**Document of**
**The World Bank**

Report No: 19625-EAP

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED GRANT FROM THE

GLOBAL ENVIRONMENT FACILITY IN THE
AMOUNT OF SDR 8 MILLION (US$11 MILLION EQUIVALENT)

TO THE

MEKONG RIVER COMMISSION

FOR A

WATER UTILIZATION PROJECT

January 10, 2000

Rural Development & Natural Resources Sector Unit
East Asia and Pacific Region

## CURRENCY EQUIVALENT

Currency Unit = US Dollar (US$)

## FISCAL YEAR

MRC: January 1 - December 31
IBRD: July 1 - June 30

## WEIGHTS & MEASURES

Metric System

## ABBREVIATIONS AND ACRONYMS

| | | |
|---|---|---|
| Agreement | - | Agreement on Cooperation for Sustainable Development of Mekong Basin |
| ADB | - | Asian Development Bank |
| ASEAN | - | Association of Southeast Asian Nations |
| AusAid | - | Australian International Development Agency |
| BDP | - | Basin Development Plan |
| CAS | - | Country Assistance Strategy |
| DANIDA | - | Danish International Development Agency |
| GIS | - | Geographic Information System |
| JICA | - | Japan International Cooperation Agency |
| JC | - | Joint Committee of MRC |
| LACI | - | Loan Administration Change Initiative |
| MOU | - | Memorandum of Understanding |
| MC | - | Mekong Committee |
| MRC | - | Mekong River Commission |
| MRCS | - | MRC Secretariat |
| NMC | - | National Mekong Committee |
| IBRD | - | International Bank for Reconstruction and Development |
| PMR | - | Project Management Reports |
| PIP | - | Project Implementation Plan |
| SOE | - | Statement of Expenditures |
| TOR | - | Terms of Reference |
| UNDP | - | United Nations Development Program |
| UNEP | - | United Nations Environment Program |
| WUP | | Water Utilization Program |

| | | |
|---|---|---|
| Vice President | - | Jean-Michel Severino, EAPVP |
| Regional Program Coordinator | - | Bradley Babson, EAPVP |
| Country Director | - | Ngozi N. Okonjo-Iweala, EACSM |
| Sector Director | - | Geoffrey B. Fox, EASRD |
| Task Team Leader | - | Mei Xie, EASRD |

# Mekong River Commission
# Water Utilization Project

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Mekong River Commission
**Water Utilization Project**

# Project Appraisal Document

Global Environment Facility
East Asia and Pacific Regional Office

| | |
|---|---|
| Date: January 10, 2000 | Task Team Leader/Task Manager: Mei Xie |
| Regional Program Coordinator: Mr. Bradley Babson | Sector Manager/Director: Geoffrey B. Fox |
| Country Director: Ngozi N. Okonjo-Iweala | |
| Project ID: 4E-PE-45864 Sector: Environment /Natural Resources | Program Objective Category: Environmentally Sustainable Development |
| Lending Instrument: GEF Grant | Program of Targeted Intervention: [ ] Yes [x ] No |

**Project Financing Data** [ ] **Loan** [ ] **Credit** [ ] **Guarantee** [x ] **GEF Grant**

**For Loans/Credits/Others:**

Amount (US$): SDR 8 million (US$11.0 million equivalent) GEF Grant
Financing plan (US$m):

| Source | Local | Foreign | Total |
|---|---|---|---|
| GEF Grant | 5.7 | 5.3 | 11.0 |
| Co-Financing | | | |
| Japan | 0.0 | 1.0 | 1.0 |
| Finland | 0.0 | 1.2 | 1.2 |
| France | 0.0 | 0.6 | 0.6 |
| National Governments | 1.2 | 0.0 | 1.2 |
| Mekong River Commission | 1.3 | 0.0 | 1.3 |
| **Total** | **8.2** | **8.1** | **16.3** |

Recipient: Mekong River Commission (MRC)
Guarantor: n.a.
Responsible agency: Mekong River Commission Secretariat (MRCS)

| Estimated disbursements (Bank FY/US$M): | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|
| Annual | 0.5 | 2.6 | 2.0 | 1.8 | 1.8 | 1.8 | 0.5 |
| Cumulative | 0.5 | 3.1 | 5.1 | 6.9 | 8.7 | 10.5 | 11.0 |
| (%) | 5% | 28% | 46% | 63% | 79% | 95% | 100% |

Implementation Period: 7 years Expected Effectiveness Date: 3/31/00 Expected Closing Date: 6/30/07

## A: Project Development Objective

*1. Project development objective and key performance indicators (Annex 1):*

The Project would assist the member states of the Mekong River Commission (MRC): Cambodia, Laos, Thailand, and Vietnam, to implement key elements of the 1995 Agreement on Cooperation for Sustainable Development of Mekong Basin (Agreement). The Project's broad development objectives would be to assist the MRC to establish mechanisms to promote and improve coordinated and sustainable water management in the Basin, including reasonable and equitable water utilization by the countries of the Basin and protection of the environment, aquatic life and the ecological balance of the Basin. This would be achieved through preparation of "Rules" for water utilization (quantity and quality) and procedures for information exchange, notification/consultation in accordance with the Mekong Agreement. The Project would assist in the formulation and implementation of the "Rules" by facilitating consultations among the MRC-member states and helping the MRC develop a Basin Simulation Model Package and Knowledge Base. The Project would promote protection of sensitive ecological systems including wetlands, flooded forests and the estuary system that support globally significant bio-diversity.

The Project duration is seven years, from 2000 to 2006, and key performance indicators include (i) a functional, integrated and comprehensive Basin modeling package by 2003; (ii) a functional and integrated knowledge base on water and related resources, with a communication system linking the National Mekong Committees (NMCs) with the MRC Secretariat (MRCS) by 2003; (iii) adoption of protocols for information exchange, water use monitoring, and preliminary notification/consultation procedures by 2004; (iv) adoption of provisional in-stream flow "Rules" by 2005; and (v) adoption of provisional water quality rules by 2006.

## B: Strategic Context

*1. Sector-related Country Assistance Strategy (CAS) goal supported by the Project (Annex 1):*

CAS document number: See below. Date of latest CAS discussion: See below.

The **Thailand** CAS (R98-165, July 9, 1998; 16 June 1998) lists, as one of its key development objectives, protection of natural resources and the environment, and proposes improvement of natural resources management as a key action to meet this objective. The related World Bank objectives include: (i) increasing efficiency of water use; (ii) improving watershed protection through establishing a framework for watershed management; and (iii) establishing clear policy and institutional frameworks. In giving priority to rural development and natural resources, the CAS indicates the Bank's desire to take a strategic approach to its assistance in these areas. To this end, the Bank has undertaken work with Government on a Rural Development Strategy, which recommends that the management of natural resources be improved, in order to ensure the sustainability of rural development, and highlights water as an important natural resource, and recommends two key actions: increased and more participatory management of watershed areas, as well as more integrated management of water supply and demand. Lao PDR is rich in two natural resources of great interest to its dynamic neighbors: timber and water resources, the latter is particularly important for hydropower generation, which is one of the country's main assets, and offers significant potential for national socio-economic development and regional integration. The **Laos CAS** (IDA/R99-151, April 20, 1998) aims to support the sustainable development and management of natural resources including forests, water resources and agricultural land. The CAS emphasizes the Lao PDR's need to preserve its rich endowment of bio-diversity through the development and implementation of environmental safeguard policy in the context of planned water resources development, especially hydropower. The **Vietnam CAS** (IDA/R98-135; IFC/R98-199, September 22, 1998) places great emphasis on Bank's support for improving management of natural resources, of which water resources form

an important part. The **Cambodia CAS** (IDA/R97-8, February 20, 1997, highlights enhancing rural development and natural resources management as one of the key CAS supported areas. It states that effective management and protection of country's forest and other natural resources is a priority on which the Bank places considerable emphasis in its assistance strategy. Bio-diversity protection is also an area for support. The Mekong River Basin is also partially within the territories of China and Myanmar, although they are not members of the MRC. Considerations related to China and Myanmar are discussed in Sections B.3, C.2 and E.3.

In achieving the Bank's overall objective of poverty alleviation through sustainable development of natural resources, the Bank supports global and **regional** initiatives that help countries deal with trans-boundary issues, such as international waters. This is reflected in the Bank's Water Resources Management Policy (1993) which directs the Bank to promote the cooperative management of international water resources, when requested. The 1995 Mekong Agreement among the four lower riparian countries reflects the goodwill of the MRC-member states to cooperate in the sustainable development of the Basin, and to create a positive foreign policy environment in the region. The Agreement sets a framework of riparian cooperation and outlines general principles and procedures, organizational arrangements of MRC and scope of authority. But the MRC still needs to make progress in implementing the provisions of the Agreement to sustain the international goodwill of regional collaboration engendered by the Agreement. This Project is in the nature of regional technical assistance to support the MRC and its member states. Its outcome will contribute to natural resources protection and improved water resources utilization and management in the basin, and thus is in line with the thrust of individual country CASs in the MRC member countries, i.e. supporting sustainable natural resources management.

*2. GEF operational strategy/program objective:*

**Regional Cooperation in the Mekong**. Regional cooperation in mainland Southeast Asia has increased dramatically since the end of the Cold War and the cessation of the Cambodian conflict in the early 1990s. Vietnam, Cambodia and Laos are now full members of the ASEAN. There are currently a number of regional initiatives to promote economic integration in the trade, transport and power sectors and through cultural exchanges in the basin. Some of these initiatives are backed by international development agencies, such as UNDP, ASEAN, and ADB (e.g., the Greater Mekong Sub-Region program). The GEF has selected several regions to concentrate its International Water (IW) portfolio to maximize GEF's strategic impact. Two areas are the Danube-Black Sea Basins, and the South China Sea region. In the latter region a major regional project involving three of the four Mekong riparian countries (Thailand, Cambodia, and Vietnam) is at an advance stage of preparation by UNEP. The Project would support the participation of the MRCS and NMC WUP teams in the activities of the South China Sea Inter-Governmental Steering Committee and the issue oriented Technical Committees being established. The Project would also support the participation of the WUP management teams in major regional meetings of GEF project teams in the other strategic regions and in the Global IW meetings being planned by UNDP (Annex 2).

Cooperation among the lower Mekong countries began in 1957, with the establishment of the "Committee for Coordination of Investigations of the Lower Mekong Basin." The Committee conducted hydro-meteorological investigations and pre-investment studies which focused on a cascade of large international reservoirs along the main river. In the aftermath of the Vietnam War, the framework of cooperation was restructured to reflect the new geopolitical realities when Cambodia became a "non-participating/active member" in 1976 (although it did not renounce the earlier Mekong treaties). The other three countries established the "Interim Mekong Committee" to keep the Mekong Committee's (MC) activities going until Cambodia would participate in

"reactivating" the MC. Following the Cambodian Peace Agreement in 1992, Cambodia requested readmission to the MC. By the early 1990s, however, the mainstream reservoir cascade no longer appeared tenable because of environmental and resettlement concerns. The framework of cooperation was restructured to include Cambodia and address the two most important issues: dry season water sharing, and protection of the environment and ecological balance. In 1995, the four countries (Cambodia, Laos, Thailand and Vietnam) of the lower Basin signed the "Agreement on Cooperation for the Sustainable Development of the Mekong River Basin". The Agreement, which establishes the MRC, recognizes the vital role that water resources play in socio-economic development and the need to ensure that valuable natural resources are developed and managed in a sustainable manner.

The Agreement includes provisions for MRC to formulate "Rules" for Water Utilization and other "Rules". The term "Rules" is used in a general sense to refer to the obligations of the MRC-member states with respect to: (i) procedures for the notification and consultation of proposed water uses under Article 5 of the Agreement; (ii) maintenance of flows on the mainstream of the Mekong River according to Article 6 of the Agreement. In particular, the maintenance of dry season flows based upon an analysis of the natural flow regime; (iii) water quality criteria, rules, and measures for the protection of beneficial uses, including the aquatic eco-system; (iv) procedures for monitoring water use and diversions in the Mekong Basin; and (v) procedures for information exchange and monitoring.

**Consistency with GEF Operational International Waters Program**. The Project is consistent with the policies and priorities of the GEF Waterbody-Based Operational Program (OP#8). The Project would develop tools and the related knowledge base to enable the riparian countries to gain a deeper understanding of the hydrologic linkages between the natural environment, water utilization, and strategic transboundary water and environmental issues, and to formulate and implement appropriate "Rules" to ensure reasonable and equitable water use. These "Rules", and the corresponding regional mechanisms and procedures for their implementation, provide the essential framework for preparing and agreeing on a regional development plan and for the development of compatible national plans and strategies. These linkages will be strengthened under the Project by directly involving national stakeholders, the respective NMCs and national institutions concerned with water and natural resource sector policy and development, in the preparation of the "Rules" and the development of the related tools and knowledge base. The Project thus addresses the key existing barriers to effective cooperative action to adopt national policies and strategies that are consistent with the protection and enhancement of the globally significant natural resource base of the Basin.

*3. Main sector issues and MRC strategy:*

**Main Sector Issues**. The major sector issues concern the equitable sharing of the water resources and sustainable development of the natural resources in the Basin. The most critical factors are related to changes in the hydrology and *dry season flow* in the lower Basin. Laos and Cambodia rely heavily on river transport and the reduction of dry season flows could adversely affect navigation. Cambodia has the long-term potential for increasing its irrigated agriculture. Over the decades, Vietnam and Thailand have developed extensive irrigation systems that currently face dry season water constraints. Seawater intrusion into the Mekong Delta during the dry season adversely affects irrigation and domestic water supplies. Vietnam is concerned with dry season flows of the River because it needs flows to prevent seawater intrusion and for irrigation purposes. Thailand has been studying options for diverting water from the Mekong, and for inter-basin diversion of water from Mekong tributaries.

*Hydropower* development throughout the Basin is gaining momentum, especially in China and Laos. Currently, there are 500 MW of installed capacity in the Lower Mekong and

1500 MW along the Chinese portion of the River. China is constructing several hydropower schemes on the Mekong River. Laos has plans to construct a number of medium-sized hydropower projects on Lao tributaries to the Mekong. Carefully planned hydropower development can bring two positive regional impacts. First, both China and Laos would like to export power to Thailand and options for creating a regional power grid are under study. Second, hydropower schemes with substantial storage could increase the dry season flows by storing wet season flows and releasing the water to generate power during the dry season. Increased dry season flows would benefit the dry season water demand in the Lower Basin. Thus, how to share the potential additional dry season flow would be of key interest to the lower riparians. Hydropower development, however, also carries significant risk of upsetting the Basin's ecological balance by changing the annual flow regime (i.e., decreasing wet season flows and increasing dry season flows) and effecting important fish migration routes.

The Mekong Basin supports one of the most productive and diverse *freshwater ecosystems* in the world. Freshwater and estuary capture fisheries constitute a major source of protein and an important element of food security for the Basin's mainly poor and rural population. Annual floods support a rich riparian habitat and an extensive network of wetlands. For example, the estuaries in the Mekong Delta maintain important ecological processes such as transport of nutrients, plankton, shrimp, fish larvae, and detritus—all essential components in the aquatic food webs. Protecting the Basin's ecological balance would bring important global benefits because of its significant bio-diversity, wetlands, flooded forests, and estuary (see Annexes 4 and 9 for detailed analysis).

*Water quality* management has been a matter for considerable discussion among the riparian countries of the Mekong Basin since the signing of the Mekong Agreement. Much of the controversy stems from the lack of knowledge about water quality conditions and the dynamics of water quality related to water and land use (industrial development including mining remains relatively low throughout most of the basin), but it also stems from a lack of agreement on individual and collective responsibilities. The MRC and several donors, including Swedish SIDA have undertaken and are continuing to support programs to strengthen water quality monitoring and assessment and hence to build the knowledge base. The water quality issue also includes the Delta salinity management which depends not only on upstream water use and the outflow from Ton Le Sap in the dry season, but also irrigation and drainage management by Vietnam in the delta.

**MRC Strategy**. In June 1998, the MRC, with assistance from UNDP, prepared its first "Strategic Plan (1999-2003)", which sets out visions, goals and strategies both for the Lower Mekong Basin and for the MRC. The Strategic Plan recognizes the changing socio-economic and financial environment in the region, and reviews the forces driving the changes in the countries, donor community and global environment. It then, within the broad MRC mandate of the Agreement, identifies five medium-term goals:

- Establish the "Rules": this includes, inter alia, establishing minimum flows on the Mekong River and the review of proposed water uses.
- Formulate the Basin Development Plan: To be used as a general planning tool for sustainable management and development of the Mekong Basin.
- Establish MRC environmental management policies and guidelines.
- Complete and evaluate on-going programs and projects.
- Improve the capacity of the MRC.

To achieve the goals, the Strategic Plan identifies four Key Result Areas (KRA) or "Core Business Areas"---(i) Natural Resources Planning and Development; (ii) Environmental Management and Social Considerations; (iii) Database and Information Systems; and (iv) Organization Management and Cooperation. Specific strategies and performance indicators are defined for each KRA, which drives the formulation of the MRC five-year indicative work plan and the 1999 work program. The Strategic Plan and the priority programs were extensively discussed with key stakeholders, including national line agencies. The MRC Council approved the Strategic Plan and the work plan in October, 1998, which were then presented at and widely supported by a Donor Consultative Group Meeting after the Council meeting.

*4. Sector issues to be addressed by the Project and strategic choices:*

The Project would support the MRC in achieving one of its five major medium-term goals: establishing "Rules". It would directly address the key sector issues of water utilization and ecological protection. It would provide the MRC with both the analytical tools for their Water Utilization Program (WUP), and assistance in formulating and negotiating the "Rules" (Section E.3). Both the indicative 5-year work plan and the 1999 annual work program highlight the WUP, together with Basin Development Plan (BDP) and the reshaping of the internal management of the Secretariat, as the key programs to implement the MRC Strategy.

WUP has been adopted by the MRC Council as a permanent program to formulate, implement and adapt the "Rules". An important mandate of the MRC is to assist the riparian member countries to develop the basic tools to implement the Agreement and to achieve sustainable resources management in the basin. It is intended to be an umbrella program, under which priority activities of the two MRC Subcommittees (Water Quantity; Water Quality) would be implemented. WUP provides a foundation for BDP and MRC's resources investigation and management programs. However, international water management is a long-term, dynamic and often contentious process. The objective of the WUP and the process of river basin management will be evolutionary and may take a long time to mature.

BDP preparation has just started and will provide a basin-wide framework for sustainable socio-economic development. BDP and the WUP will support each other, will be implemented in parallel, and will be carefully coordinated. The timing of the two projects is seen to be mutually beneficial. Several donors have conditioned their future financial support to the MRC on demonstrated progress in these two key areas.

