

The Mekong River system is a resource shared by six sovereign states. The water quality is being degraded by salt water intrusion and runoff from acid sulphate soil during the beginning of the rainy season. Local water quality problems exist in several of the river tributaries, and are expected to increase in future because of mining and industrial activities, expanded use of fertilizers and pesticides, and growing population density. Water quantity is also a problem because of insufficient water supply during the dry season and severe flooding during the wet season.

Sustainable use of the Mekong water system for various purposes must be seen in a regional context. Many medium-sized and large engineering schemes are being planned now and will be implemented in the future. Assessments of impacts of national measures taken to tap the potential should not limit the investigations to cover only direct impacts at the operation site itself. They also need to include secondary impacts, of which some may occur downstream, as well as upstream and outside the country of operation. In the next decade a number of dam, irrigation, land reclamation, agriculture, aquaculture, forestry, infrastructure and industrial projects will be implemented in the Mekong Basin. Most activities, whatever their scale, will have an impact on the natural conditions of the water and other natural resources. Some of the impacts are possible to predict by experience from similar areas and projects. Others need to be investigated and monitored in detail in order to identify mitigation measures to prevent irreversible destruction of the resources dependent on and developed by the Mekong River water regimes. Therefore, an Action Plan involving all the riparian countries is needed to achieve reasonable and equitable use of the river resources in a sustainable manner.

On 5 October 1994 the Agreement was signed on the Preparation of a Diagnostic Study for the Mekong River Basin between UNEP and the former

Mekong Secretariat. The project is being carried out from January 1995 to March 1996.

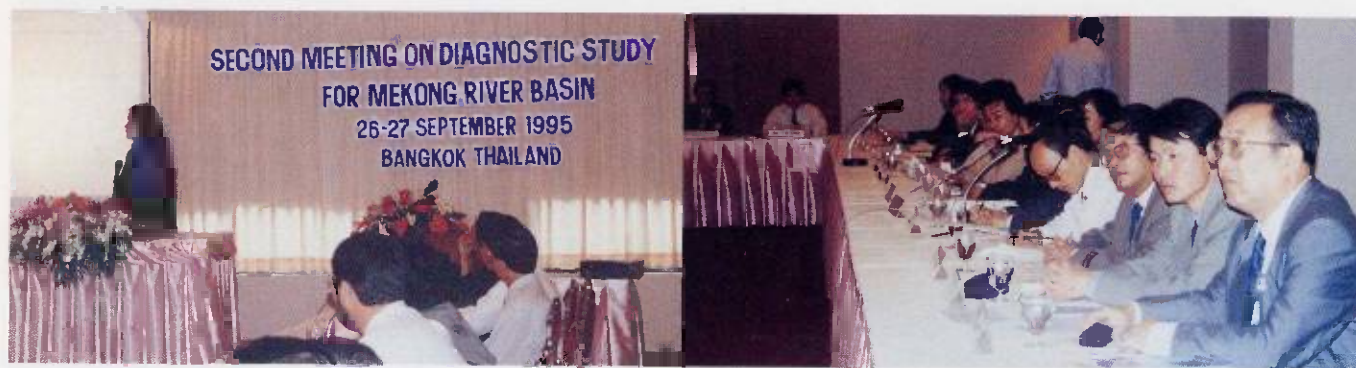
The Mekong River Basin Diagnostic Study (MRBDS) provides both sectoral and integrated diagnoses of the entire Mekong River Basin in order to identify specific issues that could be better addressed by basinwide environmental management plans. The analytical approach for the MRBDS proceeded from a review of the environmental characteristics and issues in each country to an assessment of the environmental issues affecting more than one country or the entire Mekong River Basin. This approach was taken to ensure that sectors in each country were analyzed in a consistent fashion in order to form a basis for integrated analyses of all environmental sectors and issues throughout the region.

The Diagnostic Study is the first study of its kind to obtain contributions from experts of the six countries. This process has ensured that iterative and consensus-building steps occur. The framework of action will be presented to the Governments and agencies concerned for consideration and approval.

The Third Meeting of Government-designated Experts is planned for Ha Noi from 2 to 5 February 1996 and will consider such items as:

- interest in developing a cooperative EIA process for projects which may have considerable potential transboundary effects; and
- need to strengthen the water quality monitoring network and develop related guidelines.

The results of the Diagnostic Study will also provide the foundation for sustainable development plans in the Mekong River Basin. Recommended actions will serve as the basis for forthcoming Mekong consultative meetings of donor/technical aid agencies.



*Second meeting on the Mekong River Basin Diagnostic Study held at Bangkok, Thailand from 26 to 27 September 1995*

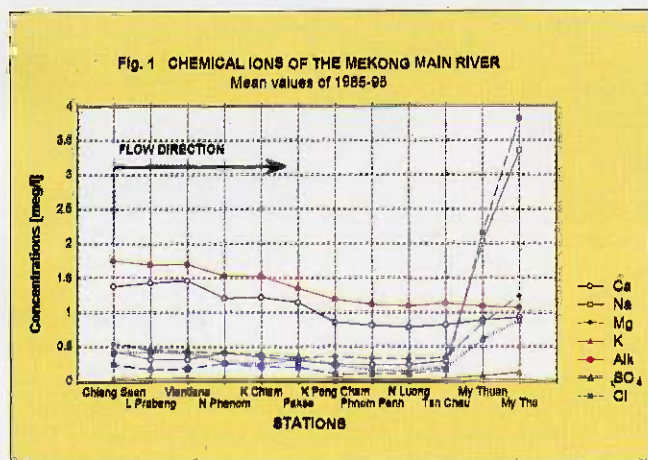


## MEKONG WATER QUALITY MONITORING NETWORK: Assessing the Suitability of Surface Waters for Different Water Uses

The Water Quality Monitoring Network (WQMN) project, commenced in 1985, is designated to study the quality of water in the lower Mekong River and some of its tributaries on a regular basis. Its aims are to (1) assess the suitability of surface waters in the lower Mekong basin for different water uses; (2) identify sources of water quality problems; and (3) develop ameliorative measures. It is also providing basic information necessary for the development of irrigated agriculture, fisheries and aquaculture, domestic and water supply and food processing industries.

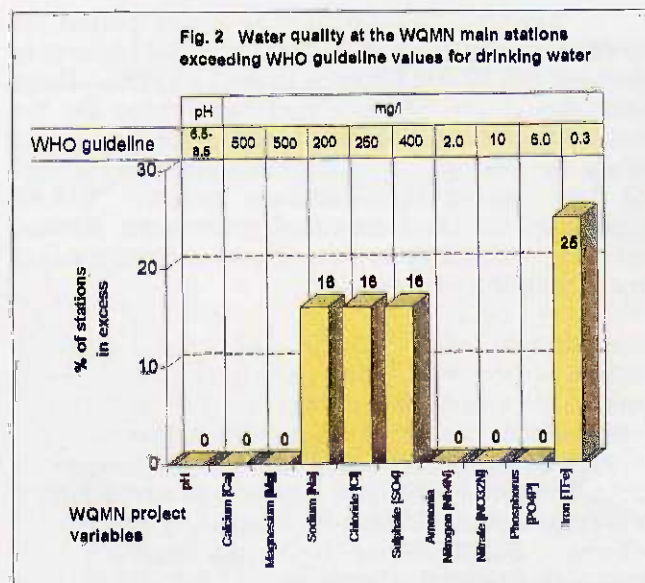
Most average annual pH values of the Mekong mainstream are between 7.3 to 8.0. Within these ranges of pH values, Figure 1 shows that the bicarbonate ion ( $\text{HCO}_3^-$ ) is the most common carbonate species found in the Mekong water. Concentrations of the bicarbonate ion are strongly related to  $\text{Ca}^{++}$  concentrations which reflect the weathering of limestones ( $\text{CaCO}_3$ ), except My Thuan and My Tho in the Mekong Delta, which are governed by sodium chloride ( $\text{NaCl}$ ), due to salinity intrusion from the sea. About 20 chemical parameters are monitored in the WQMN project and some of their levels are compared with those of WHO guidelines for drinking water (see Fig. 2).

In 1995 most of the project time and funds have been used to upgrade the riparian laboratories, carry out routine monitoring, and conduct training in water quality data evaluation, which is the main task to deal with, in order to assess and manage water resources for sustainable development and to minimize negative impacts, as well as to improve understanding of the importance of monitoring and to help decision-makers to use the data as a basis for environmental planning and sustainable development.



Since one of the objectives of the WQMN project is to develop water quality criteria as a basis for the development of national and regional standards that will ensure good water quality to be maintained and controlled for the sustainable use of the common

water resources, a document on Water Quality Criteria of the Mekong River was reviewed in August 1995, by the joint efforts of the consultants, the riparian technicians concerned and the Secretariat staff. The knowledge about the concentrations of most of the elements reviewed in this document is not quite adequate for natural conditions or for polluted ones.



Now these monitoring activities are carried out as an integral part of the Environment Programme to facilitate necessary actions to integrate environmental considerations in project planning and to start building up an environmental database at the MRC Secretariat and the riparian countries by gathering and organizing relevant data. Concerning future plans, the main tasks to be dealt with include:

- Revision of the monitoring activities (checking collected data, analytical procedures, sampling frequencies, etc.) in order to find out the sources of pollution affecting the quality and, consequently, the potential use of the water, as well as to design measures needed to minimize the negative impacts, both locally and downstream; and
- Compilation of important background information on factors that influence water quality, such as land use information, hydrology and population densities in order to support the real evaluation of the data.

However, it is necessary to continue the data collection and monitoring of the water quality, since the collected data should be used in the Water Quality and Pollution Control Project, under which several of the activities will be covered by the WQMN project components. Therefore, it is intended to merge these two projects into one, namely "Water Quality Monitoring and Pollution Control".



## SUSTAINABLE IRRIGATED AGRICULTURE PROJECT (SIRAP): An Application of the Participatory Approach in Agricultural Development

The Sustainable Irrigated Agriculture Project (SIRAP) was established in 1992 to provide support for irrigation improvement (infrastructure, operation and management) and agriculture development within 65 existing schemes in seven provinces in northern Thailand and three provinces in the Lao PDR along the Mekong River and its branches.