Establishing the WUP and formulating the BDP are mutually supporting exercises in three ways: i) the BDP will use among others the databases and modeling tools developed by WUP; (ii) the "Rules", developed under WUP, particularly the dry season minimum flow "Rules", will establish constraints on future water resource developments; and (iii) by analyzing economic development strategies and water-related projects under different development scenarios, the BDP will provide valuable information to the MRC when it reviews proposed water uses under the notification "Rules" formulated under WUP.

This Project will mark the starting point for MRC's long term implementation of WUP. While the Project has a 7-year span, it should be seen as a first step along a long road, aiming to provide an opportunity to bring the riparians together for meaningful dialogue on improved and sustainable basin management. (see Section E.3 for detailed technical issues).

**C: Project Description Summary**

*1. Project components (see Annex 2 for description and Annex 3 for cost):*

The Project will consist of three components:

A) Developing necessary analytical tools and a comprehensive basin simulation package to support MRC's basin management decisions, determining, monitoring and implementation of the "Rules"[1]; and putting functional information sharing mechanisms in place.

B) Drafting "Rules" to establish minimum flows in the Mekong River and define water sharing, utilization and water quality rules; preparing detailed review and notification procedures; and assisting in negotiations and consultation during formulation of the "Rules".

C) Strengthening institutional (regional and national) capacity to implement the "Rules", undertaking basin management functions, promoting participation of upper riparians, coordination with donor agencies, supervision and monitoring of the implementation of the Project, and financial and procurement management.

| Project Component | Category | Cost (US$M) | % of Total | GEF-Financing | % GEF-financing |
|---|---|---|---|---|---|
| A. Basin Modeling & Knowledge Base | Institutional | 9.9 | 61% | 6.6 | 67% |
| B. Rules for Water Utilization | Institutional | 1.3 | 8% | 1.1 | 82% |
| C. Institutional Strengthening | Institutional | 5.1 | 31% | 3.3 | 65% |
| **Total Project Cost** | | **16.3** | **100%** | **11.0** | **67%** |

The Project will take 7 years to complete. The implementation period is necessary because the modeling, knowledge base development and rule making are long-term activities which will require many iterations and a long process of consensus building. The project will help the MRC formulate "Rules" by providing analytical tools, building technical capacity in the MRC and the riparian states, facilitating consultations, and providing legal expertise. The terms and conditions of the obligations incurred by the MRC-member states in adopting different types of "Rules" will be explored during the course of consultations and with the support of internationally-recognized water law expertise. Protection of the globally significant ecosystems in the Mekong River Basin will be a key element in the development of the analytical tools and a principal requirement in the rule making.

*2. Key policy and institutional reforms to be sought:*

At present, the MRCS is made up of individuals working on and financed by specific projects that are usually donor-driven and donor-defined. There has been a lack of an overriding coherent strategy and approach. The MRC's new Strategic Plan calls for a shift of MRC focus away from managing specific projects to managing water and related natural resources in the Basin, and away from basin development to basin management. In the past, the MRC and its predecessor, the MC, have collected a huge amount of information on the Mekong Basin but because of insufficient integration of data bases and expertise have been ill-equipped to use this data for management purposes. The shift will drive the organizational development and reform of the MRC and its Secretariat. The second challenge will be the shift away from donor-driven project dynamics to MRC-driven program dynamics that is now discernibly in progress, underlined by the Strategic Plan. Both the content and implementation process of the Project will be at the heart of support for these shifts. To do so, it would provide the MRC with analytical

[1] For the definition of 'Rules', see Section E.3.

tools to assist information processing, sharing and informed decision-making, and will put in place necessary institutional measures for managing the basin's water and related resources. The Project will be implemented and managed by the MRC and NMCs, with assistance incorporating international experience.

The Project will encourage the participation of upper riparians, China and Myanmar, in MRC political dialogue and in Project technical activities relating to basin modeling and management issues. Currently, China and Myanmar are not signatories to the 1995 Mekong Agreement, but official MRC dialogue partners. Planned hydropower reservoirs in China will fundamentally alter the dry season flow regime in the Mekong River and may also have a significant impact on wet season flows (Section E.3). Incorporation of Chinese activities into MRC management activities is important for the long-term success of the MRC.

The "Rules" will provide a critically needed regional framework for the preparation of national plans and strategies that are consistent with the principles agreed by the riparian countries in the Mekong Agreement. By directly involving the NMCs, and the respective line agencies responsible for sector plans and policies, in the development of basin analytical tools, building the basin knowledge base, and in the formulation of the "Rules", the Project will create the enabling environment for policy reform and action at the national level essential to achieving the regional goal of sustainable development of the natural resources of the Mekong Basin.

*3. Benefits and target population:*

The target population will be those living within the Mekong River Basin or utilizing their waters. The Project would benefit the populations in the Basin, as well as in the riparian countries that depend heavily on the Mekong basin's natural resources to sustain their socio-economic development. It would benefit the basin's ecosystems. These benefits would result eventually from the implementation of the "Rules" and procedures for water utilization and the improved understanding of the river system through the models and analytical tools. The Project will also benefit the whole region in terms of facilitating greater political cooperation and dialogue. Donor community and other interest groups would gain indirect benefits from a more effective and coordinated use of their funds and assistance.

*4. Institutional and implementation arrangements:*

**The Mekong River Commission**. The MRC is an inter-governmental organization of the four lower Mekong Basin states: Cambodia, Laos, Thailand, and Vietnam. The MRC is composed of three permanent bodies:

- The Council, which is composed of one member from each state at the Ministerial and Cabinet level who is empowered to make policy decisions on behalf of his/her government.
- The Joint Committee (JC), which is composed of one member from each state at no less than the Head of Department level and acts as the management body for the MRC and implements the policies and decisions of the Council.
- The Secretariat (MRCS), which renders technical and administrative services to the Council and JC, and is under the supervision of the JC. The MRCS is located in Phnom Penh and has a staff of approximately 100, including both international and riparian staff.

The JC has established sub-committees to help it address two high-priority MRC activities: Basin Development Plan and Water Utilization. There are two water utilization sub-committees: Water Quantity Sub-Committee and Water Quality Sub-Committee. The MRCS renders technical and administrative services to the sub-committees.

The MRC has an annual budget of approximately $12-$15 million per year, which can be divided into two parts: administrative costs ($2-3 million), and program/project costs ($10-12 million). Multilateral and bilateral donor agencies provide grant financing for almost all of the MRC's program/project costs. Administrative costs are funded from contributions by MRC-member countries ($175,000 per country in 1997), donor grants, an 8% surcharge on donor-funded projects, and treasury management.

**National Mekong Committees**: Each MRC-member country has a NMC that formulates national policies vis-a-vis the MRC, and provides coordination between national line agencies and MRC projects. A typical MRC project involves the MRCS technical staff, national line agencies, and international consultants. Although the structure of the NMCs varies by country, the general arrangement is to have three bodies: (i) an inter-ministerial policy-making body; (ii) a management group consisting of key governmental departments; and (iii) a secretariat to support the NMC.

**Implementing Agency**. MRC, through its Secretariat, will be the implementing agency for the Project. The Grant Agreement will be negotiated with MRCS which will be responsible for project management, including financial and procurement management. MRCS will: (a) undertake procurement duties, including: (i) contracting consultant services, (ii) purchasing office and communication equipment, and (iii) purchasing computers, software, and related equipment; (b) maintain and report adequate financial records, facilitate audits and manage special account and disbursements; (c) monitor and evaluate project implementation; and (d) prepare and submit to the Bank semi-annual reports including detailed work plans. The details are found in PIP and its Annex H.

**WUP Management Team**. The MRC will create a permanent WUP Management Team to lead and coordinate the WUP. The Team, directed by the CEO of MRCS, will consist of the MRCS's WUP Unit and the heads of NMC WUP Units.

**MRCS WUP Unit**. The MRCS will create its permanent WUP Unit directly under the Chief Executive Officer. The Unit will consist of four highly-qualified specialists, acceptable to the Bank, one from each MRC member country selected by the MRCS on a competitive basis. The Unit will have a leader and three members who are heads of three working groups (see below), and required riparian support staff. It will be supported by a small team of consultants. Indicative TORs for the leader and key consultants are included in PIP Annex H.

**National WUP Units.** Each NMC will establish a permanent WUP Unit composed of high caliber technical staff from the NMC Secretariat and seconded by key line agencies. The national Units will have day-to-day responsibility for coordination of national participation, review of short-lists of technical specialists to be selected by the MRCS for the MRCS WUP Unit and working groups. National WUP Units will facilitate and support the participation of line agency technical specialists in the WUP implementation, and carry out agreed technical and administrative tasks. The relationship between the NMC's WUP Units and the MRCS will be formalized in a Memorandum of Understanding (MOU) signed between the JC and the MRCS.

**WUP Working Groups**. The WUP management team will organize and supervise three "Working Groups"--(i) Basin Modeling and Knowledge Base; (ii) Environmental and Trans-boundary Analysis; and (iii) Rule Formulation. WUP management team will draft Terms of Reference (TOR) for the working groups. The working groups will carry out WUP activities. They will also support the BDP program through sharing and exchanging data, information, modeling tools and results. They will consist of full and part time staff from the MRCS divisions, NMCs and their line agencies, and of local and international consultants. The national staff will be selected by the National WUP Units. The national staff and the MRCS staff will form an

integrated team with a joint TORs and work plan. The actual work will take place both within the countries and at the MRCS' headquarters office.

**Donor coordination and parallel co-financing**. Several donors have expressed interest in funding part of the WUP, and each has its own agenda, schedule and internal arrangements for implementation. The governments of Japan, Finland, and France have made varying degrees of commitments to support the WUP. Finland confirmed its support for the definition and screening of modeling and data requirements and for the sub-modeling of the Tonle Sap sub-basin (Section H). France has an interest in supporting WUP water quality related activities and has made fund disbursement to MRCS. Japan is primarily interested in supporting the hydrological analysis component and the filling of data gaps in WUP. During appraisal, preliminary scopes of work by each donor were outlined as part of PIP Annex L to better define these activities and their interrelationship with the GEF supported WUP components.

**Partnership with UNDP**. UNDP has been involved in MRC development since its pre-inception. UNDP provided key support in the negotiations the 1995 Mekong Agreement, and recently in the development of the MRC's first "Strategic Plan (1999-2003)" (Section B.3). MRC has recently approved a UNDP program to support the implementation of the Strategic Plan through capacity building of MRCS, NMCs and national line agencies. This program will be critically important for the long-term success of MRC and WUP. While the UNDP program will focus on improving overall MRC management, the WUP Project will focus on strengthening the technical capabilities of MRCS, NMCs and the national line agencies to manage the water resources of the basin through the development of analytical tools and the adoption of "Rules". These programs are complimentary and mutually necessary. During Project implementation, the Bank will work closely with UNDP, exchange information, and draw support from their experience and programs to ensure Project success.

**Accounting Financial Reporting and Auditing**. During Project preparation, an assessment of financial management was carried out and found that the current accounting system in MRCS is capable of handling the GEF funds and providing separate reports on fund utilization. MRCS prepared a financial manual (July 1999) to set out policies and procedures under this Project for budgeting, fund utilization, accounting and reporting of donor funds entrusted to MRCS. It has agreed to maintain separate books of accounts to record and report for expenditures financed under the Project, and to the quarterly reports to be consistent with the formats of Monitoring Reports (PMR) described in the Bank's LACI Handbook. A Special Account will be set up under the Project for the GEF grant in a commercial bank acceptable to the Bank and will be managed by MRCS. The Statement of Expenditures (SOE) disbursement method is recommended at this stage. The Bank and MRCS will review the disbursement methodology by December 31, 2000 when a determination could be made to switch to PMR-based disbursement (Section E.4).

MRC will prepare annual financial statements in accordance with international standards for accounting and will include, at a minimum, Summary of Sources and Uses of Funds Statement, a Project Balance Sheet at the year end, and comparative figures from the previous year and notes to the financial statements. It will install a computerized accounting system by June 30, 2000. The project accounts, the operations of the Special Account and the amounts withdrawn under SOE will be audited annually in accordance with International Standards on Auditing by independent auditors. The audited financial statements together with audit reports will be submitted to the Bank within six months of the end of the MRC's fiscal year. The independent auditors on terms of reference acceptable to the Bank will be appointed before Project effectiveness (Section G.1(a)).

**Monitoring and evaluation**. MRCS will monitor and evaluate: (a) the progress of Project implementation; (b) the achievement of Project objectives; and (c) the compliance with legal covenants. Indicators to assess the project achievements and impact have been agreed with MRCS and included in the PIP (covenants d-h), which will be followed and updated as needed during implementation. MRCS will set up by June 30, 2000 a monitoring system using proper project management software to track physical progress, costs, budgets, procurement and disbursement, and key performance indicators (covenant-b). The results will be reflected in the quarterly PMR to be prepared by the WUP management team. Bank supervision missions will review project progress and results at mid-term review (mid-2003, covenant-c) and at completion (end of 2006). Semi-annual reports will be submitted for Bank review (covenant-a). A project completion report will be prepared within six months after the grant closes (covenant-i).

## D: Project Rationale

*1. Project alternatives considered and reasons for rejection:*

In general terms, activities required to achieve the long-term goal of MRC include: inter alia, (1) inventory and assessment of water and environmental resources; (2) inventory and assessment of existing and potential water uses and discharges; (3) identification, evaluation and determination of requirements for preservation of wetlands, fisheries, watersheds and other ecological resources; (4) development of integrated geographically referenced databases and computer systems/networks; (5) putting in place appropriate institutional and legal frameworks, and policies and procedures for water resources management; (6) development and calibration of hydrologic, environmental and decision support models and using them to evaluate different structural and non-structural development and management alternatives, water utilization "Rules" relating to both quality and quantity, and scenarios for the operation of hydraulic infrastructure; (7) definition, adoption and implementation of "Rules" for water utilization and discharge in terms of both quantity and quality; (8) development of basin management and development plans; and (9) improving the capacity of MRC, NMCs and the line national agencies to carry-out, maintain and update the above activities through training and technical assistance.

Initially, the Project concept considered inclusion of improving the hydrological network monitoring, data collection and database/ GIS building. But it later became apparent that the above activity areas (1) – (4) have been relatively well-supported by various donors, and most of MRC's programs completed or on-going are in the nature of collecting data or inventorizing basin resources (Section D.2). Consequently, the Project concept was reshaped to support only key activities that are not being adequately addressed so far, such as the activity areas (5) – (7). The Project would focus on the formulation and implementation of "Rules", to allow GEF resources to be concentrated on a single priority activity and to minimize conflict with activities supported by other donors. However, a detailed review of the adequacy (data quality, interval, format, integration) of the databases would be carried out during Project implementation and the Project would make provision to fill any data gaps to support the basin modeling (Annex 2).

Early in 1996, the Bank also explored the use of GEF funds to support the BDP efforts. But several other donor agencies also expressed their interest in supporting the BDP, and GEF funds did not appear to be essential. Rather, it became clear to both the MRC and the Bank that supporting the WUP as a parallel or even preceding activity to BDP is critical. It was also recognized that the MRC does not have appropriate analytical and modeling tools to support either the BDP or WUP. Thus, the BDP concept was dropped and the basin modeling was added to the Project design.

The Project initially was conceived to include only water quantity issues. However, given the close integration with the water quality aspect, it now includes both quantity and quality aspects in basin modeling and formulation of "Rules".

*2. Major related Projects financed by the Bank and/or other development agencies:*

The Bank or GEF does not have any regional project dealing with MRC. But many other donors have been funding MRC's activities, mostly bilateral aid programs that in some cases involve more than one MRC country. Those providing key assistance to MRC include UNDP (strategy; institutional capacity); Denmark (fishery; wetlands); Switzerland (watersheds; GIS); Sweden and UNEP (water quality monitoring; groundwater investigations); ADB (transport; power; wetlands; GIS); UNEP (GIS; water quality monitoring; environmental assessment); Japan (institutional capacity; hydrological monitoring); Australia (institutional capacity; hydro-meteorology); Finland (hydrographic surveys) and Germany (forest management).

A large portion of MRC's past and on-going programs relate to resources inventory, surveys and database /GIS building in hydro-meteorology, hydrographic atlas, water quality, fisheries, forest cover, and wetlands. There are some modeling programs on salinity, groundwater and flood planning, and programs relating to environment management, environmental impact assessment, watershed management, and soil erosion and sedimentation.

| Donor | Sector | Projects | Timeframe |
|---|---|---|---|
| | I. | **Natural Resources Planning and Development** | |
| UNDP | Plan | Mekong Delta Master Plan | 90-93 |
| Denmark | Fishery | Assessment of Mekong Fisheries & Impact of WRM | 97-01 |
| Denmark | Fishery | Support for Fishery Management | 97-99 |
| Denmark | Fishery | Management of Reservoir Fishery | 95-99 |
| Denmark | Fishery | Extension for Acquaculture in the Mekong Delta | 98-00 |
| Switzerland | Watshds | Strategy study for dev. of watershed management/ forestry sector | 98-99 |
| Netherlands | Agri. | Sustainable Irrigated Agriculture Project Consolidation | 97-99 |
| Germany | Resour. | Sustainable management of resources in the lower Mekong Basin | 97-01 |
| Korea | Flood | Flood Control Planning for the Development of the Mekong Delta | 97-00 |
| France/ UNDP | Resour. | Natural Resources based development strategy for Tonle Sap area | \\ |
| | 2. | **Environment Management/Social Considerations** | |
| Switzerland | Watshds | Watershed classification in the lower Mekong Basin | 92-99 |
| Germany | Forest | Assessment and monitoring of Mekong forest cover | 93-99 |
| UK | Env. | Pilot Study of Water Resources & Environmental Management | 98-99 |
| Denmark | Env. | Environmental Policy and Guidelines | 98-00 |
| UNEP | EIA | Environment Assessment in the Greater Mekong Region (I-II) | \\ |
| Sweden | Wtld | Envl. Mgmt of Plain of Reeds (VN) & Flood Plains (Cambodia) | 93-98 |
| | 3. | **Database and Information Systems** | |
| Denmark | Wetld | Inventory and management of the Cambodian wetlands, Phase I | 97-99 |
| Finland | Map | Updating Hydrographic Atlas; Surveys; Mapping | 96-99 |
| Sweden | Ground-water | Groundwater Investigation – Phase I | \\ |
| Sweden | .. | Groundwater Investigation – Phase II | 97-99 |
| Netherlands | .. | Groundwater modeling in the Mekong Delta | 98-00 |
| Japan | Monit. | Improvement of Hydro-meteorological Network - Component I | \\ |
| Australia | Monit. | Improvement of Hydro-meteorological Network - Component II | 97-00 |
| Sweden,unep | Qlty | Water quality/acidity monitoring in Mekong Delta (I) | 87-95 |
| Sweden | Qlty | Water Quality/acidity monitoring in Mekong Delta (II) | 95-98 |

| | | | |
|---|---|---|---|
| ADB | GIS | Geographical Information Systems | \\ |
| Swiss | .. | Geographic Information System | \\ |
| UNEP/ GRIC | .. | Geographic Information System | \\ |
| | 4. | **Organization Management and Cooperation** | |
| UNDP | Institution. | Strategic Planning and Capacity Building | 98-01 |
| Sweden | Institution. | CTF for studies, training | 96-99 |
| Denmark | Institution. | CTF for Capacity Building | 97-00 |
| AusAid | Institution. | MRC Cooperation | 97-99 |

*3. Lessons learned and reflected in Project design:*

Negotiations for the 1995 Mekong Agreement were difficult and time-consuming, and UNDP negotiation assistance was necessary for the parties to reach consensus on a new framework of cooperation. Early attempts in 1996 by the MRC to formulate subsidiary agreements demonstrated that the process of defining and agreeing upon "Rules" for water utilization will be long and require a concerted sustained effort founded upon good technical information and utilizing an iterative consultative approach. The Project design takes these lessons into account.

The BDP preparation process, supported by UNDP, Sweden and Danida, provided some lessons. Its progress has been slow and produced less than expected results. The phasing of project preparation and implementation has been adopted as an approach that allows for designing and implementing well thought out steps a building on the experience gained as the project progresses. BDP project preparation has taken a two-phase approach. Phase-1: formulation of project concept and consultations on MRC and country consensus (Section E.7). Phase-2: formulation of detailed project components.

Another lesson was to avoid duplication and to enhance coordination among MRC programs (Sections D.1, D.2). MRC has already set up five major databases: (1) Wetlands (wetland surveys in each country), (2) Fisheries (one of the biggest databases in MRC, containing information on sustainable catch and basic statistical data), (3) Socio-economic, (4) Land use (forest covers and agricultural use), and (5) GIS mapping. It also has three on-going monitoring programs on hydrology, water quality and groundwater. These databases and information systems were reviewed and found sufficient enough to start developing a basin-wide knowledge base and modeling package. During implementation, the modeling effort should link the different MRC programs together and identify areas where further data collection is necessary to support management decisions.

*4. Indications of borrower commitment and ownership:*

The Project proposal was first presented to the Bank by MRC in 1996. After obtaining the GEF project preparation grant, MRC assigned a task force and internal resources in MRCS which managed the grant, designed TORs, procured and supervised the consultants' team. The consultants' work was completed in December 1998. In collaboration with the NMCs, national line agencies and GEF focal points of the riparian states (Section E.7), the MRCS task force prepared a WUP Project concept proposal for GEF financing. The proposal was approved by the JC in September 1998 and by the MRC Council in October 1998, both of which highlighted this Project among the MRC priority programs in the 5-year work plan and in the 1999 work program (Section B.3). The draft PIP, including the MRC Business Finance Plan (PIP Annex K) was approved by the JC in July 1999 and by the Council in October 1999.

*5. Value added of GEF and Bank support in this Project:*

**Promote regional cooperation and consultation**. The process of formulation of "Rules" will be not only technically challenging but politically sensitive, and will involve many parties. GEF support would promote and facilitate extensive consultations among the member countries during the sensitive negotiations process, contribute to awareness and reaching consensus on basin management issues among interested parties in and outside the region, and provide value added to regional cooperation that ensures the conservation of globally significant environmental resources.

**Play catalyst role**. There is no shortage of donor interest in supporting the MRC. But an increasing concern from the donor community has been the lack of coherence and coordination among various MRC and donor supported programs. Often these programs have been conducted independently with practically no common interface, or audit of desired outcomes. Donors also have priorities that differ from MRC. Donor funds are sometimes not managed directly by MRC, and come in the form of visiting experts from donor countries, or studies carried out by donor teams. In mid-1996, MRC efforts to independently negotiate the "Rules" ran into difficulties due to a dispute over how to address water quality issues. During dialogue with donors, MRC and several donor agencies expressed their wish to see the Bank take play a role in regard to these sensitive water-sharing issues, due to the Bank's technical competence and experience with complex international water management issues. MRC has welcomed Bank/GEF involvement in the Project, as it has been seen as playing a catalyst role in coordinating MRC programs, various stakeholders and donors, and providing funds to be managed and implemented directly by MRC.

**Provide technical expertise**. The Project is complex as there are a number of issues under debate among the riparian countries, including integration of water quality and quantity, establishment of low-flow requirements and subsequently determining the minimum flows, utilization of surplus waters, and monitoring and procedures for notification and consultation on proposed development schemes. Bank technical contributions and devolution of responsibility for Project preparation, monitoring, evaluation and supervision would add value to MRC's capacity building. The Bank/GEF has extensive experience in dealing with international waters in Central Asia, South Asia, North and Southern Africa and Eastern Europe. Lessons and expertise can be drawn to help dealing with these issues. In particular, the Project will support and facilitate linkages and collaboration with other GEF international waters programs.

**Facilitate dialogue with riparian**. Unlike other donors, such as UNDP, DANIDA, Japan or ADB, the Bank has so far played low key with MRC in Mekong regional activities. Given the significance of the Mekong Basin in the region, the regional financial situation and the Bank's long term interest in the region, the Project would provide an opportunity for promoting regional cooperation and help identify investment opportunities that are sustainable in the long run.

**E: Issues Requiring Special Attention**

*1. Economic*

[ ] Summarize issues [ ] To be defined [x] None

Per GEF's requirement, a project specific analysis on GEF incremental costs was carried out by the project task team, and the results are included in Annex 4.

*2. Financial*

[ ]Summarize issues below [ ] To be defined [x] None

*3. Technical*

**Basin Modeling and Knowledge Base (Project Component A)**. For MRC to become a fully functioning international river basin agency responsible for sustainable management of water and other natural resources in the Mekong River Basin and with good interaction and coordination between the member states, it needs to be equipped with a unified system of basin models, planning and decision-making tools to enable it to undertake the formulation of "Rules" on sound scientific basis and to fulfill its functions for basin management in the long run. MRCS has had a number of modeling studies. However, those models have not resulted in a comprehensive basin simulation model package, as they were developed separately and often concerned with sub-sectoral issues (such as hydropower planning, hydrology, flood control, or salinity intrusion simulation). They have been carried out as individual attempts which do not have a strong focus on the basin planning and management functions of MRC. Thus, there has been little incentive to keep them operational as they have not created permanent modeling capacity in MRCS or the riparian states to apply and update the models.

Implementing the operational provisions of the Agreement requires the development and operation of an integrated and comprehensive hydrological/hydraulic and water quality modeling package for the mainstream and tributaries of the entire basin. To do so, one needs to understand the interaction between the physical, ecological and biological features of the basin, their changes due to human activities, and trans-boundary concerns. Some important concerns (Annex 9) related to water use in the Basin include navigation, water use, sediment transport and sedimentation, pollution, migratory birds and fish, flood plains and wetlands, and changes in the yearly flow regime. Under the proposed Project, water quality modeling will be fully integrated into the basin modeling package under a program supported by the French. This activity will be initiated with a thorough assessment of water quality and the mid-term and long-term threats to water quality, an analysis of alternative phased programs under the MRC to address these threats, and the development of suitable basin model components to facilitate integrated water quantity and quality analysis as a part of rules development. The MRC WUP Management Team will closely coordinate GEF project activities with those to be supported by the French and those currently supported by SIDA and other donors, to insure that the knowledge base and the basin modeling package can adequately deal with water quantity and quality issues.

The knowledge base and modeling and analytical tools to be developed under the Project should have the following objectives: (i) develop the basin modeling package for operationalizing of the Mekong Agreement, testing and monitoring of the "Rules", and supporting basin planning and management decision-making; (ii) provide an analytical tool to integrate the basin planning and management processes, and to assess environmental and socio-economic impacts of development options; (iii) create sustainable modeling capability within the riparian countries (including the NMCs and line agencies) and MRCS; and (iv) identify data gaps of water resources monitoring and MRC information systems and give feedback for possible adjustments to these programs (Section D.2). Thus, the Project needs to carefully evaluate available models (both in MRCS and internationally) to determine their suitability and adaptability for the whole basin. The process and criteria to evaluate and select appropriate basin models need to be defined and agreed during the early stage of Project implementation.

**China's Critical Role**. China's average annual contribution to the Mekong River flow is about 76 billion $m^3$, accounting for 16% of the Mekong River's average annual flow of 475 billion $m^3$. Although details of China's future hydropower program on the Mekong River are sketchy, the MRC's 1997 "Mekong River Basin Diagnostic Study" estimates that the current Chinese reservoir storage capacity of 1 billion $m^3$ could increase to almost 20 billion $m^3$ in the next few decades, with an ultimate storage capacity approaching 40 billion $m^3$. The pace and

extent of Chinese hydropower development is uncertain. Chinese consumptive water demands in the Mekong Basin are very low, due to unsuitability of the land for irrigated agriculture. Hence, Chinese water resources development may alter the flow pattern of the Mekong River, but will probably not have a significant impact on total annual flows. Myanmar contributes only 2% of the Mekong River's annual flow, and has no significant plans to develop its water resources in the Mekong Basin.

In the medium term, and with the construction of Xiaowan reservoir (about 14 billion $m^3$), total storage in the Chinese portion of the Basin could reach about 20 billion $m^3$. Under this scenario, sources indicate that Chinese reservoirs could regulate approximately 25% of the Chinese portion of Mekong River flows and 5% of the total annual flow. Some researches indicate that dry season flows near Vientiane, Laos could increase by 50% and into the Mekong Delta by 20%, although the downstream impacts of the future Chinese reservoirs have not been authoritatively quantified and would depend on reservoir operations. Under normal operations, the decrease in wet season flows in Mekong River might be on the order of 10% at the Chinese border, with a progressive decrease as the Mekong River flows downstream. Under non-normal operating conditions, for example during reservoir filling or extreme flood events, Chinese reservoirs could have larger, transitory, impacts on both wet and dry season flows.

Water utilization in the lower Mekong will not only include that of the existing and fully utilized low flows, but also any incremental flows created by China. The data bases and modeling studies used in the BDP and in WUP will need to cover the entire basin including China and evaluate the impact of different upstream development scenarios on the basin development planning and on the formulation and adoption of "Rules". In addition, the "Rules" and their implementation will have to be adapted to changing future conditions as development unfolds, underscoring the importance of creating the necessary human and institutional capacity in MRC. MRC officials are keen on having China and Myanmar participate in the drafting and implementation of the "Rules". The Chinese and Myanmar governments are not adverse to working with the MRC. The Project design would encourage further collaboration.

China and Myanmar are currently official dialogue partners with the MRC, providing them an opportunity to participate in discussions at MRC Council and Joint Committee meetings. In 1996, the MRC, China and Myanmar agreed to consider establishing technical working groups on hydrology and navigation. A legal agreement on navigation between China, Thailand, Laos and Myanmar on the upper Mekong River is in the final stages of negotiations. MRC officials periodically undertake missions to Yunnan province in China for discussion on water-related matters. The MRC is committed to information exchange and technical collaboration with China, and the Project includes dedicated funds for upper riparian collaboration on WUP-related technical matters and meetings. The MRC will use these funds as appropriate, and when China or Myanmar indicate a willingness to participate in WUP.

**Development of the Rules for Water Utilization**. The term "Rules" is used in a general sense to refer to the obligations of the MRC-member states with respect to Articles 5 and 6 of the Agreement. Article 5 contains the general principle of "reasonable and equitable utilization" of the waters of the Mekong system, and outlines the conditions for notification, consultation, and agreement on proposed water uses. Article 6 calls for the maintenance of flows on the mainstream with respect to i) natural dry season flows, ii) wet season flows sufficient to enable the acceptable natural reverse flow of the Tonle Sap, and iii) peak flood flows. Article 26 mandates the Joint Committee to prepare "Rules for Water Utilization and Inter-Basin Diversions" pursuant to Articles 5 and 6. In order to implement Articles 5 and 6, and adhere to the principles of Article 3: "Protection of the Environment and Ecological Balance," and Article 7: "Prevention and Cessation of Harmful Effects," additional "Rules" on water use monitoring, information and data exchange procedures, and water quality are needed. In summary, "Rules"

for water utilization anticipated to be formulated under the Project are: (i) Physical "Rules" with regard to maintenance of flows on the mainstream; and water quality. (ii) Procedural "Rules" with regard to information exchange; monitoring water use and diversions in the Mekong Basin; and notification and consultation on proposed water use.

The drafting of "Rules for Water Utilization" will be a multi-faceted, long-term process that requires extensive consultations, negotiation assistance, and solid scientific analysis. The terms and conditions of the obligations incurred by the MRC-member states in adopting different types of "Rules" will be explored during the course of consultations. A structured and facilitated consultation process with the Sub-Committee(s) for Water Utilization (Quantity and Quality) is envisioned. Three to four consultations per year, starting in mid-2000 and lasting until 2006, are expected. The WUP management team, in conjunction with facilitators and legal experts, and appropriate WUP working groups, will assist the Sub-Committees in drafting water utilization "Rules". The Sub-Committees will formulate draft "Rules" for the consideration of the MRC Joint Committee, which then makes recommendations to the MRC Council. The MRC Council members are entitled to make policy decisions on behalf of their respective governments (Article 15 of the Mekong Agreement) and thus the terms and conditions of the water utilization "Rules" adopted by the Council are considered binding by the MRC-member states.

The MRC places a high priority on drafting a coherent and integrated set of water utilization "Rules" in an expeditious, yet scientifically sound manner. The strategy pursued in the Project is to facilitate and support a flexible, yet structured process in formulating the "Rules" for water utilization. Moreover, in a manner consistent with the principle of adaptive management, and in light of the prevailing uncertainties in some key data, the "Rules" will be adopted on an interim basis, subject to review and revision according to the conditions promulgated by the MRC.

*4. Institutional*

**Basin Management Capacity**. Although MRC and MRCS have had experience in managing many programs and projects financed by donors, there have been increasing concerns, both from the countries and from the donor community, about the lack of clear vision and strategy in the MRC's work programs and weak organizations and management of the MRCS. UNDP recently helped the MRC develop a Strategic Plan (Stage 1) and is starting a program to boost MRC capacity (Stage 2). At the 1998 Donor Consultative Group Meeting, many donors expressed the view that the next few years will be critical for the MRC testing whether it can successfully implement the principles in the Mekong Agreement. The MRC Council recognizes these problems and has vowed to improve its effectiveness, improve accountability, transparency and efficiency, and to define clear technical, financial and administrative roles. The Project will support the MRC reform (Section C.2).

**NMCs Capacity**. The MRC's Strategic Plan calls for a greater integration with NMCs and their national agencies. The capacity and role of NMC vary greatly between the countries. Vietnam seems strongest. Thailand would need to strengthen its own capacity, now that the MRCS has moved to Cambodia. Laos and Cambodia still lack sufficient technically capacity. Strengthening of NMCs under the Project should be tailored to the different situations.

**Financial Management Capacity**. Since MRC/MRCS manages numerous donor funds, it is regularly audited. The 1997 PriceWaterhouse's Audit Report showed that MRCS's accounting records and procedures were in accordance with generally accepted auditing standards. The Project funds primarily technical assistance and training which are subject to simple procurement procedures. To ascertain that the financial management system complies with the requirements of OP/BP 10.02, an assessment was carried out by the

PriceWaterhouseCoopers, in March 1999, of the accounting, financial reporting and auditing arrangements at MRCS. Based on the assessment (Annex 5), a well organized financial function with qualified staff exists at MRCS, and its accounting system is capable of separately reporting on different donor funded activities. Given MRCS' long experience in dealing with donor funded activities, the Project should have been eligible for PMR-based disbursement. However, as the current accounting system is not Y2K compliant, there is a risk that MRCS may not be able to prepare timely reports until the new system that is being developed is fully installed, tested and operational. Therefore, disbursement based on SOE is recommended at this stage, and PMR-based disbursement will be considered by the end of 2000 (Section C.4). Moreover, a monitoring and evaluation system would be set up under the Project (Section C.4). Project management software programs (for example, Microsoft Project) would be introduced to enhance the capacity of the NMCs and MRCS in Project implementation and coordination.

5. *Social:* Social aspects relate to ensuring stakeholder participation and including socio-economic data and analyses in modeling and rule making processes (Section E.7 and Annex 2,A.3).

6. *Environmental*

a. Environmental issues:

[ ] Summarize issues below [ ] To be defined [x] None

b. Environmental category: [ ] A [ ] B [x] C

c. Justification/Rationale for category rating: The Project will be of a technical assistance nature, with strengthening of institutional capacity. It does not involve physical investment works. The Project would add value to sustainable environmental protection and improvement water management in the basin.

d. Status of any other environmental studies: There does not seem to be shortage of donor support and funding for MRC on environmental studies, relating mostly to data collection and database building, survey, investigations, mapping and inventories, policy studies and assessment. Subjects of these programs completed or on-going range from inventories of ecosystems, wetland bio-diversity, watersheds, freshwater fishery and forest covers, to environmental assessment, salinity and acid sulfate soils, water quality and quantity monitoring. Active donors are Sweden, Denmark, UNEP, Switzerland and Germany (Section D.2).

e. Local groups and NGOs consulted: n.a. Consultations see Section E.7 below.

f. Resettlement.

[ ] Summarize issues below [ ] To be defined [x] None

g. Borrower permission to release EA:[ ] Yes; [ ] No; or [x] n.a.

7. *Participatory Approach:*

a. Primary beneficiaries and other affected groups:

Implementation of the Mekong Agreement requires strong political commitment from all member states, and the participation and support of key stakeholders in the basin and external parties. The Project preparation and implementation must be owned by MRC who will work through NMCs with national line agencies and other stakeholders. To enhance this ownership, MRC organized national workshops and two regional consultation workshops with NMCs, national agencies, MRC JC members, national GEF focal points, and donors during the two-stage of Project concept formulation. In *Stage-I,* the MRC team and the consultants developed a conceptual framework for the WUP and the Project, which was used as the basis for the first

regional consultation workshop on January 8-9, 1998 in Bangkok. In *Stage-II,* the design of the Project components was developed based on national discussions to understand each riparian's needs and concerns for promoting and managing development and for their national interests. It was discussed at JC meeting in March 1998 and the second regional consultation workshop on May 13-14 in Vientiane. These consultations provided feedback on the interpretation of the Agreement and key national and regional concerns to be addressed in the Project, and helped reshape the Project concept.