SIRAP is being treated as a pilot project for the development of about 750,000 irrigated hectares in Thailand and 30,000 hectares in the Lao PDR. These areas should produce rice and field crops for the increasing urban population as well as for export, and reduce the ecologically undesirable pressure on rain-fed land of the slash-and-burn system. SIRAP emphasizes the involvement of government, farmers and the private sector in a development strategy based on a participatory approach.

After 42 months of the project's implementation with active participation at all levels (central, provincial and district) as well as farmers' organizations, the project has been appreciated not only for its significant contribution to the increase of agricultural production and institutional strengthening in both countries, but also for supporting government policies. Based on the bottom-up approach with farmer institutional strengthening, the SIRAP has supported the Irrigation Management Transfer (IMT) policy and the Agriculture Structure and Production Adjustment Systems in the Lao PDR and Thailand, respectively. The IMT process is a handing over of responsibility for irrigation scheme management to a farmer Water User Organization (WUO). The five WUO schemes in the Lao PDR have developed their own management systems with the assistance of the Community Development Team and SIRAP Adviser. The participatory approach was also applied for labour-based construction and improvement of irrigation schemes in Thailand, and the Farmer Farm Plan (FFP) and Irrigation Scheme Plan (ISP) were employed in both countries.



*Fish harvesting on integrated farm (Mahasarakham, Thailand)*

During the dry season 1994-95, the production area and rice field schemes have increased in the Lao PDR. In Thailand, the agricultural activities have focused on demonstration of crop production, crop pest and disease control, livestock production, fish raising and mixed farming. In this connection, a workshop on marketing and contract farming for government staff and farmers was organized. WUOs, already strengthened in administration, water management and agriculture production, have been supported by SIRAP. Revolving funds aim at facilitating agriculture production and increasing the institutional potential and self-reliance of these WUOs. SIRAP's Gender Development (GD) was integrated in other activities, from raising GD awareness for government staff as an analytical tool in agricultural production planning to strengthen the role of female farmers in WUOs and production groups.

In the Lao PDR the specific GD activities implemented were Small Credit for Female Farmers of the WUO, Marketing Information and Involvement of Female Farmers in WUOs' Leadership. In Thailand, Female Farmer Participation in the Planning Process was addressed by the SIRAP in all schemes. Female Production Groups were established and encouraged to purchase agricultural inputs. The SIRAP concept has been accepted by the Project National Executive Committees of Thailand and the Lao PDR.



*Training in villages (Lao PDR)*

The promising results of SIRAP and its lessons have been proposed to be applied to other provinces in both countries. The SIRAP will be completed in May 1996. Its proposal for Phase II has been approved by the MRC Joint Committee. It will focus on consolidating the project's previous results with more attention to the gender development and environmental aspects. A Regional Exchange Programme to strengthen mutual understanding and cooperation among the four riparian countries in sustainable irrigated agriculture will be developed.



## MEKONG GEOGRAPHIC INFORMATION SYSTEM: Supporting Basinwide Natural Resources and Environment Planning

The Mekong Geographic Information System (GIS) activities started in September 1991 with funds from the Asian Development Bank (US\$600,000) and the Government of Switzerland (US\$350,000). The MRC Secretariat, during the initial phase of the Mekong GIS project, has conceived a network of riparian counterpart agencies to generate a resources spatial database using remote sensing and GIS technology to support the information needs within the individual riparian countries and for the lower Mekong basin as a whole.

Most of the work has been concentrated on generating spatial data on the physical environment at the scale of 1:250,000 and smaller, to support basinwide natural resources and environment planning. Thailand and Viet Nam went straight into the GIS as they had generated essential maps earlier.

In Cambodia and the Lao PDR, major efforts were needed to create environment-related thematic maps, using remotely-sensed data, to enter into the GIS.

Since late 1993, UNEP/GRID, which is coordinating the establishment of an environment information system in the Asia and Pacific region, opted to coordinate with the Mekong GIS and support its activities.

Since 1994, the MRC Secretariat has continued its efforts to upgrade and integrate both the Mekong GIS and the water related statistical databases to assess and monitor the environment and manage the water and related resources. In order to investigate the effects of changes of the basin's physical environment and activities on the water resources and its quality, an

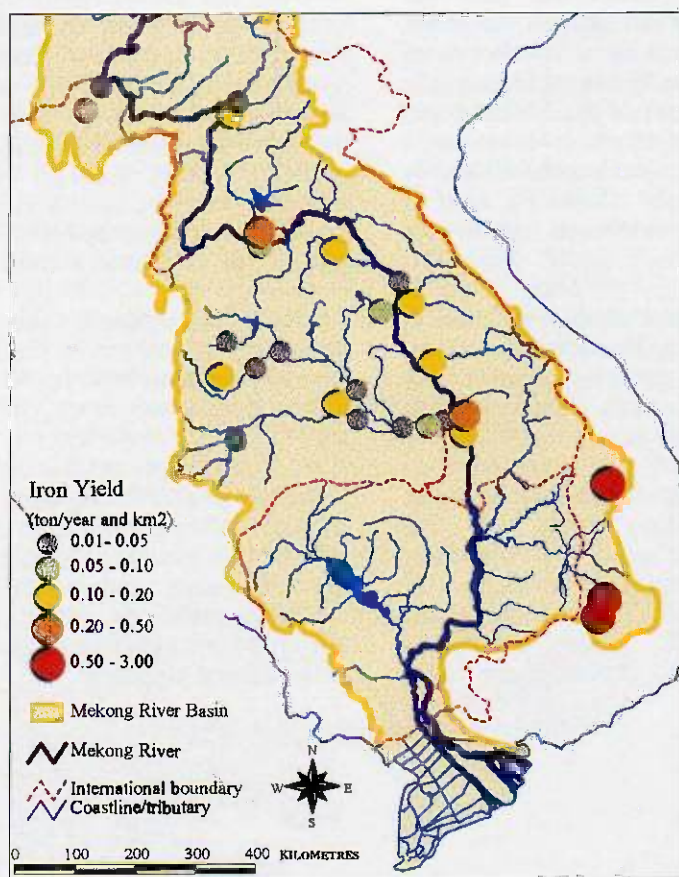
integrated database using sub-basins as primary units is being established.

Data on the physical characteristics of the sub-basins will be linked to water related statistical databases to create indicator values for all sub-basins.

The previously digitized spatial data, containing baseline information, are useful for this present application.

The goal of the Mekong GIS is to allow resource allocation and environment decisions affecting the lower Mekong basin to be based on up-to-date and accurate information and increase the capacity of government organizations to make informed decisions regarding sustainable development.

Although many data were digitized, there still remain some gaps within certain areas and/or layers. These gaps need to be filled by collecting new data and digitizing these in order to have a complete layer covering the entire lower Mekong basin.



*Investigating some chemical characteristics of the Mekong River and its main tributaries, a GIS application*

Dynamic data need to be updated at a regular intervals. Therefore, the Mekong GIS project will continue to update and gather additional small-scale data up to 1:250,000 and strengthen the existing centres' capacities to generate data for GIS analysis for policy-making.

The MRC Secretariat will soon participate in the recently-established Greater Mekong Sub-Regional Environmental Monitoring and Information System Project funded by the ADB.



## UPDATING OF THE HYDROGRAPHIC ATLAS: Nearing completion

The Finnish-funded project for *Updating of the Hydrographic Atlas* has experienced steady progress since 1987. The previous components have seen successful implementation and training has been provided throughout the project. Today the atlas is completed for the Lao PDR and Thailand from the Golden Triangle in the north, the border between the Lao PDR, Thailand and Myanmar, to the Laotian-Cambodian border.

In Viet Nam, all hydrographic data are available and in 1995 some 80 km of river stretches, which substantially had changed since the floods of 1991/92, were re-surveyed. The hydrographic surveys in the coastal zones and estuaries of the Mekong and Bassac Rivers provide useful information for maritime navigation purposes and the project on the *Feasibility Study for the Improvement of the Access Channel to the Bassac River* will make extensive use of the available data.

In Cambodia, the project started with aerial photography with joint funding, but ground control, aerial triangulation, topo mapping and field verification are actually proceeding under Finnish funding.

Three components (final phases), in total estimated at US\$1.9 million, remain for the completion of the hydrographic atlas: (i) *Cambodia*: Prek Kdam on the Tonle Sap and Kampong Cham on the Mekong, downwards to the Cambodian-Vietnamese border: ground control network, hydrographic charts, and printed copies of the topo-

hydrographic atlas; (ii) *Viet Nam*: from the Cambodian border to the sea: aerial photography, stereo-plotted topographic maps, and printed copies of the topo-hydrographic atlas; and (iii) *Cambodia* from Kampong Cham upwards to the Laotian border plus Prek Kdam, upstream to the Great Lake: ground control network, hydrographic charts, stereo-plotted topographic maps and printed copies of the topo-hydrographic atlas.

The Government of Finland has shown its interest by funding these phases. Sufficient skills have been built up during previous phases to guarantee sustainability, consisting of a professional capability of continued hydrographic surveys of river stretches which are suffering from rapid morphologic changes (sandy areas). The national counterpart organizations are properly equipped and have set up sufficiently strong institutions to independently carry out similar continued activities.

If combined, the remaining components mentioned above can be finalized in 20 months, whilst completion activities in Viet Nam would not take longer than 14 months.

It is expected that substantial use will be made from the printed atlas, from which the blueprints are already existing in the Lao PDR and Thailand. They will help in planning work, provide useful information for navigation and constitute a basis for further border-negotiations, navigation agreements and the set-up of an aids-to-navigation system according to international standards.