The process of the Project implementation is seen as important as its outcome. It is expected that the consultation process will intensify during implementation and include a wider participatory audience. The PIP emphasizes the requirements on the consultation process, which would include consultation among the member states during drafting the "Rules" in a manner that is appropriate to the sensitive nature of the discussions, and consultations with interested groups and stakeholders on modeling, technical, social and environmental issues. In March 1999, MRC adopted new guidelines for public participation in MRC activities. It also prepared a public participation plan for implementation under this Project (see PIP Annex I). The plan aims to initiate stakeholder participation on a cross-national basis in the Mekong Region, to carry out stakeholder analysis and to include civil society in the consultation process. Review by Bank social unit found the plan to be acceptable, with some improvements.

b. Other key stakeholders:

Preliminary discussions were held with JICA, Finland and France on potential parallel co-financing of the Project, and with UNDP, ADB, UK Embassy in Bangkok and AusAid on coordination. Further exchange of information took place during the MRC Donor Consultative Group Meeting in October 1998.

*8. Procurement:*

Procurement under the Project is expected to be simple, as most of the procurement activities will involve hiring of consultants by MRC, arrangements for training, seminars and study tours, and purchase of computer and office equipment for MRCS and riparian agencies. MRCS staff have good experience in procurement of international consultants and goods through their past involvement with various donor supported programs. It has also gained experience with Bank procurement policy through executing the GEF PDF Block-B grant during Project preparation. The Bank Regional Procurement Adviser carried out a procurement review in Phnom Penh in March 1999, and concluded that staff in the MRCS is capable of carrying out the Project procurement. Subsequently, MRCS prepared a draft procurement plan (PIP Annexes E and F) and provisional procurement regulations (PIP Annex J) which were reviewed by the team's procurement staff, who found the regulations a sound basis to work on. It was agreed with the MRCS that: (a) a procurement advisor will be recruited on a short-term basis to assist MRCS in procurement matters during the first year of Project implementation; and (b) MRCS staff will participate in Bank procurement training that will be provided in the region during the upcoming year.

**F: Sustainability and Risks**

*1. Sustainability:*

***Institutional***: The long-term viability of the MRC depends on two main elements: the interest of the riparians or the demand for such a regional institution to help facilitate and promote regional cooperation in the Basin; and the technical capacity of MRC in making sound decision on basin management issues. At this stage, the first element does not appear to be in doubt. But closer linkages between the MRC, the NMCs and the national resource management

agencies need to be forged. For the second element, putting in place basin management tools, the establishment of "Rules" to implement the Agreement, and preparation of the BDP will all contribute to boosting of MRC's technical capacity.

***Financial***: Since the establishment of the earlier MC in the 1950s to MRC in 1990s, the activities of the regional agency have been almost entirely funded by donor agencies. MRC has now an annual budget between $12-15 million (Section C.4). MRC-member countries pay for some nominal share of the MRC's administrative costs and counterpart staff support. If donor funding were to decrease, it is unclear if the MRC would be able to continue to carry out its current programs. Given the continued importance of the Basin in the region, the strong donor interest demonstrated over the past 40 years, and MRC being the only regional organization dealing exclusively with water and related resources management in the Basin, it is not foreseeable that donors would reduce dramatically their support to the MRC. Nonetheless, MRC concurs that its long-term goal should be to increase the amounts of member contributions and generate other revenues to cover greater share of the MRC activities. For this purpose, MRCS has prepared a Business Finance Plan (June 1999) to demonstrate how it would gradually take over financing of the WUP management team as GEF financing will be set on a declining basis. The Plan, as part of PIP, has been endorsed by the JC in July 1999.

***Technical***: There are no insurmountable technical issues. While the basin modeling would be a complicated exercise, numerous basin models have been available in the market and applied in many river basins of the world. One concern is the sustainability of the modeling efforts. Previous modeling results have not been used effectively. The main reason is that the models were developed separately with certain sub-sectoral interest, and do not have a strong focus on MRC's decision-making for basin planning and management. Thus, there has been little incentive to keep them operational. Nor have these studies created much permanent modeling capacity inside MRCS or among the riparian states to apply the models and update them (Section E.3). The modeling component under this Project would have the primary focus of developing and testing the formulation of the "Rules", of being operational to assist MRC in monitoring and review of the implementation of the "Rules", and of aiding decision making on basin management issues. Regardless of what models are adopted, they would be data driven. There is a large amount of information in MRC on the environmental aspects, an area where in the past the MRC has been relatively strong in data gathering and analysis. However, a detailed review into the adequacy (data quality, interval, format, integration) of the databases would be carried out during the start of the Project implementation by qualified experts as a pre-modeling exercise. The focus of the review would be on supporting basin modeling and not on general data collection.

*2. Critical Risks (reflecting assumptions in the fourth column of Annex 1):*

| Risk | Risk Rating | Risk Minimization Measure |
|---|---|---|
| **Annex 1: from Output to Objective** | | |
| MRC agenda and programs are donor-driven. | M | To provide GEF Project funds directly to MRC for its management, with Bank/GEF supervision. |
| Low implementation and management capacity, and coordination of MRC, MRCS, NMC. | S | Include a capacity building component. UNDP Phase II support program to increase institutional capacity in parallel to the implementation of the Project. |
| Weak national capacity to implement the Project and continually use the analytical tools for basin planning and management. | M | The basin model package to be made operational to support monitoring, review and evaluation of the "Rules". Provide training to national agencies to operate and apply the models. |

| | | |
|---|---|---|
| Member states unable to reach agreement on interpretation of the principles in the Mekong Agreement or on draft "Rules", thus causing delay in Project implementation. | S | To ensure high level commitment from MRC, concept review only after MRC Council's endorsement of the Project proposal, and negotiations after JC and Council's approval of PIP. Set moderate Project outputs and realistic performance indicators. To promote regional cooperation, rather than create conditions to riparian development. Provide high-powered international advisory panel to facilitate consultation and negotiations. |
| **Annex 1: from Component to Output** | | |
| Riparians unable to reach agreement on model selection and parameters. | M | Consultations with key parties in the riparian states from an early stage of Project preparation, and during implementation. Provide technical assistance with international experience. |
| Complicated issues related to water quality measuring and unclear mandate of MRC in setting environmental standards. | M | Set modest Project scope, limited to assistance in developing water quality rules and guidelines, review of country environmental policies, and drafting water quality monitoring procedures. |
| Inadequate participation or information exchange with China and Myanmar. | S | Project to provide funds to encourage upper riparian participation, to facilitate dialogue. |
| More donor interest and enough funds to support the whole WUP; GEF funds to cover incremental cost become unnecessary. | N | No need to mitigate, as GEF sees it as a positive sign. |
| **Overall Risk Rating** | **S** | |

Risk Rating - H (High), S (Substantial), M (Modest), N (Negligible or Low)

*3. Possible Controversial Aspects (Project Alert System):* *None*

**G: Main Grant Conditions**

*1. Effectiveness (see Section C.4):*

a) Appoint an independent auditor on terms of reference acceptable to the Bank.

b) Recruit three specialists for WUP Management Team in MRCS.

c) Establish three working groups with appropriate support staff.

d) Fully staff NMC WUP Units.

*2. Dated Covenants:*

a) Prepare semi-annual reports (progress report, monitoring and evaluation report and work plan for the next six months) by June 30 and December 31 of each year, starting June 2000.

b) Set up, by June 30, 2000, a project monitoring system using proper project management software to track physical progress, costs, budgets, procurement and disbursement, and key performance indicators.

c) Carry out project implementation mid-term review by June 30, 2003.

d) Complete development of functional integrated basin modeling package by October 31, 2003.

e) Complete development, installation and testing of a functional and integrated knowledge base and information systems by December 31, 2003.

f) JC approval of preliminary procedures for information exchange, flow and water use monitoring, and notification/consultation protocols by July 31, 2004.

g) JC approval of provisional in-stream flow "rules" (including minimum flows) by July 31, 2005.

h) JC approval of provisional water quality related "rules" by July 31, 2006.

i) Prepare project completion report by December 31, 2007.

**H. Readiness for Implementation**

[x] The WUP team leader was recruited through competitive process and came on board in September, 1999. This expenditure is expected to be retroactively financed by GEF grant after project approval. Preparation of a short list for the international adviser to the WUP management team and for the procurement expert is underway.

[x] Recruitment of the consultant team under the Finnish funds to carry out the "Identification of Modeling Needs, Data Requirements and Selection Criteria" is expected to be initiated shortly. The French funds have been made available to MRCS and initial activities have started.

[x] Appointments of National WUP coordinators have been made in all four countries.

[x] MRCS submitted a draft PIP for Bank review in July 1999. The PIP was found to be generally realistic. Revisions were discussed at negotiations and a revised PIP is expected to be submitted to the Bank prior to Board.

**I. Compliance with Bank Policies**

[x] This Project complies with all applicable Bank policies, i.e. OP/BP 10.02 on Financial Management (section E.4); Procurement assessment (regional requirement, Aug. 11, 1998); and OP/BP 7.50 "International Waters" (below).

Two upper riparians, China and Myanmar, are not a member of MRC, although technical collaboration and exchange of information on the Mekong already exist between MRC countries and technical institutions in China. According to para.7(b) of the Bank OP 7.50, one of the exceptions to notification to riparians is that the Project is of the nature of water resource surveys and feasibility studies on international waterways. The Project will be of a nature of a technical assistance program, involving information collection, modeling studies, training and institutional strengthening. It is in the Bank's judgement that the Project falls into this exception to official notification. Nonetheless, China and Myanmar have been informed about the Project and have participated in annual dialogue meetings, including a recent one in July 1999. They will be invited in technical discussions and riparian consultations during implementation (Section E.3).

Task Team Leader: Mei Xie (EASRD)

Sector Director: Mr. Geoffrey Fox (EASRD)

Country Director: Ms. Ngozi N. Okonjo-Iweala (EACSM)

Regional Program Coordinator: Mr. Bradley Babson (EAPVP)

# Annex 1
## MRC: Water Utilization Project
## Project Design Summary

| Narrative Summary | Key Performance Indicators | Monitoring and Supervision | Critical Assumptions/Risks |
|---|---|---|---|
| ***MRC Goal***:<br><br>An economically prosperous, socially just and environmentally sound Mekong River Basin | Operationalized Mekong Agreement, with subsidiary agreements/rules on water sharing in place.<br><br>Formulation and adoption of a basin development plan. | MRC Annual reports and News Letters<br><br>Reports from MRC-JC and Council meetings | Political and economic stability of riparian states.<br><br>Continued willingness of riparian states to collaborate on the basin development. |
| ***Development Objectives:***<br><br>Establish effective mechanisms to improve water resources management for the economic and social development of the Mekong Basin in an environmentally sustainable manner (including reasonable and equitable water utilization by the countries of the Basin; protection of environment, aquatic life and the ecological balance of the Basin). | Development of a functional, integrated basin modeling package by October 31, 2003;<br><br>Development, installation and testing of a functional and integrated knowledge base and information systems on water and related resources, with a communication system linking the NMCs with the MRCS, by December 31, 2003;<br><br>Adoption of protocols for information exchange, water use monitoring, and preliminary notification /consultation procedures by July 31, 2004;<br><br>Adoption of provisional in-stream flow "rules" (including minimum flows) and final notification/consultation/agreemetn protocols by July 31, 2005;<br><br>Adoption of provisional water quality rules by July 31, 2006. | MRC project implementation progress reports<br><br>GEF/Bank and donor supervision reports<br><br>MRC Annual reports and News Letters<br><br>Reports from MRC-JC and Council meetings<br><br>Council resolutions | The Mekong Agreement is respected by member states, there is continued high political support from the member states for the MRC and its decisions, with coordinated actions at the national level.<br><br>Continued donor support for MRC.<br><br>Future increments of dry season water from development of upper basin (which creates continued interest of lower riparians to collaborate). |

| | | | |
|---|---|---|---|
| ***Outputs:***<br><br>1. A functional and acceptable package of basin simulation modeling and analytical tools supported by improved databases<br><br>2. A set of recommended rules for water utilization (i.e. dry and wet season flow levels on the River; notification and review procedures for proposed water uses, water quality)<br><br>3. Enhanced project and basin management capacity in MRC, NMC, MRCS and relevant national agencies | Basin model package installed and being applied at MRCS and member countries.<br><br>A set of provisional "rules" proposed to the MRC JC and Council.<br><br>Project management teams in place in MRCS and NMCs; WUP units and working groups established and functioning with appropriate staffing and training | MRC project implementation progress reports<br><br>Reports from MRC JC and Council meetings<br><br>GEF/Bank and donor supervision reports<br><br>Visits by Bank supervision missions | MRC agenda and programs not driven by individual donor interest.<br><br>Member states able to reach preliminary agreement on interpretation of the principles in the Mekong Agreement.<br><br>Adequate project management capacity and coordination of MRC, MRCS and NMC.<br><br>National capacity to implement the project and continually use the analytical tools for basin planning and management. |
| ***Project Components:***<br>***(see Annex 2)***<br><br>A. Develop basin modeling and analytical tools | ***Input:***<br>A.1 Technical assistance through consultancy in hydrological and hydraulic modeling, testing, calibration, installation and analysis.<br>A.2 Purchasing of commercial modeling software, computer hardware for regional and national uses, communication equipment, monitoring equipment.<br>A.3 Supplemental data collection, surveys, monitoring and mapping.<br>A.4 Integrate existing databases with the basin-wide modeling system in MRCS and member states.<br>A.5 Training of regional and national staff in modeling operating and application.<br>A.6 Consultations among member states on modeling results and their use for formulation of rules of water utilization. | MRC project Implementation progress reports<br><br>Bank/GEF supervision mission reports | Riparians able to reach agreement on model selection and parameters. |

| | | | |
|---|---|---|---|
| B. Formulate water utilization rules | B.1 Technical assistance through consultancy in drafting of rules.<br>B.2 Structured and mediated consultations through an expert panel to facilitate extensive negotiations among MRC member states.<br>B.3 High-powered consultant panels to work with politicians. | | Complicated issues related to water quality measuring and unclear mandate of MRC in setting environmental standards.<br><br>Participation of upper riparians, particularly China, in the consultation process. |
| C. Strengthen institutional capacity for basin management and WUP implementation | C.1 Provide training courses, on-the-job training, workshops, and study tours for MRC and NCM staff, and representatives from relevant national agencies on water resources and basin planning and management relating to WUP, improvement of MRC and MRCS's effectiveness, accountability, transparency and efficiency.<br>C.2 Fund incremental administrative costs in MRCS relating to implementation and supervision, including the establishment of a project monitoring and evaluation system.<br>C.3 Strengthening of MRCS capacity in financial and procurement management.<br>C.4 Facilitation of information sharing and consultations with upper riparians. | | Adequate in-house capability of MRCS and continuity of MRCS and NMC project teams.<br><br>NMCs' active participation in implementation through contributions in kind, quality staff input, and discussion meetings. |

Note:
*Development Objective:* Describes the impact the project's outputs will have on the beneficiary, institution, or system in terms of changed behavior or improved performance. The development objective defines the project's success.

*Project Outputs*: Defines what the project can be held directly accountable for producing--the project's deliverables, the goods, and services it will produce. Typically, outputs are independent, synergistic, and integrated.

*Project Components*: Clusters of activities that define how the products and services will be delivered (technical assistance, physical infrastructure, and the like).

# Annex 2
## MRC: Water Utilization Project
## Project Description

1. The WUP Project will help establish a permanent and functional program to support the management of water resources in the Mekong Basin in a manner consistent with the Mekong Agreement. It consists of three components: (A) Develop basin model package and knowledge base. (B) Develop rules for water utilization. (C) Strengthen institutional capacity of MRC/ NMCs.

2. The output of the Project is expected to be MRC use of the basin model package and knowledge base (Component A) to help formulate rules for water utilization (Component B) and the Basin Development Plan (BDP). The outcome is expected to be MRC use of the knowledge base to review proposed water uses by MRC-member states according to the "rules for water utilization" and for consistency with the BDP.

### A. Basin Model Package and Knowledge Base

3. The broad aim of Component A is to provide an analytic tool to support WUP, and the BDP, that is based on improved understanding of the interaction between the physical and biological features of the basin and their functions, and the changes in these that may occur due to human activities. The Project would support the recruitment of international and local consultants to work with the countries, and the procurement of related computer and communications equipment to develop the related shared information system and knowledge base at MRC for decision making, planning and modeling by developing, testing and implementing a system of shared data bases and software tools (sub-component A.1), to develop the basin modeling package (A.2), and to use the models to identify and analyze transboundary environmental, social and economic impacts of proposed actions on the aquatic ecosystem and other water uses and functions of social, economic, and regional and global importance (A.3).

#### *A.1 Information and Knowledge Base Development*

4. (i) Modeling Needs, Data Requirements, and Selection Criteria. The WUP Project will not attempt to develop a completely new model with new software. The Project will select models that are presently available in the market. Selection of the modeling system is a major decision to be taken early in the Project. The differences that exist among existing modeling systems are found in the appropriateness of the basic scientific approaches and assumptions built into the model, the computational techniques, the user and data system interfaces, their flexibility in adapting and building the model in different physical, environmental and economic settings, and the speed and ease with which changes in the model and data can made. Most importantly, the outputs of the selected modeling system should be able to address and support the objectives of the WUP Project, particularly the consultative process by which the rules for water utilization will be negotiated among the riparian countries.

5. As a preparatory work, MRCS carried out a preliminary model screening study with financial and technical assistance from AusAID from late 1998 –July 1999. The study provided, with primary focus on MRCS staff, awareness of the potential benefits and limitations of modeling, preliminary assessment of hydrological data, modeling exercise with the Murry Darling water quality and quantity model, and training courses.

6. The sub-component activity will be carried out by the MRCS and NMC WUP teams to define the modeling needs and objectives, the data requirements and likely limitations that will

prevail during the WUP Project, and the criteria to be used in selecting the modeling system. The outcome will be discussed with and reviewed by the WUP regional and country Units. When the result is agreed between the MRCS and NMC WUP teams, the procurement of consultants and the work on the modeling system would be initiated.

7. (ii) Review of Available Data. Modeling and related analytical tools are only as useful as the quality and completeness of the data on which they are based. A lot of effort and donor support has been given (both in the past and currently) to building and improving water and environmental related knowledge, including inventories, surveys and data collection, monitoring networks, GIS building, and mapping. Active areas with the most donor support include hydrology, water quality, wetlands, groundwater, fisheries, forestry, salinity, acidity and sedimentation. These data can be found in the seven databases installed in the MRCS: forestry; meteorology and hydrology; water quality; socio-economy; water resources; groundwater; and wetlands.

8. Basic data needed for the basin modeling package include catchment features, meteorology, hydrology, water quality, social and economic, water use, major infrastructure, groundwater and hydrographics. Primary sources of data include the hydromet network, project studies, remote sensing, GIS systems under development, maps and survey results. The Project should review and use existing data or data likely to emerge from ongoing projects. The Project will support additional data collection if they are critical for model building, and if calibration data are missing or outdated. The modeling needs of the WUP Project would also influence and shape some MRC's ongoing and planned monitoring and data collection programs.

9. (iii) Identification and Filling of Critical Data Gaps. Both the WUP Project and the long-term support for implementation of the water utilization rules depend on the MRC knowledge base and the quality and reliability of data in its information system. The improvement of the knowledge base and the information system will necessarily be a gradual and evolutionary process. Nevertheless during the WUP Project, an effort will be made to close critical data and information gaps. During the review of available data, and the analysis of transboundary environmental, economic and social issues, these gaps will be identified and priorities agreed between the WUP teams in MRCS and NMCs. Moreover, in consultation with the concerned donors, the MRCS will formulate a program to close these gaps through adjustments to existing projects where this is feasible or by securing new support from donors.

10. (iv) Data Bases and Information System Design. The aim is to have a modern information system with appropriate data bases at the core of the MRC knowledge base that is shared and equally accessible to the MRCS an the NMCs. The Project will support the design of this information system including the selection and preparation of required software, design of data structures, hardware and communications arrangements, and the development of procedures for data base development and maintenance. These concepts and specifications will be summarized in a report thoroughly discussed with all stakeholders in the riparian countries and agreed by between the MRCS and the NMCs. This agreement is intended to be a critical input to consultations on the proposed information and monitoring exchange protocol (B.1.1), and is required to initiate the development, testing and implementation of the WUP data bases and information systems (A.2.5).

11. (v) Assessment of National Legal and Institutional Frameworks. Under this sub-component the national legal and institutional frameworks will be reviewed to assess the legal and institutional capacity of the NMCs and national line agencies to implement the rules

(developed in Component B) and to provide the basis for the rule making in order to ensure that the rules are appropriate and feasible.

12. (vi) Water Quality Data and Problem Assessment. In spite of the fact that hydrological conditions strongly influence water quality, concern for water quality in the Mekong is quite recent. There is no updated assessment of the present state of the water quality in the Basin, although, it is obvious that increased erosion/sedimentation, salinisation, and local acidification and eutrophication are some important issues. A number of MRCS environmental projects are now on-going, and will provide knowledge for the water quality modeling. Before the water quality components of the basin modeling package are develop, a thorough assessment of existing water quality data, and assessment of the status of water quality and the significant present and future threats will be carried out.

13. (vii) Development, Testing and Implementation of Data Bases and Information Systems. The development, testing and implementation of the data bases and information systems would involve the procurement of hardware and software and its installation and integration into a knowledge base computer network accessible to the NMCs and line agencies as well as the different divisions and units within the MRCS in accordance with the design. This would include an Intranet system and access to the Internet. This activity will also include the development of operation and maintenance programs and the training technicians responsible for the system. Quality assurance systems will need to be operationalized. The system will need to be fully tested to ensure that its structure and formats are compatible and that the designed access and use functions are operational. The systems will also require electrical and virus safety features that should be fully implemented and tested.

14. The data bases and information systems will be designed to be compatible and integrated with other on-going MRC activities including the proposed "Integrated Geographic Information System and Statistical Databases for Natural Resources Management" project to be financed by Denmark and the development of Intranet and Internet connections between the MRCS and the NMCs being financed by Finland and UNDP.

### *A.2 Development of Basin Modeling Package*

15. The need for the development of an operational, integrated, comprehensive basin modeling package for the water resources of the mainstream and tributaries of the Lower Mekong River Basin is based on three considerations:

- Implementation of the provisions of Chapter III of the Agreement specifically Articles 5 and 6, and Chapter IV specifically Article 26 (Water Utilization Rules).
- Support preparation of a Basin Development Plan.
- Achieving the key results sought in the Vision and Strategy document recently adopted by the MRC.

16. The riparian countries and the MRC have recognized that the complexity of the water resources of the Mekong Basin, and the wide range and scope of existing water uses and development proposals and plans of the riparian countries, must be adequately taken into account in evaluating options to implement the Agreement and in implementing priority studies and projects that constitute their regional and national strategies.

17. Prior Modeling Activity. MRCS, and its predecessor Mekong Committees, have undertaken a number of modeling studies in the past, and some models are available. However, those models have not resulted in a comprehensive Mekong Basin modeling package. Nor have these studies created a permanent, continuing modeling capacity inside MRCS or within NMCs and their partner line agencies. This is because those studies have mainly reflected specific sub-sector interests (such as salinity, hydropower or irrigation), were often *ad hoc* or for specific project purposes, and did not have any linkage to the planning and management responsibility of MRC. They have also often lacked a strong focus on capacity building within the riparian countries or in the MRCS that was sustainable.

18. Basic Elements and Processes To Be Modeled. The WUP basin model package should include elements defined and linked together in a structure to represent the catchment and river system, including present and planned water use, that adequately represents present physical reality, provides reliable estimates of future conditions, and provides the information needed for management decisions. The linked elements will require overall calibration and verification to ensure acceptable matching of the model and real world behavior.

19. Choice of an appropriate time-step will be necessary for the modeling package. Observed flow show considerable variation within each of the months during the wet season. This variation is important in maintaining wetland processes. Additionally a daily time-step may be needed for water quality modeling, and in the delta area, where tidal influence must be considered, even a shorter time step may be considered. The short time step allows better evaluation of the management rules relating to water quantity and notification procedures.

20. Basic Approach. The basin divides into three major zones or parts because of the underlying hydrologic and hydraulic character of the river and the types of river functions and environmental concerns that predominate. Although each part of the basin requires a different modeling approach, the WUP modeling package must be capable of an overall integrated analysis of the basin and the river's annual cycle. The basin modeling package must be flexible and user-friendly. Special emphasis should be put on the transparency and ease of understanding assumptions, structure, and results. Visual output should be emphasized. The basin modeling package should be implemented in a manner to permit the MRCS and NMC modeling working groups to readily change the underlying structure, assumptions, parameters, and data incorporated in the various model components (this may require that the they have full access to the model computer code).

A.2.1 Upper Basin

21. The Upper Basin generally comprises the watershed and river system above Pakse (to be confirmed). The watershed lies primarily in Laos, Thailand, China and Myanmar. This is the upland portion of the watershed where hydrologic processes, including rainfall, glacial and snow melt, and groundwater recharge and discharge predominate in the determination of river flow. The modeling approach in this portion of the watershed should therefore be hydrologic, concentrating on predictions of runoff and recharge and the related hydrologic processes.

22. Groundwater Modeling and Assessment. Because of the importance of groundwater recharge and discharge in this portion of the watershed, understanding groundwater behavior is particularly important in modeling both the quantity and quality of water resources.. This is particularly the case where water quality is related to geologic conditions in the catchment. For example, the high salinity levels of the Mekong tributaries in some parts of Thailand are related to rising levels of saline groundwater in these watersheds. The level of groundwater is expected

to continue to rise as the clearing of land for cultivation and the development of irrigation expands. This process will lead to increasing salinity in surface waters. Understanding, predicting and developing proposals for managing this phenomenon will be an important task.

23. Reservoirs. Reservoirs are a critical element in modeling the Upper Basin. The largest and most important existing and proposed reservoirs are located in the Upper Basin. Storage and regulation for different purposes (primarily hydropower, irrigation and water supply) are the primary objectives of these projects. Their mode of operation has significant effects on downstream flow patterns and on water quality because of changes in flow level, timing, assimilative capacity caused not only by the scheduling of releases and diversion, but also the water quality and ecological changes in the reservoir lakes.

24. Portions of the Mekong Basin in China and Myanmar. An estimated 18 percent of the flow of the Mekong River originates in the uppermost part of the basin located in China (16 percent) and Myanmar (2 percent). Neither country is a party to the Agreement. China has well known plans for the development of the substantial hydropower potential of this region. China has already developed several small storage sites for this purpose, and is currently planning to develop the largest storage site with a potential of 4,800 MW. Knowledge of the natural flows from this region, and regulated flows that will result after development and use of the full potential of the river by China and Myanmar is important to the complete analysis of the annual cycle of the Mekong River and to the estimation of flows at selected points in the lower basin during critical period of water use and function. The Project will support efforts by the WUP team to involve Chinese specialists in the development of the basin modeling package, and to seek the active participation and support of China and Myanmar to the overall WUP program of the MRC.

A.2.2 Lower Basin

25. The Lower Basin below Pakse has a quite different hydrologic and hydraulic character. This portion of the basin consists of the Cambodian flood plain, the Great Lake (Ton Le Sap), and the delta in Vietnam. The flows pattern in this portion of the basin is primarily determined by hydraulic conditions, particularly water levels and tidal influences, except in the monsoon season where the high rainfall in this portion of the basin, high mainstream flows and the lack of drainage causes extensive flooding and surface storage of excess water. Downstream of Pakse, and in the delta, the mainstream divides into several channels and branches further complicating the flow pattern and the modeling.

26. Tonle Sap. The Great Lake (Tonle Sap), the main feature in the Cambodian plain, is of exceptional ecological and economic importance to Cambodia, the Mekong Basin, and globally. The Lake includes extensive wetlands, flooded forests, and its perimeter is extensively cultivated and irrigated. The Lake is connected to the mainstream of the Mekong in Phnom Penh by the Tonle Sap River which functions as a inlet to fill the Lake with Mekong River water in the high flow period and as a drain in the low flow season. Significant volumes are also contributed to the Lake by its surrounding watershed. The Lake's surface area varies from about 3,000 $km^2$ at the end of the dry season to about 16,000 $km^2$ at the end of the wet season. The subsequent gradual draining of the Lake during the dry season is a significant contributor to the dry season flow of the Mekong below Phnom Penh. This globally unique Lake-River system including its wetland and flooded forest ecosystem is thought to be critical to the bio-diversity and inland fishery of the Mekong Basin. This is a critical dynamic element of the WUP basin model package.

A.2.3 The Delta

27. The third major zone in the Mekong basin is the Delta. Tidal influences extend above Phnom Penh. Just below the confluence of the Tonle Sap River with the Mekong River in Phnom Penh, the Mekong divides into the Bassac River and the mainstream of the Mekong. About 80% of the flow continues down the Mekong. Both rivers are important to navigation and are sources of irrigation water in the Delta. This is an agriculturally and ecologically rich area with extensive mangrove forests near the coast. Irrigation and drainage is provided to about 2.4 million hectares of rice. Water management is extremely complex in such a highly populated and developed delta region. In addition to the problems of water supply, drainage and navigation, and control of salinity intrusion, the Delta includes extensive areas of acid-sulfate soils that when drained and developed result is very acidic drainage water. These acidic drainage waters tend to also result in increased levels of soluble aluminum that is a significant factor in fish disease. The Delta is an integral part of the entire ecosystem of the Lower Basin, and its water management system and needs must be an integral part of the WUP basin modeling package. Vietnam has developed expertise and models to support the development of the Delta, and these existing resources should be fully integrated and utilized in the development of the WUP basin modeling package.

A.2.4 Water Quality Modeling and Strategy Development

28. The findings, conclusions and recommendations of the water quality data and problem assessment, including the proposed concept and approach to the water quality modeling component of the basin model package, should be discussed and agreed with the MRCS and the NMCs, and members of the JC Sub-committee on Water Quality Rules. Based on this agreement the basin model package component require to model water quality will be developed and calibrated, and fully integrated into the overall model package in a manner that will enable the WUP team to carry out integrated modeling of water quantity and quality.

29. The Agreement provides no guidance on the form or criteria for water quality rules (sub-component B.2.2). Given the uncertainty inherent in the existing data, the lack of viable options to address some problems, and the weak state of environmental law and enforcement capacity, it seems likely the Sub-committee should develop and recommend to the MRC a strategy with interim rules that can be improved as the water quality knowledge base improves and the institutional capacity and policy framework for dealing with the issues improves. It is therefore most important to understand which problems are of greatest strategic and economic importance and deal with those problems by the most effective means available. The most difficult questions facing the Sub-committees on rules for water quantity and quality will be to set priorities among the problems and threats that have been identified and to use the integrated basin modeling package to develop a strategy to address those problems. Such a strategy in the near term is likely to rely less on legal standards for ambient water quality or emissions than on a specific action plan to be undertaken by each country as appropriate to strengthen water quality and emission monitoring, harmonize and increase the effectiveness of their legal frameworks, and strengthen the enforcement and policy framework. At the same time, the interim rules could be framed to address those specific problems about which there is good knowledge of the root causes and consequences, and for which there are viable means to address the problem.

A.2.5 Integration of Upper and Lower Basin Models

30. Individual models appropriate for the physical and environmental setting and principal features in each part of the basin will be linked to form a single integrated modeling package capable of analyzing the entire basin and the linkages and relationship between actions in different parts of the basin at different points in time. Modeling of water quantity and quality, and linkages with important environmental, social and economic issues such as wetlands, fisheries, salinity and navigation will be integrated to insure consistent and comparable results and recommendations, and to provide a comprehensive basis for comparing options. The basin modeling package is intended to be able to analyze the entire annual cycle of the Mekong River, as well as specific critical periods at selected locations under a range of assumptions and project proposals.

A.2.6 Calibration and Verification of the WUP Modeling Package

31. The WUP basin modeling package is intended to provide the key analytical support to the MRC's process of negotiation of the rules for water utilization, provide similar support to the preparation of the Basin Development Plan, and support project and strategy development in each of the riparian countries. It must therefore be a tool accepted by all the riparian countries and its results and outputs must be considered by all as credible and reliable (within the limits of the data that is available at any point in time). Hence, particular attention will be given to the calibration of the WUP basin modeling package. After calibration, the modeling package should be verified using different input data than used in the calibration process before it is used to formulate, test, and evaluate options.

A.2.7 Verification of Water Use Monitoring Protocols

32. Water use monitoring protocols will be developed under sub-component B.1.2. Article 26 of the Agreement calls for improved mechanisms to monitor the intra-basin water uses, and a mechanism to monitor inter-basin diversions. The calibrated basin modeling package will be used to simulate a wide range of water use and diversion scenarios to test the viability of the alternative mechanisms being considered in the consultations on these rules.

A.2.8 Support for Rules Formulation and Consultations

33. The calibrated basin modeling package and the knowledge base will be used to test procedures and guidelines developed during consultations on the Procedural Rules (sub-component B.1) and to formulate and evaluate alternatives and options for the Physical Rules (sub-component B.2).

### *A.3 Environmental, Economic and Social Trans-boundary Analysis*

34. The ability to identify, predict and assess linkages and impacts between proposed actions and transboundary environmental, economic, and social needs and concerns is critical to the success of the WUP Project. Such an analytical framework would provide important support to consultations among the riparian countries on the interpretation and implementation of the Agreement. It would also provide the tools needed to review project proposals and plans under the notification and consultation protocols, to analyze options implement the Agreement, to properly carry out environmental impact assessments for proposed actions, and to support the preparation of a Basin Development Plan that is consistent with sustainable development and management of the water resources of the Mekong River Basin.

35. The development of such an analytical framework depends on an understanding on how the environment and other water uses and functions (navigation, salinity control, wetlands, fisheries, water supply, water quality) could be affected by changes in the flow regime of the river at critical times and locations, and on the ability to predict changes in the flow regime that would result from proposed actions. The latter ability will be provided by the basin modeling package developed in A.2. The aim of this sub-component A.3 is to develop additional model components for the basin modeling package that would enable the MRCS and NMC WUP teams to analyze and predict transboundary impacts on the aquatic ecosystem and other water uses and functions of social and economic importance. review of existing data and knowledge, and problem assessment

A.3.1 Trans-boundary Problem Assessment, Priorities, and Data Needs

36. MRCS and UNEP completed a Diagnostic Study of the Mekong River Basin in 1997. At the time of that study, there did not exist sufficient knowledge of problems and their importance to set priorities, or to develop specific guidelines or strategies to take preventive or corrective action.

37. This sub-component would rely primarily on existing data, and data that is likely to be obtained from ongoing studies and field research. MRCS has implemented and has an ongoing extensive program of field investigations, training, and capacity building focusing on key transboundary issues in the Mekong Basin including fisheries, forestry and watershed management, wetlands, salinity, acid-sulfate soils, flood plain management, and soil erosion and sedimentation. These activities are placing increasing emphasis on collecting data and carrying out related research on linkages with the flow and hydrologic regime. Assessing each problem area with all available data, determining which problems are of regional and global significance, and identifying specific needs for additional data are the key steps in launching this process.

38. ***Closing Critical Data Gaps.*** Local communities rely heavily on the river and its associated environment. If the flow pattern or river flow is going to be changed so heavily that it is damaging the associated environment, it will affect the well-being of the local populations and may include movement from the local areas to the cities and towns. These communities are valuable source of knowledge about the local environment and its relationship with river flow especially under extreme conditions. This informal and subjective information is going to be collected and collated using the network of social scientists in the region. The information obtained is used when assessing the ecological and socio-economic impact of different development alternatives.

39. In areas where specific data are lacking, the Project would support the contracting of national and international scientific expertise to review actual conditions in the field, discuss issues and experience with local specialists, and develop change and response scenarios. The scientific experts would visit the sites where assessment is needed, and would utilize information and data from the social assessments, local knowledge, reviews of the national and international literature, model outputs, and results of environmental and physical studies made at the site. The panels would assess the impact of simulated changes in the river flow caused by different planning alternatives. The result is a subjective but scientifically assessment that would provide a basis for the WUP team to make progress and a basis for reformulating MRCS's long term program of studies and research.

A.3.2 Transboundary model component development

40. The objective of this component is to use the information from past investigations together with information on the past and simulated river flow regimes, to guide river basin management decisions on water and land use. Knowledge is needed on wetland issues such as the location, extent, timing and duration of inundation, and their productive capacity. The data and models should establish relationship between the river flow and these variables. Once the relationship has been established, the impact of flow changes to the ecosystem can be estimated.

41. Development even of semi-quantitative environmental response and impact analysis will take time. In many cases, descriptive or simple tabular relationships are expected to be the best form of such analysis in view of the limited knowledge and data available. Anyhow, in the case of some fishery studies and the Study of Cambodian Wetlands and Flood-Plains some kind of semi-quantitative response and impact analysis should be possible.

**B. Development of the Rules for Water Utilization**

42. The Project will support the MRC in the formulation of "Rules for Water Utilization" by providing analytical tools, building technical capacity in the MRCS and the riparian states, facilitating consultations, and providing legal expertise. The term "rules" is used in a general sense to refer to the obligations of the MRC-member states with respect to Articles 5 and 6 of the Mekong Agreement, and other actions necessary for the sustainable development of the Mekong River Basin. The terms and conditions of the obligations incurred by the MRC-member states in adopting different types of rules will be explored during the course of consultations and with the support of an internationally recognized water law expert. The WUP modeling and knowledge base working groups will also support the rule-making process.