*FINNIDA survey vessel in the Mekong Delta, Viet Nam*



## ASSESSMENT OF WATER RESOURCES FOR HYDROPOWER DEVELOPMENT IN CAMBODIA: An Inventory of Promising Hydropower Projects

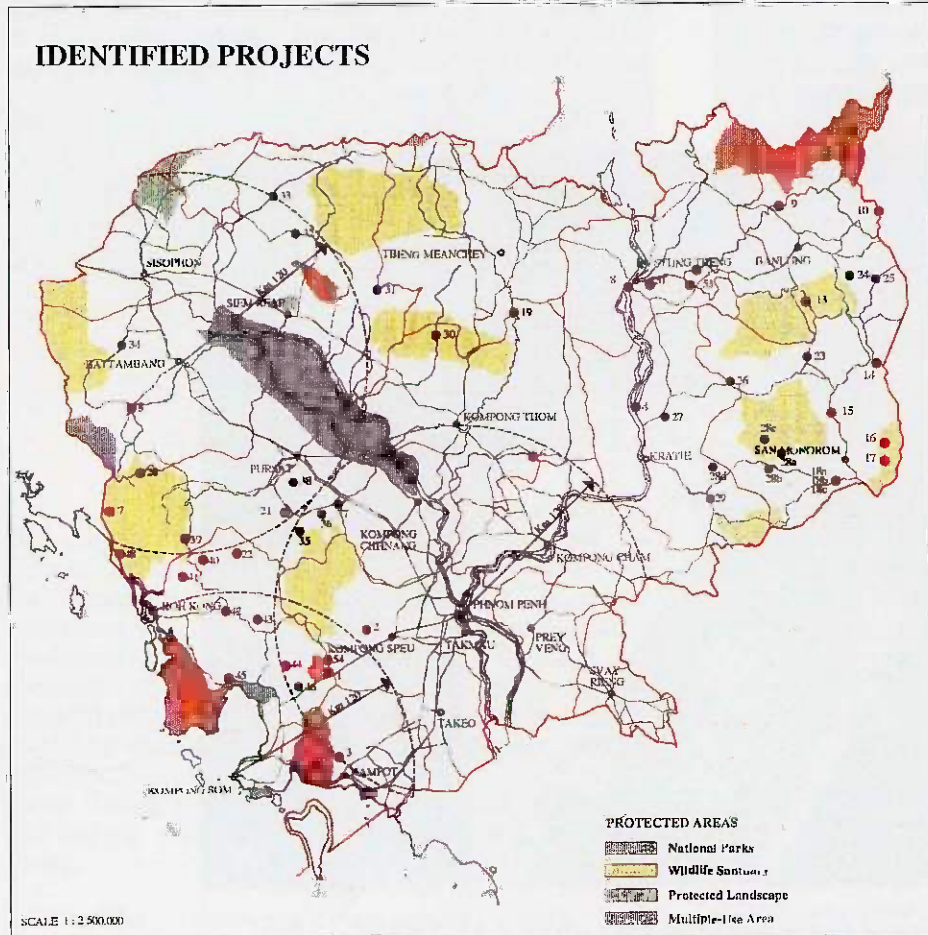
*The Review and Assessment of Water Resources for Hydropower and Identification of Priority Areas Study* was financed by the Government of Austria with the Department of Energy, Ministry of Industry, Mines and Energy as the National Implementing Agency and the MRC Secretariat as the Executing Agency. The Final Report was issued in June 1995.

The study aimed to: (i) update the previous inventory of promising hydropower projects made in the seventies, based on the latest data and information available and taking into account the socio-environmental impacts; (ii) identify priority areas for electrification; (iii) formulate short and medium-term hydropower development plans to meet the power demand of the priority areas; and (iv) make recommendations on further actions required for hydropower development in Cambodia including data collection, investigations and studies. The updating of the project inventory involves the preliminary project evaluation and screening of 65 hydropower projects and 18 multipurpose water resources projects. In order to identify the priority areas, the power demand study was carried out at the provincial level. During the course of the study, three workshops were organised to discuss and consult with the Cambodian

authorities on the draft Inception Report, methodologies and criteria for project screening and ranking, and draft Final Report.

The findings of the study could be summarized as follows: the economic hydropower potential of the Mekong mainstream amounted to 1,400MW/4,300MW depending on the development alternatives of the Sambor project. That of the Mekong tributaries and other rivers outside the Mekong Basin is estimated at 3,900MW. All recommended projects for short and medium-term development are located either in the Cardamom mountain range separating the western coastal area from the Mekong Basin or on rivers flowing into the Great Lake in the western part of the country: Stung Mnam (90MW), Stung Atay (110MW), Kamchay (130MW), Battambang No. 2 (36MW), West Kirirom (13MW), Stung Pipot No. 2 (25MW) and Botor Project (28MW). Except for the Kamchay and Battambang projects, other proposed projects for short and medium-term development are studied at only the preliminary level. Thus, the most urgent action common to all these projects to be undertaken at an earlier stage would be the hydrologic measurements, as most rivers have limited hydrologic data for project study at the pre-investment level.

### IDENTIFIED PROJECTS



### HYDROPOWER AND MULTIPURPOSE PROJECTS

No.	NAME
1	KIRIROM
2	PREK THNOT
3	KAMCHAY
4	SAMBOR 1984
5	BATTAMBANG 1
6	STUNG CHINIT
7	STUNG MNAM
8	STUNG TRENG
9	LOWER SE SAN 3
10	UPPER SE SAN 4
11	PREK LIANG
12	PREK LIANG 2
13	LOWER SRE POK 3
14	UPPER SRE POK 5
15	PREK KWEI
16	PREK TOR
17	O PHLA
18	UPPER PREK TE (3 PROJ.)
19	STUNG SEN
20	BATTAMBANG 2
21	STUNG PURSAT 1
22	STUNG PURSAT 2
23	STUNG ATAY
24	MID-ST. RUSSEI CHRUM
25	LOW-ST. RUSSEI CHRUM
26	STUNG TATAY ALTERN. 2
27	ST. CHHAY ARENG ALTERN. 2
28	WESTERN KIRIROM PLATEAU
29	STUNG PIHOT ALTERN. 2
30	BOKOR PLATEAU
31	STUNG MNAM 1
32	LOWER SE SAN 1
33	LSSE SAN 2 + LSSE POK 2
34	KIRIROM EXTENSION

### IRRIGATION PROJECTS WITH HYDROPOWER AS SECONDARY PURPOSE

No.	NAME
23	PREK CHBAR
24	PREK SANTAI
25	PREK DRANG
26	PREK KRIENG
27	PREK KAMPE
28a	LOWER PREK TE 2 + No. 1 (DIVERS. WEIR)
28b	LOWER PREK TE 3
28c	LOWER PREK TE 4
28d	LOWER PREK TE 5
29	PREK CHLONG
30	STUNG STAUING
31	STUNG CHICKRENG
32	STUNG TANAT 1
33	STUNG SREN 1
34	STUNG SREN PROJ. (DIVERS. WEIR)
35	STUNG MONKOL BOREY 1
36	STUNG PURSAT 3
37	STUNG PURSAT 4
38	STUNG PURSAT 5
39	PREK KOMPONG LEU



## AERIAL PHOTOGRAPHY FOR RESOURCES MAPPING IN CAMBODIA: Important Inputs for Various Studies and Development Projects

The MRC Secretariat began the Aerial Photography for Resources Mapping in Cambodia Project in early 1992 with US\$1.2 million made available by Belgium, the European Commission and Finland. During 1992-93, the project flew over about 73 per cent of the country. In 1994, UNDP, Belgium and Finland provided an additional US\$464,000 to photograph the other parts of the country which are mainly forested areas in the south-western and eastern parts of Cambodia. The last remaining strips were flown during the 1995-96 flying season.

The effort of the MRC Secretariat to fund aerial photography has been one important contribution to the development of Cambodia. The aerial photography product at the scale of 1:25,000 has been a rapid means to provide detailed and up-to-date data on the physical environment. The first set of aerial photographs, completed in March 1992, was of priority importance for the land allocation programme of the UNHCR and for the demining teams of the UNAMIC. The Land Use Mapping Office of the Ministry of Agriculture has been using them for mapping land use and infrastructure, delineating villages and counting households. The data have served as important inputs for various studies and development projects in Cambodia, such as the UNESCO Zonal Environmental Management Plan for the Angkor archaeological park. The subsequent aerial photographic prints produced under the project have been used for various purposes, e.g., for the rehabilitation of irrigation systems and the mapping of

inundated forests at the Tonle Sap by UNDP and for soil mapping of part of Kompong Speu province by OXFAM at the Ministry of Agriculture. IGN was using diapositives produced from these aerial photographs to prepare topographic maps of the Siem Reap area. The aerial photographs from the last flying season were useful for extracting information for a feasibility study of the Kamchay hydroelectricity project in the south-western part of Cambodia. Another important use for improving the utilization of the country's natural resources is the multi-stage analysis of the aerial photographs with low resolution satellite imageries. This was done in the mapping of Cambodia's land cover for FAO/UNDP and now for the forest cover mapping of the Mekong basin's part in cooperation with GTZ. The latest aerial photographs will be used by FAO/UNDP to prepare forest inventories in the eastern and south-western parts of Cambodia.

The Remote Sensing and Mapping Unit of the MRC Secretariat has assisted the Cambodia National Mekong Committee in archiving the photographic prints for easy access and distribution to users. Fast and effective delivery of photographic products, i.e., contact prints and diapositives made from the original negatives, is another important activity now under consideration by the MRC Secretariat. To meet the demands of a growing number of users, a dark-room with adequate equipment and capable technicians to maintain and archive the aerial photography originals needs to be established in Phnom Penh.



*Aerial view of Kratie on the Mekong River, 1:25,000 scale*



## UPGRADING OF THE FERRY FACILITIES IN CAMBODIA: Strengthening the Transport Infrastructure for Rehabilitation

Cambodia, a war-stricken country for over 16 years, has an urgent need for rehabilitation of its transport infrastructure. From its road network, the ferries, together with the bridges, are the most vulnerable components, but ferries need careful maintenance and continuous training of staff.

The whole ferry system in the country was outdated, lacking basic spare parts, and was no longer responding to the need for a rapid development of the transport infrastructure, following the economic recovery after UNTAC's peace process (1991-92). Four strategic and economically important ferry sites in the country were identified as priorities for rehabilitation and upgrading: Neak Lueng, Kampong Cham, Prek Kdam and Stung Treng. Various appraisal, identification and formulation missions from Denmark were fielded and resulted in the funding of a US\$18.6 million project for the *Upgrading of the Ferry Facilities in Cambodia*. Project outputs and objectives are: the building of two new 120 tonne capacity ferries, the full rehabilitation of the three biggest existing ferries (Peace 2, Friendship 27 and Friendship 28), the rehabilitation of the ferry ramps at Neak Lueng and Kampong Cham, containerized workshop facilities at important ferry crossings, construction of a slipway at the Neak Lueng left bank and training of ferry staff.