43. A structured and facilitated consultation process with the Sub-Committee(s) for Water Utilization (Quantity and Quality) is envisioned, with clear mile-stones and time-frames. The drafting of "Rules for Water Utilization" will be a multi-faceted, long-term process that requires extensive consultations, negotiation assistance, and solid scientific analysis. At least five consultations per year, starting in mid-2000 and lasting until 2005, are envisioned. The WUP project management team, in conjunction with a facilitator/legal expert, and appropriate WUP working groups, will assist the Sub-Committees in drafting water utilization rules. The Sub-Committees will formulate draft rules for the consideration of the MRC Joint Committee, which then makes recommendations to the Council. The MRC Council members are entitled to make policy decisions on behalf of their respective governments (Article 15) and thus the terms and conditions of the water utilization rules adopted by the Council are considered binding by the MRC-member states.

44. Article 26 of the Mekong Agreement mandates the Joint Committee to prepare "Rules for Water Utilization and Inter-Basin Diversions" pursuant to Articles 5 and 6 of the Mekong Agreement. Article 5 contains the general principle of "reasonable and equitable utilization" of the waters of the Mekong system, and outlines the conditions for notification, consultation, and agreement on proposed water uses. Article 6 calls for the maintenance of flows on the mainstream with respect to i) natural dry season flows, ii) wet season flows sufficient to enable the acceptable natural reverse flow of the Tonle Sap, and iii) peak flood flows. In order to implement Articles 5 and 6 of the Mekong Agreement, and adhere to the principles of Article 3: "Protection of the Environment and Ecological Balance," and Article 7: "Prevention and

Cessation of Harmful Effects," additional rules on water use monitoring, information and data exchange protocols, and water quality are needed.

45. In summary, "Rules" for water utilization anticipated to be formulated under the Project are: (i) *Procedural "Rules"*---Protocols for information exchange; protocols for monitoring water use and diversions in the Mekong Basin; and protocols for the notification and consultation on proposed water use. (ii) *Physical "Rules"*--maintenance of flows on the mainstream; and water quality "Rules".

46. The MRC places a high priority on drafting a coherent and integrated set of water utilization rules in an expeditious, yet scientifically sound manner. The strategy pursued in the WUP Project is to facilitate and support a flexible, yet structured process in formulating the rules for water utilization. Moreover, in a manner consistent with the principle of adaptive management, and in light of the prevailing uncertainties in some key data, the rules will be adopted on an interim basis, subject to review and revision according to the conditions promulgated by the MRC.

47. The initial phase of formulating the protocols outlined above, including: i) information exchange, ii) water use monitoring, and iii) notification and consultation, can proceed soon after the start-up of the WUP Project because they deal primarily with "procedural rules." Critical data gaps and improved information management needs will be identified under Component A.1 of the WUP Project (Information and Knowledge Base Development); this information will provide the foundation for developing protocols for information exchange and water use monitoring. The exchange of information engendered by these protocols should help in the development of the Basin Modeling Package (Component A.2) and the Trans-boundary Response Analysis (Component A.3), and support the formulation of the Basin Development Plan. Sub-Committee deliberations on notification and consultation protocols can also begin during the early stages of the of the WUP Project.

48. Formulating rules related to maintenance of flows on the mainstream and water quality rules, requires more scientific and environmental analysis and thus should wait until the Basin Modeling Package (Component A.2) and the Trans-boundary Response Analysis (Component A.3) are adequate to support this effort. These two sets of rules are referred to here as "physical rules." As discussed below, the Project envisions water utilization rule-making proceeding with "procedural rules" first, followed by "physical rules."

### *B.1 Procedural Rules*

B.1.1 Data and Information Exchange Protocols.

49. Article 24, Provision C of the Mekong Agreement lists as some of the functions of the Joint Committee "to regularly obtain, update and exchange information and data necessary to implement this [Mekong] Agreement." Component A of the WUP Project, "Basin Model Package and Knowledge Base" will identify data gaps and needs and provide a basis for developing data and information exchange protocols. Currently, the MRC-member states have some data within their own national line agencies or National Mekong Committee Secretariats which are not, but should be, shared with the MRCS. Conversely, the MRCS may have information which is not easily accessible to the NMCs and line agencies.

50. Information and data exchange protocols are required to ensure that the MRCS and the NMCs and the line agencies in each of the riparian countries are aware of their responsibilities in providing information and management actions within their areas of responsibility. Types of information which might be subject to exchange protocols include:

- Hydrological information on mainstream, tributaries, distributaries, groundwater
- Meteorological data
- Water use data
- Water quality information
- Land Use: Forestry, wetlands
- Feasibility studies and associated EIAs, scientific surveys, etc.
- Socio-economic data
- Fishery data
- Water-related infrastructure: reservoir and conveyance capacities, pump station sizes, etc.
- Sector information related to water use and development

51. The exchange protocols should include details such as:

- Objectives and outcomes sought from the information exchange
- Type and format of information to be exchanged
- Information transfer chain from (and to) the MRCS, NMCs, government agencies, and the community
- Timing of such information transfers
- Responsibility for maintaining database
- Type of access to data bases

52. Formulating and revising information exchange protocols will be a long term and continuous process, but it is expected that significant progress can be made in the early stages of the WUP Project, both to support the development of the Model Package and Knowledge Base (Component A) and the Basin Development Plan. A key performance indicator for the WUP Project will be the MRC adoption of an information exchange protocol for high-priority items within 2 years of the start-up of the WUP Project.

B.1.2 Water Use Monitoring Protocols

53. Article 26 of the Mekong Agreement calls for the MRC to "improve the mechanism to monitor the intra-basin uses" and "set-up a mechanism to monitor inter-basin diversions." Although the MRC and the former (Interim) Mekong Committee have collected hydrological data for over four decades, there does not exist a shared understanding among the MRC-member states of their respective use of water. Developing a Basin Model Package and discussing the "reasonable and equitable use" of water resources is not possible unless water uses are identified and quantified.

54. Water use monitoring protocols should apply to all significant existing surface and groundwater consumptive and non-consumptive water uses in the lower Mekong Basin. Protocol information on major water uses should include items such as:

- Amount and location of water diverted or abstracted

- Location of water use
- Amount of applied and consumptive water use
- Period in which the water used: season, month, week
- How the water used: irrigation, urban water supply, industrial use, etc.
- Amount and nature of return or waste water flows

55. In addition to providing information on water use, mechanisms may need to be formulated so that water use reporting in each riparian is accurate and acceptable by the other MRC member countries. Verification procedures could include on-site inspections by MRCS staff, certified reports by MRC member states, etc.

56. Formulating and revising water use monitoring protocols will be a long term and continuous process, but it is expected that significant progress can be made in the early stages of the WUP Project, both to support the development of the Model Package and Knowledge Base (Component A) and the Basin Development Plan. A key performance indicator for the WUP Project will be the MRC adoption of a water use monitoring protocol for high-priority items within 2 years of the start-up of the WUP Project.

B.1.3 Notification, Consultation and Agreement Procedures

57. Article 5 of the Mekong Agreement calls for the notification, consultation, and agreement on proposed water uses according to the season (dry or wet), point of diversion (mainstream or tributary), and location of use (intra- or inter-basin). The practical implementation of these procedures requires the formulation of notification, consultation and agreement procedures. Chapter II of the Mekong Agreement presents the following definitions:

- Notification: Timely providing information by a riparian to the Joint Committee on its proposed use of water according to the format, content, and procedures set forth . . . [in the Rules for Water Utilization].

- Prior Consultation: Timely notification plus additional data and information to the Joint Committee as provided in . . . [the Rules for Water Utilization] that would allow the other member states to discuss and evaluate the impact of the proposed use upon their uses of water and any other effects, which is the basis for arriving at an agreement.

58. The Sub-Committee(s) for Water Utilization will need to make recommendations to the Joint Committee on the "format, content and procedures" for notification and consultation.

59. In addition to specifying the notification/consultation procedures, the MRC also needs to develop internal procedures for handling the notification of proposed water uses.

60. Formulating and revising notification and consultation protocols will be a long term and continuous process, but important progress can be made in the early stages of the WUP Project. For example, the basic conceptual questions can be addressed and draft protocols can be considered. A preliminary definition of wet and dry seasons may be adopted. It may be possible to identify proposed water use projects that all MRC members support, formulate notification procedures, and process the project in the MRC as test cases. Not only would this help the MRC develop notification procedures, but it would also allow important water resource development projects to proceed through the MRC using unambiguous and officially-sanctioned notification

protocols. A key performance indicator for the WUP Project will be for the MRC to use formal notification procedures for a non-controversial, mutually agreed-upon, water use project(s) within 2 years of the start-up of the WUP Project.

61. Even if the notification protocols are formulated and agreed-upon, the MRC may not be ready to review some types of proposed water uses for a number of years. For example, a significant proposed use of dry season water from the mainstream would need to be evaluated using the Basin Model Package and Knowledge Base (Component A), evaluated with respect to Maintenance of Flows Rules (Component B.2.1), and any other considerations contained in the notification protocols. Nevertheless, the MRC should be able to agree on a complete set notification protocols by the mid-term of the WUP Project. A key performance indicator for the WUP Project will be for the MRC to adopt a complete set of provisional notification and consultation procedures within 3 years of the start-up of the WUP Project.

### *B.2 Physical Rules*

B.2.1 Maintenance of Flows on the Mainstream

62. Article 6 of the Mekong Agreement calls for the maintenance of flows on the mainstream. During the dry season, the flow should be "not less that the acceptable minimum monthly natural flow during each month of the dry season." Wet season mainstream flows should also be sufficient "to enable the acceptable natural reverse flow of the Tonle Sap to take place." Establishing minimum flows based upon the natural flow regime is a key element of the sustainable development of the Mekong River Basin and the protection of existing beneficial uses. Evaluating alternative minimum flow regimes require extensive scientific, environmental, and socio-economic analysis. The Basin Model Package and Knowledge Base, developed under Component A of the WUP Project, will be used to evaluate the impacts of different minimum flow regimes.

63. With respect to the dry season flow rules, there are a number of specific items identified in the Agreement (Article 26), including:

- Specifying which months are subject to the dry season minimum flow rules. For example, March through May, or January through June.
- Establishing the location of the hydrological stations, and determining the flow level requirements at each station.
- How to incorporate drought episodes into the dry season flow rules.

64. During the wet season, the acceptable natural reverse flow is defined (Chapter 2) as:

- The flow level in the Mekong River at Kratie that allows the reverse flow of the Tonle Sap to an agreed optimum level of the Great Lake.

65. During the WUP Project preparation phase (1997), the MRC adopted the concept of using the natural hydrograph and associated uses of water as the basis for formulating rules on mainstream flows. Key considerations in this approach include:

- Identifying beneficial uses of water and their linkages to the annual hydrograph. For example, in-stream uses, such as navigation, salinity repulsion, and pollution dilution require minimum water levels during the dry season.

- The aquatic eco-system requires a minimum flow based on the natural flow during the dry season.

- Fish migration to spawning and rearing habitats are usually triggered by abrupt changes in the flow regime, i.e., the rising and falling limbs of the annual hydrograph.

- Preservation of wetlands and floodplains are essential to preserving aquatic productivity and biodiversity, and are dependent on the wet season flow regime.

- Dry season flows into the Mekong Delta are partly dependent on the amount of wet season mainstream flows stored in the Tonle Sap.

66. Understanding the flow regime of the Mekong River Basin in the most complete sense, including temporal (seasonal and annual) and spatial (mainstream, tributaries, distributary, wetland, floodplains) variations is the foundation for establishing minimum flow rules, formulating the BDP, and the review of proposed water uses. A key performance indicator for the WUP Project will be the publication of an MRC report on the "Hydrology, Water Quality, and Beneficial Uses of the Mekong River Basin" within 3 years of start-up. This report will serve as the foundation for rule-making related to minimum flows and water quality.

67. The WUP strategy calls for an incremental, but comprehensive and integrated approach to setting minimum flow rules. Because maintaining dry season flows is one of the most critical management decision confronting the MRC, and the analysis of dry season flows is generally more straight-forward than wet season flows, the Water Utilization Sub-Committee will focus on setting dry season flow rules first. A key performance indicator for the WUP Project will be for the MRC to adopt a set of provisional dry season minimum flow rules within 4 years of the start-up of the WUP Project.

68. The hydrology and hydraulics of wet season flows is complicated by a number of factors. Overbank flooding, flows into the Mekong delta, and reverse flows into the Tonle Sap during the wet season require the use of sophisticated hydraulic models. Moreover, hydrological data in Cambodia is sparse and a basic understanding of Tonle Sap hydrodynamics is lacking. Critical knowledge gaps on the Tonle Sap include: i) the transfer function (and quantity) of reverse flows from the mainstream into Tonle Sap; ii) contribution of Cambodian tributaries to Tonle Sap storage during the wet season; and iii) volume, depth, and surface area curves for Tonle Sap. Addressing these knowledge gaps will take time and sophisticated analysis, and thus the establishment of wet season rules will take somewhat longer than dry season minimum flow rules. A key performance indicator for the WUP Project will be for the MRC to adopt a set of provisional wet season minimum flow rules within 6 years of the start-up of the WUP Project.

B.2.2 Water Quality Rules

69. Water quality considerations will be an integral part of formulating protocols related to: i) information and data exchange; ii) water use monitoring protocols; and iii) notification and consultation protocols. Water quality considerations (salinity intrusion, pollution dilution, and

ecological water quality needs) will be an integral part of establishing minimum dry season flow rules. A clear understanding and categorization of the beneficial uses of the water resources of the Basin, their water quality requirements, and the most critical water quality threats to these beneficial uses are not well-known. In general, point source pollution, such as municipal and industrial wastewater discharges appear to be localized and not yet of major trans-boundary concern. Diffuse non-point sources of water pollution, such as increased sediment loads and agricultural run-off, may be more important but their significance is not well-understood. An important step in addressing water quality concerns is to first characterize the problem. The Project will support the publication of an MRC report on the "Hydrology, Water Quality, and Beneficial Uses of the Mekong River Basin" within 3 years of Project implementation. This report can serve as the foundation for water-quality rule-making.

## C. Institutional Strengthening of MRC and NMC to Implement WUP

### *C.1 Project and Program Management Support and Capacity Building*

70. This Project will support the procurement of a long-term international consultant advisor to the WUP management team who will assist in all aspects of WUP implementation and coordination. The consultant will be an experienced international specialist in water resources management as well as program management. The adviser will work with the WUP teams, working groups, and national line agencies to provide technical assistance and on-the-job training. The consultant will identify problems and propose solutions, and will provide continuous liaison with the Bank supervision team. The Project will also support short-term consultants as needed in areas such as information systems, knowledge management, environment, fisheries, hydrology, water quality, groundwater, modeling, negotiations, and water law/rule making. These consultants will be brought in to assist in different key areas of Project implementation when needed and will provide technical assistance to the working groups. In order to retain maximum flexibility and in the spirit of trouble shooting, the needs for short-term consultants will be defined during Project implementation. The Project will finance the procurement of office equipment, such as photo copy machines, fax machines, cellular phones, etc.

### *C. 2 Technical Training and Capacity Building*

71. The Project will provide training to the WUP management teams, working groups, staff from MRCS, NMCs and the national line agencies. At present, some NMCs and line agencies do not have an effective capacity to meet the requirements of the WUP within their jurisdiction. The Project will include in-country and overseas training (including with river basin organizations, regional institutions, and other academics). There is also a need within MRCS to develop skills and systems necessary to manage the WUP. The training will also include fostering of development and implementation of policies supportive to the WUP.

### *C.3 Communications, Participation, and Public Awareness*

72. The participation of stakeholders in determining the environmental, water use, social and economic problems and needs would be a key aspect of knowledge base and model development as well as rule making. The Project would support information campaigns, workshops, surveys and other participatory exercises to promote interchange of ideas and enhanced mutual understanding of different project-related aspects with different stakeholders.

### *C.4 Participation in GEF Regional and Global Programs*

73. The Project is an important initiative in the GEF's broader global strategic program in international waters (IW). Thus it would support the participation of the MRC and its WUP management teams in:

(a) The ongoing IW Learn Program being implemented by UNDP, linking together the GEF with all IW project teams to provide a modern electronic mechanism for experience sharing and distance learning, and

(b) The regional effort to concentrate the GEF IW portfolio in order to maximize its strategic impact. Two regions are the Danube-Black Sea basins, and the South China Sea region. In the latter region a major regional project involving three of the four Mekong riparian countries (Thailand, Cambodia, and Vietnam) is at an advance stage of preparation by UNEP. The Project would support the participation of the WUP management teams in the activities of the South China Sea inter-governmental steering committee, technical committees, and major regional meetings of GEF project teams in the other strategic regions and in the Global IW meetings of UNDP.

# Annex 3
MRC: Water Utilization Project
Project Costs

| Project Component | Total | Local Cost | Foreign Costs | Foreign Cost % | Total Base Cost % |
|---|---|---|---|---|---|
| A. Basin Modeling and Knowledge Base | 9.1 | 3.3 | 5.8 | 64% | 61% |
| B. Rules for Water Utilization | 1.2 | 0.6 | 0.6 | 51% | 8% |
| C. Institutional Strengthening | 4.7 | 3.7 | 1.0 | 21% | 31% |
| Total Baseline Cost | 15.1 | 7.6 | 7.5 | 50% | 100% |
| Price Contingencies (8%) | 1.2 | 0.6 | 0.6 | | |
| **Total Cost** | **16.3** | **8.2** | **8.1** | | |

# Annex 4
## MRC: Water Utilization Project
## Incremental Cost Analysis

**Regional Context and Broad Development Goals**

1. The 65 million inhabitants of the Mekong Basin depend to a great extent on the natural resources of the Basin for their livelihood. Few of the economic benefits of the extraordinary economic growth that occurred in the surrounding region of Southeast Asia in the last decade were experienced in the Basin. Eighty-five percent of the Basin's population lives in rural area, of which a high proportion depend on the river and aquatic ecosystem for an important part of their subsistence livelihood. Capture fisheries is the major source of low-cost and high quality protein for the people of the Basin, and an important source of employment and income in rural areas. Poverty is widespread, and the stress on the natural resources of the Basin is increasing.

2. Wetlands that are vital for the maintenance of the fishery and support globally significant bio-diversity, depend on the annual ebb and flow of the Mekong River system to sustain these sensitive ecological balance. Exploitation of these wetlands is increasing, and in some cases they are being drained for cultivation. The prospect of increased water diversions and construction of dams on the Mekong River and its tributaries also threaten the Basin's aquatic eco-system. Shifting cultivation and wide-spread logging in the sensitive upland areas are degrading the watersheds, increasing erosion, and modifying the hydrological regime.