*The Ferry Peace 2 at Neak Lueng*

In addition to the original project objectives and outputs, optional work has been planned for further extension, subject to conditions to be met by the Cambodian National Counterpart regarding infrastructure priorities and rehabilitation commitments. Such optional work includes the building of the third and fourth new ferries, rehabilitation and repair of the landing ramps, including bank protections and scour protections, the rehabilitation of marshalling areas at Prek Kdam and Stung Treng, and provision of workshop equipment and supply of materials and spare parts at Stung Treng.

The financing agreement with the Government of Denmark was signed in May 1995 and

subsequent contracts and agreements followed for the provision of consultancy services for supervision on the construction of landing ramps, slipway, or shipbuilding and ferry rehabilitation. The two new ferries will be built in Cambodia and an important training component of the project is the transfer of technology and know-how. The Mechanical Factory No. 1 has been assigned as the counterpart for the ferry rehabilitation. The first new ferry is expected to be operational at the end of 1996 and this will be the very first 120 tonne river ferry ever built in Cambodia. In the meantime, work on ramps, landings and slipways are proceeding according to plan.



*Steel sheet pile cofferdam under construction at Neak Lueng (right bank)*

All landings will be extended under water by constructing a cofferdam in steel sheet piles, whilst the landings will be fitted with movable jetties as junctions between the ship and shore, which easily can be lowered or pulled up by a diesel generated hydraulic system.

Rehabilitation of the existing ferries can only start after completion of the first new ferry. In the meantime, the Government of Denmark has made sufficient funds available to allow for urgent repair and procurement of spare parts in order to keep the old ferries operational, awaiting their full rehabilitation. The project activities are spread over three years, when additional work is *not* included, but if so, four or five years will be needed. The upgrading of the ferry facilities project is actually the biggest infrastructure project under execution by the MRC Secretariat.





*Unprotected and eroded river bank at Tha Watmuangwa*

The Mekong River's gradient is relatively slight in the lower part (starting from the Golden Triangle, the border between the Lao PDR, Thailand and Myanmar), and its winding course results in a natural instability of alternating sequences of erosion and sedimentation. There is a remarkable difference between the water levels during the rainy season and dry season. Severe floods have caused progressive erosion and extensive damage to valuable assets and infrastructure. Such damage in densely populated areas is unacceptable and can only be avoided by the construction of efficient and sustainable bank protections. The main concern is the cost (approximately US\$1,350 per linear metre "construction" cost) since often the cost of the protection work is much higher than the value of the assets which are to be protected.

The MRC Secretariat identified and formulated the project in 1988 and obtained bilateral support from the Government of Australia for bank protection construction along the Vientiane Plain and Vientiane Municipality area. The project started in 1989 with the construction of the first 250 metre bank protection at Tha Deua, some 15 km downstream of Vientiane. Since then, the project has gradually unfolded and developed in various stages and has actually become a challenging exercise for the local construction of bank protections at various critical locations in the Mekong region. Having first developed its activities in the Vientiane Plain where various densely populated areas and living quarters were seriously threatened by rapidly progressing erosion, the construction has been carried out by expertise built up from continuous on-the-job training. With the participation of the Civil Engineering School of the Asian Institute of Technology (AIT), a low cost bank protection design has been modelled, developed and constructed at Tha Deua (Phases I and II in 1990 and 1992, respectively) followed by a slightly amended version at Wattay (1995) and later at Tha Watmuangwa (1996).

The Government of Australia has funded all previous components (as well as port construction alongside the upper Mekong River banks in the Lao PDR) and continues to show interest in funding this activity for some more critically affected sites at Wat Sop and Sithan Neua in the Vientiane Municipality area. The cost per linear metre of bank protection amounts to barely half of similar bank protections at different places in other countries alongside the Mekong River. Extensive use of local materials and limited import of construction materials manufactured abroad such as geo-textiles, gabions and reno-mattresses, are some of the reasons for success. Construction supervision consultancy services, which are secured by the Vientiane Municipality staff who have gradually built up sufficient skills during the implementation of previous stages, is known to be the main reason. Design and preparation of tender documents, under close supervision and technical assistance from the MRC Secretariat's RWT-Unit, is done locally and only local contractors are invited for bidding. Informative meetings are, therefore, held with the invited bidders/contractors prior to submitting their tenders in order to clarify and guide them in the administrative procedures and conditions which are to be met with international tendering. Training is an important activity of the project. It is the ultimate intention to "export" the Laotian skills to other riparian countries to train national counterpart staff in design and construction supervision of similar low-cost bank protections. Cambodia and Viet Nam have identified critical areas along the Mekong River where bank protections are urgently needed to protect valuable assets and important infrastructure. During each construction phase and as a training component, the project calls for the full technical preparation of the next construction phase, starting from surveys (topographic and bathymetrics), soil investigations, preparation of the design, calculation of the BOQ with cost estimates and, finally, preparation of tender documents. Furthermore, each component comprises training in computer skills (e.g., for the stability checking of slopes by computer software), English language, construction supervision and a two-day seminar on a technical topic (e.g., use of laboratory and *in situ* tests for soil investigations when designing low-cost bank protections) with study tours in neighbouring countries.



*Wattay bank protection under construction*



## IMPROVED LAND AND WATER USE IN NORTHERN THAILAND: An Integrated Approach to Land Use and Water Resources Planning

A small sub-basin of the lower Mekong basin in northern Thailand is formed by tributaries of the Mekong River, the Nam Kok and Nam Ing Rivers. Availability of water in the tributaries limits agricultural activity in this sub-basin, especially in the dry season.

A primary bottleneck identified during the field recognition survey is water shortage in the dry season, although in the rainy season the high water level of the Mekong River often diffuses drainage on the lower land of this sub-basin. Therefore, a large extent of cultivated land in the area is used for growing wet season rice as a subsistence crop. Moreover, the paddy yield remains at rather low levels and is vulnerable to both inundation and dry spells. This situation hinders the exploitation of the potential crop production of this sub-basin and improved farming methods, including crop diversification which has gained little confidence from farmers.

Since April 1993 the project has been funded by the Government of Denmark to formulate recommendations on sustainable agricultural development of the area, based on problems and constraints in land and water use identified by participating parties. It has involved various government agencies, universities, NGOs and private organizations, and covers the provinces of Chiang Rai, Phayao and part of Chiang Mai (Mae Ai and Fang districts).

The project coordinating committee identified four subjects (water resources management, irrigation systems, marketing and farming systems) as constraining factors. Four working groups were established and held several meetings in order to elaborate on the current situation and problems concerning these topics. To provide guidelines for the study of each working group and to integrate observations and recommendations on the four subjects, two workshops were held with participation of government agencies concerned and resource persons.

A series of reports were produced which recommended measures and steps for sustainable development of the region, as well as described the current situation in light of risks in developing the area, based on a field survey and analysis of collected data and information.

At the conclusion of the field activity taken by the working groups, the final project coordinating committee was held at the Bangkok Office of the Department of Agricultural Extension in November 1995 with the participation of the key agencies concerned with land and water use in the area. The committee members agreed in principle on a draft project proposal on cooperation among agencies concerned and farmers' participation. This was one of the most valuable recommendations of the project.

The two-year project provided basic ideas to the sector review on irrigated agriculture. This is a basinwide activity which is in line with the new Agreement on Mekong Cooperation and the Basin Development Plan. The project plans to disseminate its outputs to draw attention to the government agencies concerned with land and water use in northern Thailand for further action on water resources management, irrigation systems, marketing and farming systems.



*Some of the outputs of the project to improve the use of land and water in northern Thailand*



## FEASIBILITY STUDY OF YA-SOUP MULTIPURPOSE PROJECT: Aiming to Increase Agricultural Production in the Central Highlands

The *Ya-Soup Multipurpose Project* aims to improve the living standard of the residents by constructing basic infrastructure such as a reservoir, microhydropower plant, educational facilities, rural transport and social services which help to increase the agricultural production and improve the quality of life of the rural community in the project area.

The project site is located in Dac Lac province (Central Highlands of Viet Nam) which is one of the poorest rural areas in Viet Nam in spite of its great potential for agricultural development because of its plentiful water resources, favourable soils and a good climate for rice cultivation. The province has a food shortage of 60,000 tonnes of rice annually and the people in the project area experience very poor living conditions. Although this area has the highest percentage of poverty in Viet Nam, it has received a minimal amount of foreign aid. The project will be one of the pioneering projects in the rural area to demonstrate efficient and effective ways to improve the residents' living standard.

The Prefeasibility Study of the project was completed in February 1995 with financial support of US\$ 400,000 from the Republic of Korea. Agreement on the second phase, the Feasibility Study of the project, was signed in July 1995 by the Government of the Republic of Korea.



On 7 July 1995 H.E. Dr Chung Tae Dong (left), Ambassador, Embassy of the Republic of Korea, Bangkok, signed with Dr Le Van Minh, the then Officer-in-Charge of the MRC Secretariat, an agreement providing US\$800,000 for Phase II of the Ya-Soup project.

The Feasibility Study will determine the viability of a multipurpose project covering an area of 8,210 ha in the Ya-Soup River basin and strengthen the technical capability of the counterpart staff for conducting comparable feasibility studies in future. The study will produce a plan for water resources development, a plan of agricultural development and a rural development plan.



*Secondary canal of the Ya-Soup Multipurpose project*

It is being implemented over 18 months and executed by the MRC Secretariat. The consultants were mobilized to the project area in December 1995 and will complete the Feasibility Study in December 1996. The Inception Report will be reviewed by the Steering Committee in March 1996 in Hanoi, Viet Nam. Two training programmes are scheduled in May and November 1996 for strengthening the national counterparts in addition to on-the-job-training.

The project, once implemented, will improve the living standard of 30,000 people not only by increasing farm income from higher agricultural production, but also by constructing rural infrastructure including a hydropower plant, rural roads, drinking water supplies, educational facilities and strengthened agricultural extension services. The counterpart agencies' capability in project formulation and implementation will be strengthened.



## MEKONG HUMAN RESOURCES DEVELOPMENT: Capacity-Building into the 21st Century

The most important human resources development (HRD) event during 1995 was the adoption of the *Human Resources Development Strategy for Sustainable Development of Water Resources in the Lower Mekong Basin* at the Regional Expert Group Meeting on Mekong HRD Strategy at Bangkok on 26-29 April 1995. The adopted strategy earmarked a milestone for the Mekong River Commission (MRC) to move from *ad hoc* HRD activities into a goal-oriented and integrated HRD process. It ensures that the MRC Secretariat will formulate and implement priority and long-term HRD programmes/projects to attain its sustainable HRD goals. Based on this strategy, a comprehensive HRD Programme of the MRC has also been formulated, and is included in the *Mekong Work Programme*. The proposed programme consisting of three components: capacity-building, institution-building and institutionalization of gender concerns, is to strengthen the HRD base and improve the quality of decision-making, sectoral and programme efficiency and managerial performance in the planning and implementation of water resources programmes and projects carried out under the mandate of the MRC.

Under the new HRD strategy and programme, the HRD and training activities of the Secretariat continued to progress steadily during 1995. Throughout the year, the 108 HRD activities included formally structured courses, on-the-job training, workshops, seminars and study tours. Out of these, 37 activities (accounting for 34%) were national, 32 (30%) were basinwide, and the other 39 (36%) were regional or international opportunities. The Riparian-on-Stipend and Project Fellow Programmes, where riparian staff are attached to the MRC Secretariat to work for particular project(s) under direct supervision of the Unit Chiefs or Senior Project Officers, continued. The Master's Degree Programme produced three graduates from Canada on international water law, and an additional six riparian staff were admitted or recommended to study at the Asian Institute of Technology (AIT) on the environment and water resources development. The

main focus of HRD activities during 1995 was on the environment, irrigated agriculture, policy/planning/management, technical support and gender-responsive planning in water resources development. Special efforts were made to strengthen the participation of female officials in HRD events.

1995, as in other years, also saw close cooperation from the National Mekong Committees and their line agencies in regard to the organizational and logistical arrangements for training efforts as well as consultation on policy and procedure matters. Such cooperation and consultation facilitate the MRC HRD programme to progress well in line with HRD needs of the riparian countries. During 1995, keen interest and strong support of donor agencies provided important thrust and resources for HRD efforts of the MRC. With continued strong support, the outlook for MRC's HRD future should be very promising, paving the way for the 21st century. By 1999, it is envisaged that the HRD effort of the Mekong River Commission would yield the following outputs:

- A fully operational MRC HRD system with the established HRD focal points in the riparian countries and the River Basin Research and Training Network;
- A sustainable core of component staff properly trained to work for various Mekong programmes; and
- Gender perspectives mainstreamed in water and related resources development planning and programming.

In view of the more positive outlook in the Mekong cooperation in line with the overall accelerated development activities in the lower Mekong basin, capabilities of the MRC as well as the planning and implementing agencies in the member countries with regard to human resources management will be challenged as demands for skilled human resources and counterpart personnel drastically increase. The types of skills required may need to be adjusted from time to time.





## MAJOR HUMAN RESOURCES DEVELOPMENT EFFORTS DURING 1995

### Seminar/Workshop/Meeting

- **Regional Workshop on Mekong Environmental Programme**, Ho Chi Minh City, 16-17 February, for 20 riparians and 7 MRC Secretariat staff
- **Workshop on Fisheries Management in Rural Reservoirs**, Ubon, Thailand, 20-24 February, for 22 riparians and 2 MRC Secretariat staff
- **Regional Expert Group Meeting on HRD Strategies for Water Resources Development in the Lower Mekong Basin**, Bangkok, 26-28 April, for 32 riparians and 8 MRC Secretariat staff
- **Mekong Navigation Strategy Review Workshop**, Vientiane from 7-8 May, and Phnom Penh from 13-14 May, for 50 riparians and 5 MRC Secretariat staff
- **National Workshop on Flood Control Planning in the Mekong Delta of Viet Nam**, Ho Chi Minh City, 8-10 May, for 40 Vietnamese and 5 MRC Secretariat staff
- **2nd Regional Seminar on Fisheries Management and Development Cooperation in the Lower Mekong Basin**, Bangkok, 15-16 August, for 15 riparians and 5 MRC Secretariat staff
- **Technical Meeting on Review and Enlargement of the Document of Water Quality Criteria of the Lower Mekong Basin**, Vientiane, 17-18 August, for 16 riparians and 4 MRC Secretariat staff
- **Workshops on Diagnostic Study of the Mekong River Basin**, Bangkok, 24-25 April and 26-27

September, for 23 riparians and 20 MRC Secretariat staff

- **Workshop on Integrated Water Resources Management**, Vientiane, 10-13 October, for 24 riparians and 6 MRC Secretariat staff
- **Seminar on Watershed Classification and Forest Cover Assessment and Monitoring**, Bangkok, 23-24 November, for 34 riparians and 6 MRC Secretariat staff

### Training/Education

- **Training Course on Strategic Planning and Management**, Bangkok, 21 February-1 March, for 20 riparians and 5 MRC Secretariat staff
- **Training Programme on Mainstreaming Gender Issues in Water Resources Planning**, Bangkok, 1-4 August, for 24 riparians and 8 MRC Secretariat staff
- **Completion of Master's Degree Programme on International Water Law from Canada**, during August, 3 riparians completed their study programme from Calgary University, Canada

### Study Tours

- **Laotian Staff Study Tour to the Philippines**, 19-25 February, for 12 Laotian officials
- **Thai Officials Study Tour to Viet Nam (SIRAP)**, Ha Noi, Ha Bac and Thanh Hoa provinces, 10-15 July, for 24 Thai officials





## ADMINISTRATIVE AND FINANCIAL REVIEW OF 1995

The day-to-day work of the Commission is carried out at Bangkok by the Mekong River Commission Secretariat. As of the end of fiscal year 1995, there were ninety-five (95) staff members from eighteen (18) countries working at the Secretariat, of which nine (9) were fully funded by six donors. The work force consisted of forty-one professional staff members, forty-three general service staff members and eleven full-time Riparians-on-Stipend or Project Fellows from riparian countries. Seventy-seven (77) per cent of the staff members are riparian.

### Programme Income and Expenditures

The actual cash contributions for programme activities received during 1995 amounted to US\$8,084,000. These contributions given on a grant basis to the Commission by cooperating countries and agencies were allocated to support its 1995 development programme. Belgium, Denmark, Israel, Japan, the Republic of Korea, Sweden and Switzerland as well as UNDP contributed toward institutional support.

The organization continued to operate on a fully-funded basis whereby all project commitments are covered by firm support given by the governments of cooperating countries and agencies. After the *Agreement on the Mekong Cooperation* was signed on 5 April 1995, several projects which had been on hold were reactivated. Consequently, project implementation picked up in the latter part of the year. Sizable funds were received from donor countries such as Denmark. However, contributions from UN agencies were reduced drastically in the year. An additional in-kind contribution was received from the Government of Israel which provided an irrigation engineer since September 1995. Annex III shows both the actual cash and in-kind contributions for programme activities received by the MRC Secretariat during the years 1991-95.

Programme expenditures for 1995 totalled US\$7,830,000. This amount reflects actual disbursements made by the MRC Secretariat. These funds were used for the procurement of goods and services in support of the Commission's programme.

	Programme Cash received Total (US\$)	Programme Expenditures Total (US\$)
1991	7,587,000	9,204,000
1992	11,075,000	10,043,000
1993	9,839,000	9,952,000
1994	8,891,000	7,513,000
1995	8,084,000	7,830,000
Total	45,476,000	44,542,000

### Secretariat Income and Expenditures

In addition to cash contributions which funded programme activities, the Secretariat has also generated income for the actual operations of the Commission. The primary income sources include support cost revenue derived from project execution, member countries' annual contributions, treasury management, and other income related to project services.

Administrative expenditures for the Secretariat during 1995 amounted to US\$1,802,000 compared with US\$1,608,000 in 1994. The primary components of these expenditures included costs related to staff, premises, supplies, equipment and travel. The slight increase was due to modernization of office equipment, e.g., computers and telephone system, as well as an annual increase of staff members' salaries and benefits. In addition, significant expenditures were incurred under a new budget component - Meetings of the Joint Committee and the Council. Nevertheless, the Secretariat strives to keep administrative costs down to a minimum in order to maximize resources for the organization's financial independence.

Owing to sizable gains from foreign currency exchanges and revaluations, coupled with an effective control on operating expenses, a surplus of US\$707,000 resulted from the 1995 operations. Hence, the balance of the Administrative Reserve Fund (ARF) at the end of 1995 increased by such an amount accordingly, thus providing a solid financial basis for the Mekong River Commission.



*MRC Secretariat staff preparing for the group photo session*





## REQUIREMENTS AND FUTURE PROSPECTS

### Pre-MRC Period

Prior to the establishment of the MRC in April 1995, the Mekong Committee (and the subsequent Interim Mekong Committee) operated on the basis of financial support and technical assistance made available by a large number of donor countries and cooperating agencies, especially ESCAP and UNDP. In monetary terms, such support exceeded well over half a billion US dollars. During the early years of operation (since 1957), the assistance from UNDP, the major promoter and supporter of this organization, was considered *institutional support* in view of the fact that the major portion of its assistance was directed for this

purpose. Assistance from other donors, on the other hand, was for *programme support*, for implementing projects and activities of the Committee. Changes in UNDP policy were observed in the mid-1980s when its assistance was shifted gradually from institutional support to programme support. UNDP, however, continued to provide its assistance by funding two important posts, namely, the Executive Agent and Director of the Division of Finance and Administration at the Mekong Secretariat as well as the process leading to the new Agreement.

### MRC Era (since April 1995)

The Mekong River Commission started its operation in April 1995, following the new mandate and legal framework stipulated in the *Agreement for Cooperation for the Sustainable Development of the Mekong River Basin*. The former Mekong Secretariat was then entrusted to continue to function as the working/technical arm of the MRC. By nature of its organization, the MRC still has to depend on the resources, both for the programme and institutional support, from the donor community. The relationship between the MRC and the donor community, therefore, remains unchanged in this respect although in view of the expanded mandate of the MRC, future support from donors is expected to increase significantly.

Pending the completion of the *Basin Development Plan*, the *Mekong Work Programmes 1994/95 and 1996* had to follow the format and pattern of the annual work programmes of the Mekong Committee in recent years. The programme approach and an emphasis on basinwide or regional projects/activities continue to constitute the major features. For immediate and future years, in addition to projects/programmes in such major sectors as the environment, fisheries, human resources development, hydropower, navigation, etc., more projects in *irrigated agriculture and tourism and activities relating to the core functions* of the MRC need to be upgraded and expanded.