3. Economic growth is an imperative in the Basin, and water resources development is a key area in each country's long-term investment program. In preparation for the MRC's Basin Development Plan (BDP), the MRC-member governments prepared general position papers in 1997 on their country's development needs in the Basin, as summarized below:

4. Cambodia: Agricultural development through increased and improved irrigation, and improved agricultural support systems (i.e., credit, extension, marketing, etc.) is a key development priority for Cambodia. Maintenance of freshwater capture fisheries and navigation improvements are prominent features of Cambodia's development program. Cambodia relies heavily on fisheries from the Mekong River system—especially in the Great Lake (Tonle Sap), to support its mainly subsistence level rural population. Navigation is the primary form of transportation in Cambodia due to its poorly developed road and train system. Access to maritime shipping through the Mekong-Bassac River system is important. The Cambodian government plans to develop small and medium-scale hydropower facilities on tributaries to the Mekong River. Cambodia's forests remain generally intact, but are threatened by illegal and unsustainable logging practices.

5. Laos: The Lao government has ambitious plans to tap Laos' enormous hydropower potential, particularly on tributaries to the Mekong. With a poorly developed transportation system, Laos relies on inland navigation along the Mekong as its main transportation artery—maintenance of dry season flows in the River is an important concern for the Lao government. Capture fisheries from the River is important. The Lao government places a high priority on preserving the aquatic productivity of the Mekong Basin. There is limited potential for small and medium scale irrigation development.

6. Thailand: Thailand is the most economically advanced of the riparian countries, with a GNP per capita of around $2,000, as compared with $200-$500 for the other riparians. However, the primary Thai portion of the Mekong Basin, the Northeast of Thailand, is relatively undeveloped and its inhabitants are only slightly more prosperous than the other Mekong countries. The Thai government has launched a

large-scale development program for the Northeast of Thailand, centered around irrigation development, agro-processing, and reforestation. The government is considering the diversion of water from the Mekong River into the Northeast of Thailand, which is by far the driest part of the Mekong Basin and suffers from periodic droughts. It also has tentative plans for the inter-basin diversion of water from Mekong tributaries in the far north of Thailand, into the Chao Phraya Basin (where Bangkok is located). The power demand in Thailand is expected to significantly expand in the future, and Thai power agencies are considering importing energy from hydropower facilities in China and Laos. Thai travel companies are increasingly using the Mekong River and its riparian areas as tourist destinations, including hotels, golf courses, and boat rides.

7. Vietnam: The Mekong Delta is Vietnam's "rice bowl" and produces over half of the country's rice crop and is a major fruit producer. Aquaculture, mainly in the Delta's numerous canals is an important source of income and subsistence for many of the Delta's residents. During the wet season, massive flooding in the Delta results in annual loss of lives and property damage. Flood management is a high priority for Vietnam. Improving agricultural water control infrastructure (e.g., irrigation, drainage, and control of floods and of sea water intrusion) and maintaining (or increasing) dry season flows while preserving water quality, are key development objectives for the Vietnamese government. Improvement of the inland navigation system in the Delta is also important for Vietnam. The Mekong Basin also encompasses part of the Vietnam Highlands, and the Vietnamese government plans to construct (or is constructing) a number of medium-sized hydropower projects.

8. China and Mynamar: Neither China nor Mynamar are MRC-member states but their activities may have an impact on the lower Mekong Basin states. China has started hydropower development on the upper reaches of the Mekong River. Because the irrigation potential in the Chinese portion of the Mekong Basin is limited, these reservoirs should help regulate the flow and increase dry season flows into the lower Basin. In the long-term, China may wish to export hydropower to and open up a navigation route into mainland Southeast Asia. Myanmar currently has no plans to develop the water resources of its portion of the Basin.

**Baseline Scenario**

9. The "baseline scenario" describes the course of future activities by the countries in the absence of GEF support; i.e., if the countries do not take global environmental considerations into account. Two levels of analysis are used for the baseline scenario. The higher level of analysis consists of a general description of the environmental dangers and investments risks associated with each country pursuing its own, uncoordinated water resource development activities. At a lower level, a review of the MRC's work program, in the absence of GEF support, is presented. For practical reasons, the scope of analysis for calculating incremental costs is limited to the MRC's work program, which constitutes the *de facto* baseline.

10. ***The Strategic Problem of the Mekong Riparian Countries.*** Each MRC-member country has an economic and social development agenda in which the protection and development of water resources plays an important, if not vital, role. But each country is uncertain of the motives and plans of the other riparian countries, and each country is concerned that plans and future opportunities not be foreclosed or delayed by lack of agreement or uncoordinated development. Moreover, the riparian countries are concerned that their citizens and vital ecological resources will not be harmed by the actions of the other riparians. Changes in the flow pattern (flow, water level, quality, sediment load) and physical modifications (river training, dams, dredging, flood protection works) brought about by proposed water resources developments can have a major impact on the fragile social, economic and ecological systems of the whole river basin. Rural economic development will eventually relieve this pressure, but in the meantime, serious ecological and social damage could occur with the attendant increases in rural-urban

migration and poverty if the water resources of the Basin are not cooperatively and wisely planned and managed with these concerns in mind.

11. ***National Policies and Investment Plans.*** National and sector water policy actions in each of the countries required to accelerate economic development and ensure that its economic impact is environmentally and socially sustainable, are constrained by this uncertainty. Moreover, without clarity on the ground rules for implementing the Mekong Agreement, particularly the provisions for notification and consultation (Article 5), and maintenance of flows on the mainstream (Article 6), it is difficult in some cases to mobilize external financial resources to undertake urgently needed investments in water resources.

12. ***The Baseline Program of MRC Secretariat.*** The MRCS Work Program has been reorganized in accordance with the recently approved MRC Strategic Plan. Projects have been programmed into four Key Result Areas (KRAs): Natural Resources Planning and Management; Environmental Management and Social Considerations; Data Base and Information Systems; and Organization Management and Cooperation. The complete MRCS 1999 portfolio includes 17 ongoing and fully funded projects which total about US$36 million (including a US$18 million grant to upgrade ferry facilities in Cambodia), and another 50 projects that are proposed or partly funded and total US$87 million, of which US$15 million of funding has been secured from various bilateral and multilateral donor agencies. The total cost of the MRC's proposed portfolio is therefore US$123 million ($36 + $87 million), and donor commitments total US$51 million ($36 + $15). Historically, average annual expenditures (including projects) by the MRC are around US$12 million.

13. For the purposes of the GEF incremental cost analysis, the MRC's projects are divided into two groups. The first group of projects deals with specific national investment projects, such as ferry facilities or hydropower feasibility studies, and is not directly related to WUP and thus excluded from the incremental cost analysis. The second group of MRC projects will, directly or indirectly, support the GEF-financed WUP and thus constitutes the "baseline scenario costs". Table 1 summarizes projects in the MRC portfolio that are related to the WUP (as well as the Basin Development Plan). None of these projects, however, would integrate the results and outcomes of all the MRC's disparate studies and projects, nor provide the comprehensive Basin analytical tools to use the information and knowledge being developed through these projects. None of the projects in Table 1 focus on the core Basin management functions of MRC or the implementation of the Agreement (except the proposed WUP and BDP projects). Nevertheless, valuable knowledge, data and tools are being developed by some of these projects.

**Global Environmental Objectives and Benefits**

14. The global environmental objective of the Project is to prevent harm and irreversible loss of water and ecological resources in the Mekong River Basin and related coastal and marine resources. The Project is consistent with the policies and priorities of the GEF Water body-Based Operational Program (OP#8), which aims to help countries manage water bodies and their multi-country drainage basins to sustainably support human activities. The Project would help the MRC develop and use water utilization rules and analytical tools necessary for sustainable management and development of water resources in the Basin. Substantial specific global benefits would result in the protection of ecological resources and in regional cooperation.

15. (a) *Ecological Resources.* The Mekong Basin contains globally significant bio-diversity, wetlands, flooded forests, and estuary system. The Basin supports one of the most productive and biodiverse freshwater ecosystems in the world. Annual floods support a rich riparian habitat and an extensive network of wetlands. Water flooding into nutrient rich areas, combined with high levels of solar energy, help fuel a high-powered eco-system. There are estimated 1200 fish species in the Basin. Many

fish species in the Basin are highly migratory, but relatively little is known about the Basin's aquatic ecology. The long-term sustainability of the Basin's fisheries is threatened by increasing harvests, habitat degradation and water development projects that cut off migration corridors between spawning, nursery, and adult habitats. Already a number of aquatic dependent species have been classified as rare or endangered, including 18 species of waterbirds and 16 species of mammals. Important endangered species include the Irrawaddy dolphin, the Chinese white dolphin, the black finless porpoise, the freshwater giant catfish, and five waterbirds: the Eastern sarus crane, the giant ibis, the white-shouldered ibis, the greater adjutant stork, and the lesser adjutant stork. There is little information about freshwater turtles, tortoises and terrapins, but there are almost certainly several rare and endangered species in this group.

16. The heart of the Mekong Basin's ecosystem lies in the globally significant wetlands and flooded forests in the Tonle Sap, the Plain of Reeds, and the Coastline Ecosystem. The Tonle Sap (also know as the Great Lake of Cambodia) lies in the middle of Cambodia and is fed by runoff from its own sub-basin and by reverse flows from the Mekong River during the wet season[1]. During the dry season the Tonle Sap drains into the Mekong Delta, helping to combat seawater intrusion and maintain the Delta's ecological balance, including extensive mangrove forests. During the wet season, the Tonle Sap expands from 2,500 $km^2$ to over 10,000 $km^2$, and supports an extensive flooded forest which provides ideal habitat for fish spawning and nursing. Fish migrations from the Tonle Sap into the Mekong River help restock fisheries as far upstream as China and many tributary rivers along the way.

17. The Plain of Reeds covers 7,000 $km^2$ in Vietnam and 3,000 $km^2$ in Cambodia. It is subject to seasonal flooding from the River system. During the peak flood period the Plain becomes a vast lake with some areas flooded up to 4 meters. The flora is quite complex due to the high variety of flood regimes. During the flood season, the Plain supports a large number of fish species which move from upstream areas for breeding and nursing. A number of water birds, many winter migrants considered to be threatened birds of the world, are supported in the Plain of Reeds.

18. The estuaries in the Delta maintain important ecological processes such as transport of nutrients, plankton, shrimp, fish larvae, and detritus—all essential components in the aquatic food webs. The estuaries of the Tien River (part of the Mekong River system) have been listed by IUCN as internationally important wetlands. Many shrimp and fish species depend on the estuaries for their breeding and nursing. Their migration and reproductive patterns are strongly influenced by river water flow and tidal regimes. The estuaries of the Delta also support rich mangrove forests.

19. (b) *Regional Cooperation.* Cooperative and integrated management of trans-boundary water resources of international river basins is one of the most pressing current problems in sustainable natural resources management. The earth's largest reserves of accessible and usable freshwater resources are contained in its more than 200 trans-boundary lake and river systems. In nearly two-thirds of these systems, a wide variety of agreements are being implemented and monitored by international river Basin organizations. Their success is critical not only to the protection and wise use of these water resources, but to securing the broader social and economic benefits of cooperation and water use. The Mekong is one of the largest international river basins in the developing world to have reached the stage of creating a comprehensive Agreement for sustainable management of shared resources. Moving from the agreement on principles to actual cooperation and sustainable management of water resources has proven to be an elusive and difficult goal, not only in the Mekong Basin but elsewhere in the world. A timely and catalytic intervention by GEF, carefully coordinated with other key donors such as UNDP, offers the opportunity to demonstrate globally how this difficult but critical transition can be made.

[1] Cambodia, with both the Tonle Sap and Plan of Reeds has an estimated 5% of Asian wetlands of international importance, as estimated by IUCN

**GEF Alternative**

20. The baseline scenario described above would do little to mitigate the increasing risks to, and relieve the development pressures on, the ecological resources of the Basin. In spite of the extensive information on the Mekong garnered through the MRC's past projects, the MRC has been unable to utilize this information to make sound water resource management decisions. The Project would address this critical gap by developing Basin-wide and integrated tools and the related knowledge base to enable the riparian countries to gain a deeper understanding of the hydrologic linkages between the natural environment, water utilization, and strategic trans-boundary water and environmental issues. The Project would also support a consultative process to formulate and implement appropriate procedures, guidelines and rules to ensure reasonable and equitable water use. These rules, and the corresponding procedures and analytical tools for their implementation, provide the essential framework for sustainable and equitable water resource management in the Basin.

21. The linkages between cooperative Basin management and sustainable national water policy and strategies will be strengthened under the project by directly involving national stakeholders including the respective NMCs and national institutions concerned with water and natural resource sector. The MRCS and each riparian would have a complete package of analytical tools and information systems and the capacity to use them. The protocols on data and information exchange to be developed and implemented under the project would provide procedures and rules, under which these systems would be jointly maintained and updated. The proposed project would thus addresses the key existing barriers to effective regional cooperation needed to promote and support the adoption of national policies and strategies that are consistent with the protection and enhancement of the globally significant natural resource base of the Basin. The proposed GEF Alternative includes three components (see Annex 2 for details):

- *Basin Model Package and Knowledge Base*. The incremental cost is $9.9 million, of which the GEF is asked to fund $6.6 million.

- *Development of the Rules for Water Utilization.* The incremental cost is $1.3 million, of which the GEF is asked to fund $ 1.1 million.

- *Institutional Strengthening of the MRC and NMCs to Implement WUP*. The incremental cost is $5.1 million, of which the GEF is asked to fund $3.3 million.

22. ***Related GEF Investments and Programs.*** The Project is an important initiative in the GEF's broader global strategic program in international waters. It would support the participation of the MRC, specifically the WUP management teams in the MRCS and the NMCs, in two aspects of this global program:

(a) The ongoing International Waters (IW) Learn project, being implemented by UNDP, links together GEF international waters project teams for experience sharing and provide a modern electronic mechanism for distance learning. The project would support the participation of the MRCS and NMC WUP teams in this global project.

(b) The GEF has selected several regions to concentrate its IW portfolio to maximize GEF's strategic impact. Two areas are the Danube-Black Sea Basins, and the South China Sea region. In the latter region a major regional project involving three of the four lower Mekong riparian countries (Thailand, Cambodia, and Vietnam) is at an advance stage of preparation by UNEP. The project would support the participation of the MRCS and NMC WUP teams in the activities of the South China Sea inter-governmental steering committee and the issue oriented technical committees being established. The project would also support the participation of the WUP teams in major regional meetings of GEF projects in the other strategic regions and in the Global IW meetings being planned by UNDP.

**Incidental Domestic Benefits**

23. In addition to the global benefits described above, the Project would also generate significant incidental domestic benefits for the MRC-member countries. Following the review procedures established under the Project, and with the new analytical tools and knowledge base, countries could implement projects with more confidence that they will not harm other countries nor endanger sensitive ecological resources. The Project would also help build technical capacity and databases, as well as ownership, in the national line agencies and NMCs which participate in the Project. This will help the national agencies play a more supportive role in the MRC, as well as formulate efficient and sustainable water and natural resource policies at the national level.

**Incremental Costs**

24. To summary the above sections, the incremental costs required to achieve the stated global environmental benefits is US$16.3 million, of which US$11 million is sought from GEF:

| Project Component | Incremental Cost | GEF Fund | Country Contributions |
|---|---|---|---|
| A. Basin Model Package & Knowledge Base | 9.9 | 6.6 | 3.3 |
| B. Development of Rules for Water Utilization | 1.3 | 1.1 | 0.2 |
| C Institutional Strengthening of MRCS/NMC | 5.1 | 3.3 | 1.8 |
| **Total** | **16.3** | **11.0** | **5.3** |

25. Table 2 summarizes the incremental cost assessment.

Table 2. Summary Incremental Cost Assessment Matrix

| | **Baseline Scenario** | **Alternative** |
|---|---|---|
| *Global Environmental Benefit* | None | Protection of globally significant ecological resources: biodiversity conservation (fish, waterbirds, aquatic mammals, etc.)<br>Globally significant eco-systems: Tonle Sap, Plain of Reeds, Delta estuary<br><br>Example of cooperative and coordinated international water resource management. |
| *Domestic Benefit* | Data on hydrology, fisheries, navigation, watersheds, mapping, wetlands, etc.<br><br>Single sector, national management strategies for fisheries, navigation, irrigation, and hydropower. | Multi-purpose and coordinated water resource management in the Mekong Basin.<br><br>Strengthened water and natural resource management capacity at the national level and in the MRC.<br><br>Reduction of international conflicts over water in the Mekong Basin. |
| *Costs* | Baseline | 94.4 |
| | Alternative | 110.6 |
| | Increment | 16.2 |
| | (GEF) | 11.0 |

**Table 1. MRCS BASELINE PROGRAM**

| Component | Project Code | Project | Ongoing/ Planned | Cost US$mil | Funding Secured | Funding Sought | SOF |
|---|---|---|---|---|---|---|---|
| ***A – Basin Modeling Package and Knowledge Base*** | | | | | | | |
| A.1 Information and Knowledge Base | 3.19/95 | Inland Fisheries Information System | Planned | 2.60 | | 2.60 | |
| | 3.01/98 | Improvement of Documentation Center | Planned | 0.10 | | 0.09 | |
| | 3.13/92 | Improvement of Hydro-meteorological Network | Ongoing | 4.26 | 2.48 | 0.82 | Aus; Japan |
| | 3.03/97 | Integrated GIS and Statistical Databases for NRM | Planned | 1.09 | | 0.99 | |
| | 3.07/97 | Land Resources Inventory | Ongoing | 1.23 | 0.37 | 0.65 | Japan |
| | 2.50/93 | Watershed classification | Ongoing | 3.00 | 2.60 | | Swiss |
| | 2.49/92 | Mekong forest cover monitoring | Ongoing | 4.17 | 4.06 | | Germany |
| A,2 Basin Modeling Package | 3.43/87 | Updating of hydrographic atlas, survey, mapping | Ongoing | 7.66 | 6.96 | | Finland |
| | 2.11/97 | Mekong morphology and sediment transport | Planned | 0.51 | | 0.49 | |
| | 2.36/95 | Model for salinization studies in Lower Mekong Basin | Planned | 1.60 | | 1.30 | |
| | 2.49/96 | Chaktomuk area environment, hydraulic and morphology | Planned | 0.58 | | 0.58 | |
| | 3.14/96 | Upgrading of salinity forecasting in Delta | Planned | 0.63 | | 0.45 | |
| | 3.09/94 | Flood forecasting/damage reduction study | Planned | 3.29 | 0.25 | 2.83 | Denmark |
| A.3 Environment, Economic, and Social | 1.02/96 | Assessment of Mekong Fisheries | Ongoing | 5.75 | 5.21 | | Denmark |
| Transboundary Analysis | 1.17/95 | Support to fisheries management and development cooperation | Ongoing | 1.09 | 1.06 | | Denmark |
| | 1.13/88 | Management of reservoir fisheries | Ongoing | 3.84 | 3.49 | | Denmark |
| | 1.16/94 | Rural extension for aquaculture in Mekong Delta | Ongoing | 2.08 | 1.89 | | Denmark |
| | 1.21/96 | Management of freshwater capture fishery (Cambodia) | Planned | 4.86 | | 4.18 | |
| | 1.03/98 | Management of reservoir fisheries (II) | Planned | 5.35 | | 4.71 | |
| | 1.20/94 | Watershed management strategy study | Ongoing | 0.21 | 0.20 | | Swiss |
| | 1.51/92 | Sustainable NRM in Lower Mekong Basin | Ongoing | 4.80 | 4.30 | | Germany |
| | 1.42/96 | Soil and water conservation in small watersheds | Planned | 0.97 | | 0.80 | |
| | 1.37/95 | Management of salt-affected soils on Lower Mekong | Planned | 0.60 | | 0.40 | |
| | 3.13/92 | Inventory of Cambodian wetlands (I) | Ongoing | 2.00 | 1.80 | | Denmark |
| | 2.03/98 | Wetland conservation in the Lower Mekong Basin | Planned | 2.80 | | 2.50 | |
| | 2.01/98 | Integration of social/econ/poverty consid into MRC | Planned | 1.30 | | 1.20 | |