There is a tendency, however, that future assistance from many of the donor countries and agencies will be focusing on programme support; some donors also place emphasis on specific sectors. This implies that the MRC may have to rely heavily on its *internal financial resources* to operate, including funding of all the staff at the MRC Secretariat. To effectively meet the anticipated increase in the requirement of internal funds and under the existing organizational structure, rules and practices, the MRC and its Secretariat will have to be able to deliver the implementation of projects/activities with a total value of not less than *US\$30 million a year*.

To accomplish the above, apart from a tremendous effort by the MRC, continuous cooperation and strong support from the donor community will be essential. To facilitate the processes, a *Donor Consultative Group (DCG)* will be established in early 1996. It is expected that the DCG will serve not only as a mechanism for mobilizing the required increase in financial support from the donors, but also as a means for coordinating their collaborative efforts in providing the necessary assistance to both the MRC and the riparian countries of the Mekong River Basin.





## The Mekong River Basin

Area: 795,000 km<sup>2</sup> (21)  
 Length of mainstream: 4,800 km (12)  
 Average discharge: 15,000 m<sup>3</sup>/s (8)



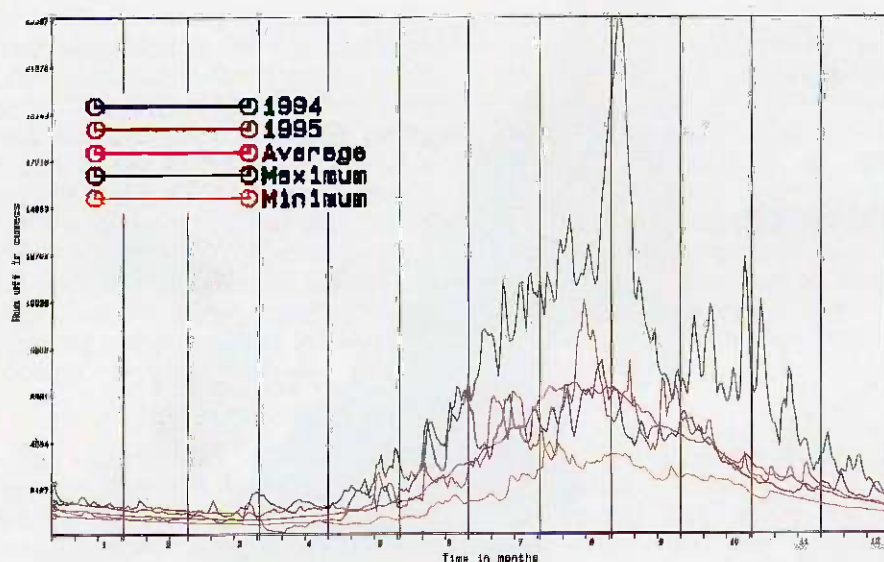


## MAIN CHARACTERISTICS OF THE LOWER MEKONG BASIN

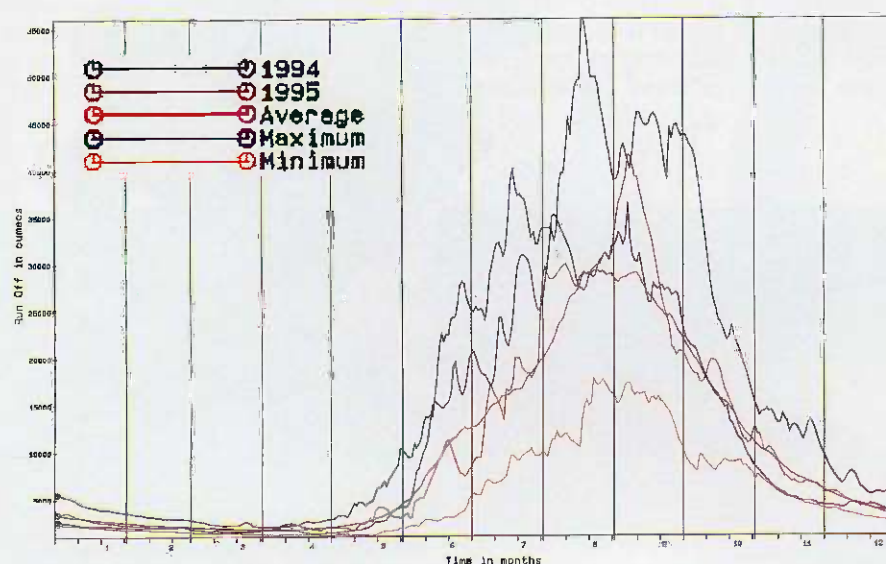
- **Lower Mekong drainage area:** 600,000 km<sup>2</sup>
- (almost the Lao PDR and Cambodia, one-third of Thailand (its north-eastern region and part of its northern region), and one-fifth of Viet Nam (the Central Highlands and the Delta))
- **Two seasons** (separated by short transition periods): rainy season: from mid-May to mid-September or early October and dry season: from mid-October (or early November) to March
- **People living in the Basin** (one-third of the total population) approx. 53 million
- **Number of major cities along the Mekong** (more than 100,000 people) 10
- **Number of water quality monitoring stations** 99
- **Number of monitoring parameters** 20

### Comparison of the Mekong River's Run-off at Two Important Hydrologic Stations:

**Chiang Saen** station (the top of the Lower Mekong Basin, drainage area: 189,000 km<sup>2</sup>) and **Pakse** station (the middle of the Lower Mekong Basin, drainage area: 545,000 km<sup>2</sup>) are shown below. The maximum, minimum and mean annual discharge are based on the long records (1963-93). It is interesting to note that the peak flow at Chiang Saen occurred in 1966 whereas the 1978 flood was the peak flow for Pakse.



*Mekong run-off at Chiang Saen, 1960-95.*



*Mekong run-off at Pakse, 1960-95*



## PROGRESS OF ONGOING PROJECTS IN 1995

Annex II

The time frame, available funds and funding sources for ongoing projects and projects expected to be started in the near future are illustrated by the chart below:

PROJECT & EXTERNAL FUNDING		TIME FRAME								PROGRESS
		1990	1991	1992	1993	1994	1995	1996	1997	
<b>1. POLICY AND PLANNING</b>										
East-West Transport Corridor <sup>a</sup> (ADB/France	\$1,000,000)									Project Steering Committee met twice in 1995 to consider programme of work and 13 options identified by Consultant for 3 corridors. On-the-job training was conducted.
Strategic HRD planning (UNDP	\$50,000)									Workshops, riparians-on-stipend programme and other activities ongoing.
Preparation of the Mekong River basin development plan (Sweden	\$250,000)									Sub-Committee on BDP met twice in 1995 to consider 10 technical papers. The first draft framework for Phase 2 was proposed.
Preparation of MRC Rules for water utilization and inter-basin diversion (Japan	\$200,000)									Sub-Committee was established and held its 1st meeting in Oct. 1995. Detailed TOR was established. A new project proposal was endorsed and initial work started.
<b>2. ENVIRONMENT &amp; MONITORING</b>										
Groundwater investigation programme (Sweden	\$525,000)									Monitoring of groundwater wells and collecting groundwater data in riparian countries.
Flood forecasting (Denmark	\$245,000)									Provision of accurate real-time basinwide forecasts and warning to riparian countries.
Salinity forecasting in the delta, Stage III (Viet Nam) (	\$460,000)									Activities incl. training, data collection, salinity modelling, analysis of salinity intrusion and distr. of flow in the Delta.
Improvement of the hydrometeorological network (incl. Cambodia) (Core activity, Japan	\$608,000)									Rehabilitation and new installation of hydro. stations. Training of personnel on data collection and processing.
Improvement of Documentation Centre (UNDP	\$34,200)									Improvements ongoing.
Geographic Information System (ADB	\$600,000)									Development of data sets using remote sensing techniques and linkages of GIS database with water resources databases.
(Switzerland	\$345,000)									
(UNEP/GRID	\$463,000)									



PROJECT & EXTERNAL FUNDING		TIME FRAME								PROGRESS
		1990	1991	1992	1993	1994	1995	1996	1997	
Aerial photography for resources mapping (Cambodia)										More than 80% of Cambodia has been covered.
(Belgium	\$619,000)									
(EC	\$438,000)									
(Finland	\$432,000)									
(UNDP	\$250,000)									Measurement campaign in dry season of 1995 completed. Database system analysis and soil management.
Management of acid sulphate soils (Viet Nam)										
(Sweden	\$585,000)									
Management of wetlands in the lower Mekong basin (Sweden										
	\$635,000)									Wetlands mapping classification and wetlands database.
Diagnostic study (UNEP										
	\$203,000)									
Water quality monitoring network in the lower Mekong basin, Phase II (Sweden										
	\$2,600,000)									Organized 3 technical meetings. Preparation of a draft final report.
(UNEP	\$177,000)									
Integration of environmental components (Sweden										
	\$1,575,000)									
Control of soil erosion, sedimentation and flash flood hazards (Sweden										Training in water quality, data evaluation and review workshop on water quality criteria.
	\$675,000)									
<b>3. RESOURCES DEVELOPMENT</b>										
Pilot microhydropower projects (Japan										
	\$608,000)									Databases developed. Environmental assessment carried out.
Mekong Integrated trans. system study (Japan										
	\$687,000)									
Rural electrification (Japan										
	\$120,000)									Soil erosion risk map produced.
Development plan for Tonle Sap (basinwide) (France: Phase I										
(UNDP: Phase II	\$988,000)									



PROJECT & EXTERNAL FUNDING		TIME FRAME								PROGRESS
		1990	1991	1992	1993	1994	1995	1996	1997	
Action plan Sre Pok basin, Phase III (Viet Nam) (Denmark \$1,710,000)										Phase III started in April 1995 and will be completed in Jan. 1997.
Irrigation rehabilitation Cambodia, Phase II (UNDP \$2,299,270)										Phase I completed; Phase II awaits funding.
Sustainable Irrigated Agriculture (Netherlands \$6,667,000)										Draft Final Report in March 1996. Final Report at the end of May 1996.
Improved land and water use (Thailand) (Denmark \$376,000)										Reports completed. A workshop to be organized later in 1996
Ya-Soup, Phase II (Viet Nam) (Rep. of Korea \$800,000)										Prefeasibility study completed and feasibility study is being implemented.
Forestry, Long Xuyen quadrangle (Viet Nam) (Australia \$1,235,000)										Management handed over to Vietnamese counterpart institution.
Watershed classification (Switzerland \$750,000)										Two thirds of lower Mekong basin classified, project extension until June 1996.
Forest cover assessment (Germany, approx. \$2,100,000)										Forest cover assess. largely completed; project extension until October 1998.
Sustainable management of resources (Germany, approx. \$1,750,000)										Implementing arrangements finalized; commencement of projects in December 1995.
Reservoir fisheries (Viet Nam, Laos & Thailand) (Denmark \$3,491,000)										Implementing arrangements just started since August 1995.
Freshwater capture fisheries (Cambodia) (Denmark \$2,269,000)										Collection of data for stock assess. & socio-economics at area around Great Lake and will expand to Mekong flood plain.
River ports in Laos (Australia \$659,000)										Five ports constructed. Last port was Pak Lay. Ban Vang port awaiting funding.
Ferry facilities (Cambodia) (Denmark \$18,600,000)										Neak Leung ferry crossings under construction. Two new ferries under construction, 3 old ferries will be rehabilitated.
Updating of the hydrographic atlas (Finland \$4,700,000) (for Cambodia \$433,000)										Topographic mapping completed & field work verification ongoing.
Bassac entrance (Belgium \$1,772,000)										Feasibility study tendered & contract award awaited. Rainy season campaign will start.



PROJECT & EXTERNAL FUNDING		TIME FRAME								PROGRESS
		1990	1991	1992	1993	1994	1995	1996	1997	
Environmental training fund (Sweden)	\$320,000									Riparians trained in the region and abroad. Study tours arranged.
Water resources training programme (Australia (New Zealand)	\$1,472,000 \$28,000)									Postgraduate study programme completed.
Human resources development for riparians (Australia (Sweden (Switzerland)	\$859,000 \$175,000 \$859,000)									Riparian officials participating in technical/ management training/workshops/seminars (ongoing).
Training on legal aspects of international cooperation for water resources development (Japan)	\$199,000									Programme being developed; training conducted in Oct.-Nov. 1996.
Integrated land and water use for sustainable agric. dev. in the lower Mekong basin (Denmark)	\$220,000									To establish an effective programme for sustainable agricultural development.
<b>4. PROGRAMME SUPPORT</b>										
Support for Mekong programme (UNDP)	2,815,000									Arrangements for the new framework and other activities progressing.
Australian Consultancy Fund	\$490,000									Funds used for various studies and training.
Swedish Consultancy Fund	\$887,000									Funds allocated for several studies and training activities.
UK Consultancy Fund	\$37,000									Funds allocated for studies.
Danish Consultancy Fund	\$441,000									Funds allocated for studies.
French Contributions	\$775,000									Funds to be allocated for studies and training activities.

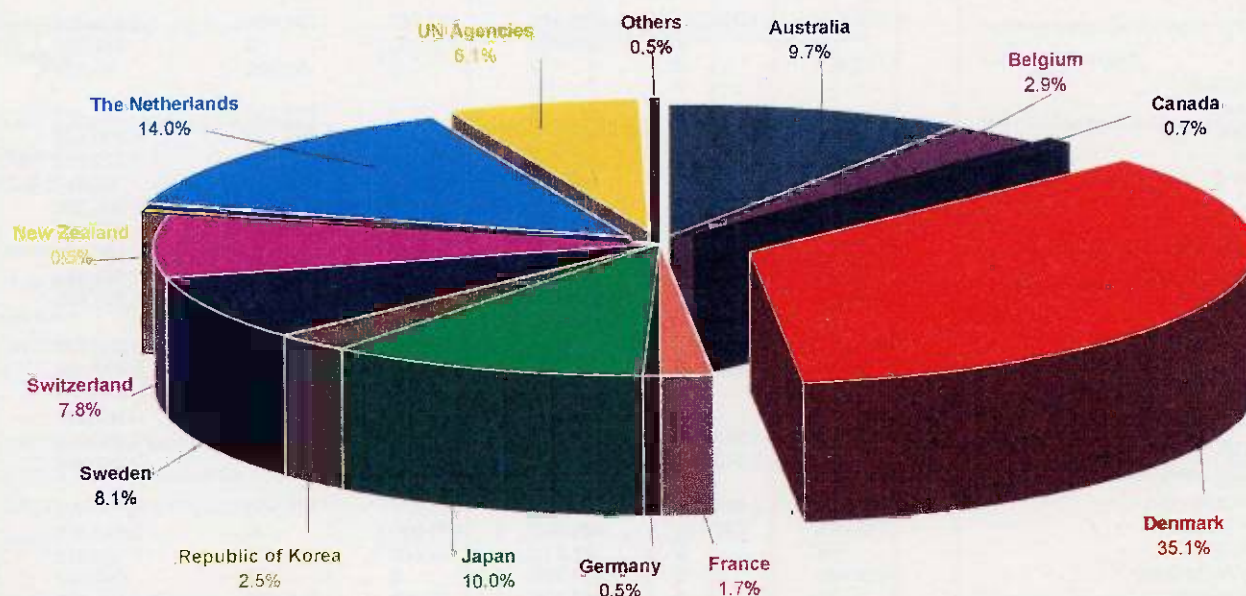


(AMOUNTS IN U.S. DOLLARS)

DONORS	1991	1992	1993	1994	1995	TOTAL
<b>A) CASH CONTRIBUTIONS:</b>						
Australia	915,898	1,342,167	596,676	435,982	784,025	4,074,748
Austria	0	0	200,000	219,000	0	419,000
Canada	43,976	0	0	0	52,632	96,608
European Union:						
Belgium	0	407,617	0	0	235,830	643,447
Denmark	130,000	455,356	1,102,519	1,247,796	2,834,470	5,770,141
France	247,674	458,710	303,555	181,836	137,238	1,329,014
Germany	(24,957)	0	30,439	27,164	42,373	75,018
Italy	0	500,000	0	0	0	500,000
Netherlands	1,225,944	738,194	2,173,378	1,576,911	1,128,700	6,843,127
United Kingdom	1,199	0	0	37,300	0	38,499
Commission of EU	139,214	899,819	348,781	164,000	0	1,551,814
Sub-total EU	1,719,074	3,459,695	3,958,673	3,235,007	4,378,611	16,751,060
Finland	1,572,952	1,139,083	689,509	627,233	0	4,028,777
Japan	200,000	236,000	382,000	857,000	807,000	2,482,000
Republic of Korea	0	0	275,000	175,000	200,000	650,000
New Zealand	34,851	0	42,728	47,850	38,868	164,298
Sweden	1,280,120	1,948,443	1,124,493	1,419,440	657,506	6,430,003
Switzerland	300,000	1,145,000	532,850	90,000	629,990	2,697,840
UN Agencies:						
UNDP/Cambodia	0	1,044,528	247,111	692,371	175,900	2,159,910
UNDP/Thailand	714,086	340,710	684,500	579,600	0	2,318,896
UNDP/OPS	0	0	31,313	28,500	0	59,813
UNDP/World Bank	312,932	0	331,965	0	0	644,897
UNEP/Nairobi	0	0	177,000	80,000	219,980	476,980
UNEP/AIT	0	0	129,360	98,000	98,000	325,360
UN/FAO	0	0	0	113,562	0	113,562
UNHCR	16,234	13,564	0	0	0	29,798
Sub-total UN Agencies	1,043,252	1,398,802	1,601,250	1,592,033	493,880	6,129,216
Others:						
Asian Development Bank	252,000	160,000	403,672	167,252	21,385	1,004,309
The Asia Foundation	0	6,418	0	0	0	6,418
JICA	0	0	0	0	20,040	20,040
Mekong's PRF	225,000	200,000	0	0	0	425,000
Miscellaneous	0	39,173	32,000	25,500	0	96,673
Sub-total Others	477,000	405,591	435,672	192,752	41,425	1,552,440
<b>Total Cash Contribution</b>	<b>7,587,123</b>	<b>11,074,781</b>	<b>9,838,851</b>	<b>8,891,297</b>	<b>8,083,937</b>	<b>45,475,989</b>
<b>B) IN-KIND CONTRIBUTIONS (ESTIMATES):</b>						
Canada	430,000	0	0	0	0	430,000
European Union:						
Belgium	82,500	90,750	96,000	120,000	120,000	509,250
France	15,000	60,000	0	0	0	75,000
Netherlands	90,000	0	0	0	0	90,000
United Kingdom	51,413	0	0	0	0	51,413
Sub-total EU	238,913	150,750	96,000	120,000	120,000	725,663
Finland	58,500	10,500	0	0	0	69,000
Israel	0	0	0	0	40,000	40,000
Japan	187,500	270,000	297,000	240,000	240,000	1,234,500
Republic of Korea	0	0	0	120,000	120,000	240,000
Sweden	266,119	248,200	273,020	0	0	787,339
Switzerland	90,000	90,000	198,000	240,000	240,000	858,000
<b>Total In-Kind Contribution</b>	<b>1,271,032</b>	<b>769,450</b>	<b>864,020</b>	<b>720,000</b>	<b>760,000</b>	<b>4,384,502</b>
<b>Grand Totals: Contribution Received</b>	<b>8,858,155</b>	<b>11,844,231</b>	<b>10,702,871</b>	<b>9,611,297</b>	<b>8,843,937</b>	<b>49,860,491</b>

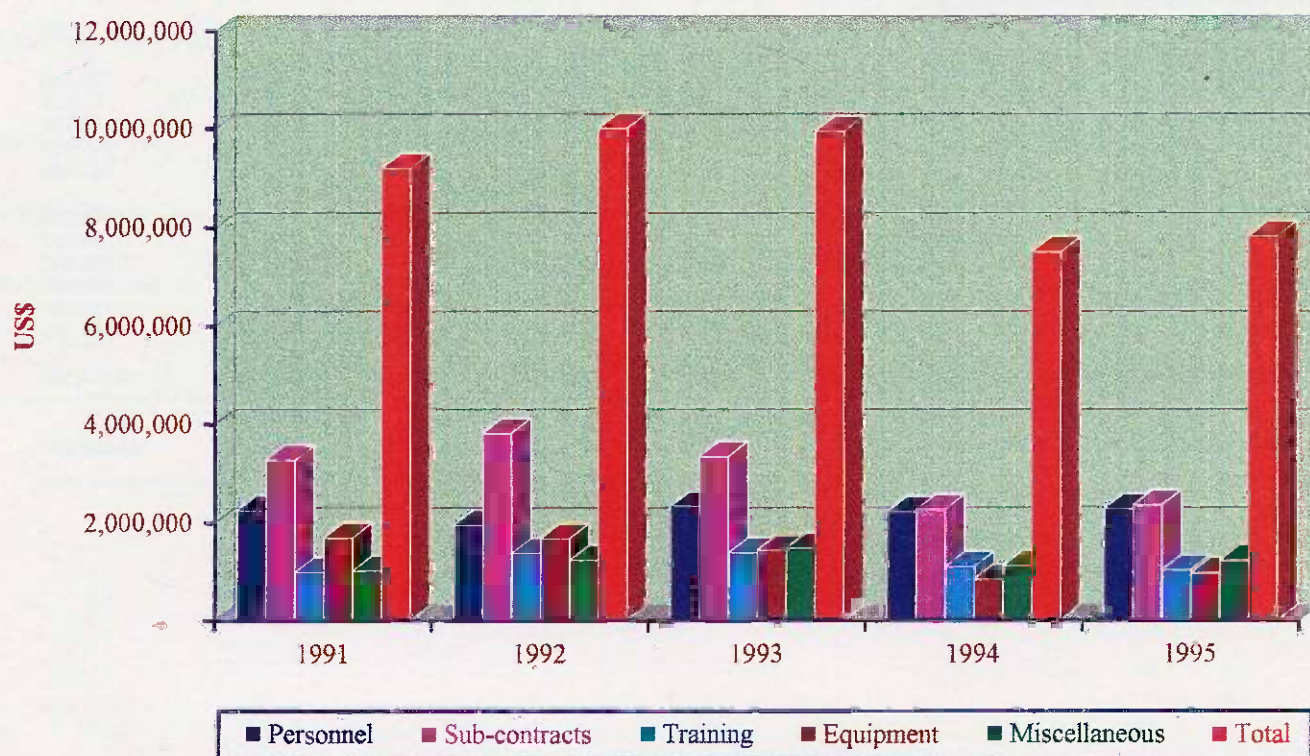


### PROGRAMME SUPPORT BY SOURCE DURING FISCAL YEAR 1995

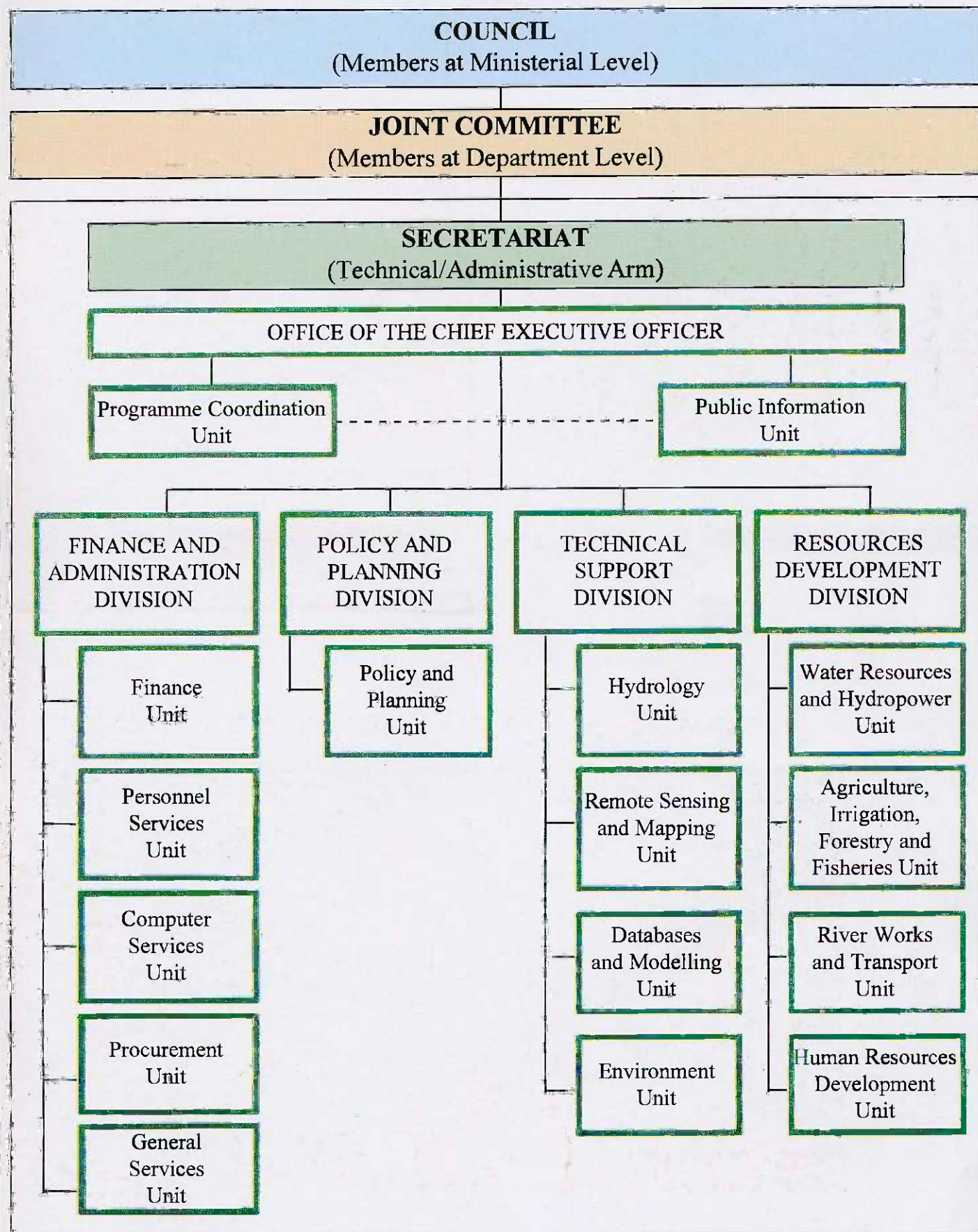


TOTAL : US\$ 8,084,000

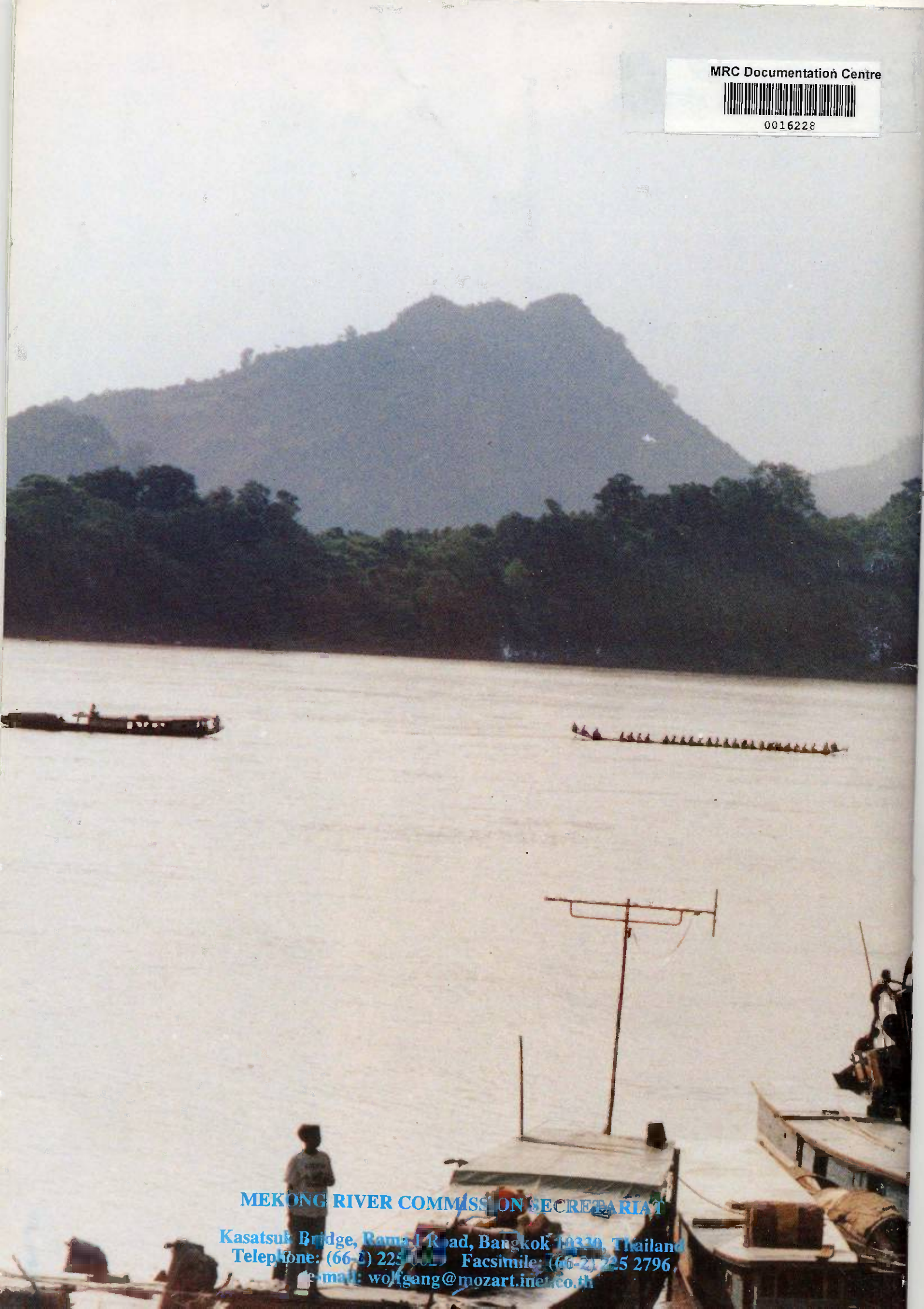
### PROGRAMME EXPENDITURES BY COMPONENT











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