**Table 1. MRCS BASELINE PROGRAM**

| Component | Project Code | Project | Ongoing/ Planned | Cost US$mil | Funding Secured | Funding Sought | SOF |
|---|---|---|---|---|---|---|---|
| | 2.02/98 | Community involvement in water resource development | Planned | 3.35 | | 3.10 | |
| | 2.19/97 | Basin-wide water borne disease management project | Planned | 1.24 | | 0.98 | |
| | 2.01/95 | Environment program | Ongoing | 13.62 | 8.14 | 4.60 | Denmark; Var |
| | | ***Sub-totals*** | | ***84.58*** | ***42.81*** | ***33.27*** | |
| ***B. Development of Rules*** | | | | | | | |
| | 4.01/98 | Preparation of framework Mekong Navigation Agreement | Planned | 0.75 | | 0.66 | |
| | 2.04/98 | Comparative study of environment law in MRB | Planned | 0.25 | | 0.25 | |
| | | ***Sub-totals*** | | ***1.00*** | ***0*** | ***0.91*** | |
| ***C. Institutional Strengthening of MRCS and NMCs*** | | | | | | | |
| | 4.01/97 | HRD for MRCS | Planned | 7.67 | 0.83 | 6.27 | UNDP; Var |
| | 4.45/94 | Training on legal aspects of WRM (MRCS) | Ongoing | 0.68 | 0.25 | 0.35 | Japan |
| | 4.02/98 | Project Management | Ongoing | 0.2 | 0.02 | 0.18 | |
| | 4.03/98 | Financial Management | Planned | 0.3 | | 0.3 | |
| | | ***Sub-totals*** | | ***8.85*** | ***1.10*** | ***7.10*** | |
| | | ***TOTAL*** | | ***94.43*** | ***43.91*** | ***41.28*** | |

# Annex 5
## MRC: Water Utilization Project
## Procurement, Disbursement and Financial Management

**Procurement**

The Bank guidelines: *Procurement under IBRD Loans and IDA Credits* (January 1995, revised in January and August 1996, September 1997 and January 1999) would be applied to GEF-financed procurement of goods. Contracts for consulting services would be procured in accordance with the provisions of the "*Guidelines for the Selection and Employment of Consultants by World Bank Borrowers*", published by the Bank in January 1997 and revised in September 1997 and January 1999 (*Consultant Guidelines*). The goods and services not financed by GEF will be procured in accordance with national regulations of the riparians or regulations of the parallel co-financing institutions. MRCS' Division Finance and Administration would be responsible for all procurement. This would include preparation of tender documents, obtaining clearance from the Bank as required, evaluation of bids, preparation of contracts, and purchase. Bank Standard Bidding Documents, Bid Evaluation Form and Request For Proposals will be used for GEF-financed contracts. The procurement profile is shown in Table A.

**Goods** (office and modeling equipment) with an estimated cost of US$0.78 million are expected to be procured through international shopping based on at least three price quotations.

**Technical Assistance** of US$6.8 million would be carried out by teams of consultants to assist in basin modeling, knowledge base management and drafting of rules and related studies. Consultancy contracts with firms for all contracts over US$100,000 would be based on 'Quality and Cost-Based Selection' procedures following the *Consultant Guidelines*, with an aggregated amount of US$5.3 million. All consulting assignments over US$200,000 would be advertised in a General Procurement Notice in the Development Business and a national newspaper of each MRC member country, requesting expression of interests, prior to short-listing of consultants. Consultant assignments under US$200,000 may use shortlists made up of national firms from the MRC member countries pursuant to part 2.7 of the consultant Guidelines. For small contracts, less than US$100,000, selection based on consultants' qualifications would be used, or with prior approval by the Bank, "single source selection" procedures may be used. The procedures for appointment of individual consultants to carry out legal advisory and expert panel functions would follow Section V of the *Consultant Guidelines*. Training, study tours, consultation workshops and incremental staffing of US$3.4 million would be reimbursed based on programs agreed with the Bank.

**Bank Prior Review** (Table B) would apply to GEF-financed goods and services with a total value of US$8.32 million, covering over 76% of the total GEF-financed contract value. The prior review is US$150,000 for goods, US$100,000 for consulting services through firms and US$50,000 for consulting services through individuals. Sole-source selection, terms of reference for all assignments regardless of their value and GEF-financed training programs would also be subject to Bank prior review. All other procurements would be subject to ex-post review on a sample basis during supervision. The first goods contract regardless of value will have prior review.

**Disbursement**

To avoid delays in Project implementation, retroactive financing of US$0.5 million is included to cover payment made between appraisal and the signing of the Grant Agreement. This will include primarily recruitment of the WUP team leader, international advisers and support staff of the WUP unit for initiating WUP activities. MRCS will follow Bank procurement guidelines.

The grant would be disbursed over a period of 7 years. A Special Account in US dollars to be operated by MRCS would be set up in a commercial bank acceptable to the Bank, with an authorized allocation of $0.5 million (equal to GEF-financed average expenditure for 4 months). MRCS would submit to the Bank applications for replenishment monthly or whenever the amount is drawn down by 20% of the authorized allocation, whichever comes first. The minimum application size, outside of replenishment to the Special Account will be 20% of the authorized allocation. MRCS would reimburse NMC's for MRCS approved travels and workshops expenditures and use SOEs for reimbursement from the Project. The Project is to be completed in December 31, 2006, and the grant is to be closed on June 30, 2007. The allocation of grant proceeds is shown in Table C.

Statements of expenditure (SOE) would be required for disbursements to be made against (a) contracts for goods costing less than $150,000; (b) expenses for training, study tours, consultation workshops; (c) consultant services costing less than $100,000 for firms and less than $50,000 for individuals; and (d) expenses for incremental operating costs. SOE would be subject to sample post-review. MRCS would retain all supporting documents and make available for review by Bank supervision missions. In the case of contracts for goods and services above these thresholds, disbursements would be made against the full documentation of the contracts and supporting documents.

**Financial Management**

A financial management assessment of the MRCS was carried out by Price Water-house & Coopers (PWC) to ascertain whether the FM system comply with the requirements of OP/BP 10.02. The PWC report concludes that the financial management systems at the secretariat are sufficient to control and monitor the financial operations of MRCS.

MRCS is largely a donor funded organization. As a result of having to control and monitor donor funds, the MRCS has in place a comprehensive system of controls to ensure that funds are fully and accurately accounted for. The finance function is headed by a Finance Director, assisted by a Chief Accountant and subordinate accounting staff. Separate project accounts are maintained to account and report for different donor funds. All accounting records are closed monthly, i.e. 15 days after the end of the month. Bank reconciliations are prepared and these are reviewed by the Chief Accountant and approved by the Finance Director. At the end of each quarter, Income and Expenditure Statements and fund balance statements are produced for each fund managed for reporting to the donors.

The current accounting policies and procedures and the computerized accounting system was established in 1993. As the computerized system is not Y2K compliant, a new system is being developed by MRCS. It is expected that the new system will be operational by early year 2000. After appraisal, MRCS submitted to the Bank a revised Finance Manual that is tailored to implementation under the proposed Project.

**Accounting and Funds Flow**. Project expenditures will be separately recorded and reported by MRCS based on separate project accounts to be maintained. MRCS will establish a separate bank account to facilitate receipts and disbursements of the project funds. Procedures for receipt and disbursement of funds from parallel co-financiers will be in accordance with separate bi-lateral agreements with each of the parallel co-financiers. Similarly, separate bank accounts will be established to receive and disburse funds of co-financiers and contributing national governments. Contributions from national governments and MRCS will be in the form of personnel, office facilities and overhead, which will be handled through normal budgeting and administrative procedures.

Given MRCS' long experience in dealing with donor funded activities, the Project should be eligible for PMR-based (Project Management Reports) disbursement. However, as the current accounting system is not Y2K compliant, there is a risk that MRCS may not be able to prepare timely reports until the new system being developed is fully installed, tested and operational. Therefore, PMR-based disbursement is not recommended. The Bank and MRCS will review the disbursement methodology by December 31, 2000 when a determination could be made to switch to PMR-based disbursement.

**Reporting**. MRCS will be responsible for preparing quarterly PMRs. The PMRs will be based on formats as described in the Bank's LACI Handbook. The formats will be agreed with MRCS prior to negotiations. MRCS will prepare annual financial statements in accordance with international standards for accounting. The annual project financial reports will include, at a minimum, Summary of Sources and Uses of Funds Statement, a Project Balance Sheet at the year end, comparative figures from the previous year and notes to the financial statements.

**Auditing**. MRCS will appoint an independent auditor acceptable to the Bank before Project effectiveness. The auditor will be responsible for the annual audit of the project accounts, providing an opinion on the eligibility of the expenses disbursed on the basis of SOEs and transactions on the Special Account. The audited financial statements together with audit reports for SOE and the SA will be submitted to the Bank within six months of the end of the Project's fiscal year. The audit will be conducted in accordance with international standards for auditing and under terms of reference acceptable to the Bank.

**Annex 5, Table A: Project Costs by Procurement Arrangements**
(in US$ million equivalent)

| Expenditure Category | Procurement Methods /a | | | | | Total Cost (including contingency) |
|---|---|---|---|---|---|---|
| | IS | QCBS | CQ | Other | NGF | |
| **1. Goods** | | | | | | |
| (a) Office equipment | 0.18 | - | - | - | | 0.18 |
| | (0.16) | | | | | (0.16) |
| (b) Modeling/knowledge base equipment | 0.60 | - | - | - | | 0.60 |
| | (0.54) | | | | | (0.54) |
| **2. Services** | | | | | | |
| (a) TA | - | 5.33 | 1.53 | - | | 6.86 |
| | | (5.33) | (1.53) | | | (6.86) |
| (b) Training/workshops/ Consultations | - | - | - | 2.49 | | 2.49 |
| | | | | (2.49) | | (2.49) |
| **3. Incremental operating costs** | - | - | - | 0.93 | | 0 93 |
| | | | | (0.93) | | (0.93) |
| **GEF Total** | **0.70** | **5.33** | **1.53** | **3.42** | | **10.98** |
| Donor Parallel Co-Financing | | | | | 2.80 | 2.80 |
| NMC Counter-Part | | | | | 1.24 | 1.24 |
| MRC Counter-Part | | | | | 1.25 | 1.25 |
| | | | | | | **5.30** |
| **Total** | | | | | | **16.28** |
| | | | | | | **(10.98)** |

a/ IS= International shopping QCBS = Consultant services procured under Quality and Cost-Based Selection. CQ= Selection of individual consultants based on qualifications (per Section V of Consultants Guidelines) Other = training and workshops NGF= Non-GEF Financing

## Annex 5, Table B: Thresholds for Procurement Methods and Prior Review (US$ million)

| Expenditure Category | Contract Value US$'000 Threshold | Procurement Method /a | Contracts Subject to Prior Review /b | Total Value Subject to Prior Review |
|---|---|---|---|---|
| 1. Goods | >150 | IS | All | 0.78 |
| | <150 | IS | None | 0.00 |
| **Subtotal** | | | | **0.78** |
| 2. Services | Firms>100 | QCBS | All | 5.33 |
| | Individuals >50 | CQ | All | 1.53 |
| **Subtotal** | | | | **6.86** |
| 3. Training | All | CQ | All | **0.68** |

a/ IS = International Shopping. QCBS = Quality and Cost-Based Selection CQ = Selection based on Consultant's Qualifications.

b/ To be financed by GEF.

## Annex 5, Table C: Allocation of Grant Proceeds

| Expenditure Category | Amount (US$ million) | Financing Percentage (%) |
|---|---|---|
| I. Goods | 0.7 | 100% foreign<br>100% ex-factory<br>85% locally procured |
| II. Consulting services | 6.9 | 100% |
| III. Travel, Training, Consultations | 2.5 | 100% |
| IV. Incremental operating costs | 0.9 | 100%, 75%, 50%, 25% |
| **Total** | **11.0** | |

# Annex 6
## MRC: Water Utilization Project
## Project Processing Budget and Schedule

| A. Project Budget (US$000) | Planned (At final PCD stage) | Actual |
|---|---|---|
| PCD | 78 | 110 |
| Final | 307 | 340 |

| B. Project Schedule | Planned (At final PCD stage) | Actual |
|---|---|---|
| Time taken to prepare the project (months) | 9 | 13 |
| First Bank mission (reconnaissance) | n.a. | 1/17/98 |
| Identification mission | n.a. | 5/14/98 |
| PCD Review | 1/12/99 | 1/12/99 |
| Preappraisal mission | 1/99 | 1/16/99 |
| Appraisal mission departure | 4/99 | 4/4/99 |
| Negotiations | 7/99 | 11/1/99 |
| Planned Board Date | 9/99 | 2/7/00 |
| Planned Date of Effectiveness | 12/31/99 | |

Prepared by: Mekong River Commission (MRC)

Preparation assistance: GEF-PDF

Bank task team who worked on the project included:

| Name | Specialty |
|---|---|
| M. Xie | Water Management (Task Team Leader) |
| D. Olson | Water Resources Engineering |
| W. Garvey | Lead Water Specialist |
| S. Shen | Ecology |
| W. Wickrema | Financial Management |
| G. Browder | Water Resources |
| K. Hudes | Legal |
| C. Dharmajaya | Task Assistant |

# Annex 7
## MRC: Water Utilization Project
## Documents in Project File

A. Project Documents:

Global Environmental Facility (GEF) WUP Project:
Project Proposal to the MRC-JC (August 1998)

Mekong River Commission "Water Utilization Program Preparation"
Final Report (December 1998)

Mekong River Commission "Water Utilization Project"
Draft Project Implementation Plan (PIP, December 1999)
Including Annexes:

| | |
|---|---|
| A | Project Description |
| B | Detailed Cost Estimates |
| C | MRC Strategic Plan and Trans-boundary Analysis |
| D | GEF Incremental Costs Analysis |
| E | Procurement Plan |
| F | Implementation Schedule |
| G | Performance Indicators |
| H | Terms of References |
| I | Participation Plan |
| J | Procurement Manual |
| K | Business Finance Plan |
| L | Parallel Co-Financing Proposals |

B. Bank Staff Assessments:

Identification Mission Aide-memoire: May 1998

Project Concept Document (PCD): January 12, 1999

Pre-appraisal Mission Aide-memoire: January 29, 1999

Appraisal Mission Aide-memoire: April 13, 1999

Follow-up Mission Back-to-Office Report: July 7, 1999

Map: Mekong River Basin: Project Location - IBRD 30089

# Annex 8

## Status of Bank Group Operations in Thailand
## Operations Portfolio
As of 12-Jul-99

| Project ID | Fiscal Year | Borrower | Purpose | Original Amount in US$ Millions | | | | Difference Between expected and actual disbursements a/ | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | IBRD | IDA | Cancellations | Undisbursed | Orig | Frm Rev'd |
| Number of Closed Projects: 110 | | | | | | | | | |
| Active Projects | | | | | | | | | |
| TH-PE-56269 | 1999 | | SOCIAL INVEST PROJ | 300.00 | 0.00 | 0.00 | 266.09 | 46.24 | 0.00 |
| TH-PE-53616 | 1998 | | FIN SEC IMPL ASST | 15.00 | 0.00 | 0.00 | 9.73 | 7.75 | 0.00 |
| TH-PE-54799 | 1998 | | ECO MGT IMPLE ASSIST | 15.00 | 0.00 | 0.00 | 12.56 | 10.56 | 0.00 |
| TH-PE-37086 | 1997 | METROPOLITAN ELECTRICITY | METROPOL'N DIST REIN | 145.00 | 0.00 | 0.00 | 113.28 | 13.29 | 0.00 |
| TH-PE-42268 | 1997 | PEA | DISTR AUTOM & RELIA | 100.00 | 0.00 | 0.00 | 89.86 | 64.87 | 42.47 |
| TH-PE-4805 | 1997 | GOVT OF THAILAND | UNIVER SCI & ENG.EDU | 143.40 | 0.00 | 0.00 | 137.29 | 53.89 | 0.00 |
| TH-PE-4791 | 1996 | GOVT OF THAILAND | SEC.EDUC. QUALITY IM | 81.90 | 0.00 | 0.00 | 74.77 | 44.88 | 0.00 |
| TH-PE-4793 | 1996 | GOVT OF THAILAND | TECHNICAL EDUCATION | 31.60 | 0.00 | 0.00 | 31.13 | 27.53 | 0.00 |
| TH-PE-4800 | 1996 | GOV. OF THAILAND | HIGHWAYS V | 150.00 | 0.00 | 45.00 | 100.13 | 145.13 | 15.28 |
| TH-PE-4799 | 1995 | EGAT | LAM TAKHONG PUMP STO | 100.00 | 0.00 | 0.00 | 42.50 | 35.48 | 0.00 |
| TH-PE-4802 | 1995 | BANGCHAK PETROLEUM PCL | CLEAN FUELS & EA QUA | 90.00 | 0.00 | 0.00 | 57.47 | 57.47 | 0.00 |
| TH-PE-4803 | 1995 | RTG | LAND TITLING III | 118.10 | 0.00 | 0.00 | 59.26 | 42.75 | 0.00 |
| TH-PE-4796 | 1993 | METRO ELEC AUTHORITY | DISTRIB. SYS & EGY E | 109.00 | 0.00 | 2.81 | 8.41 | 11.21 | 8.40 |
| Total | | | | 1,399.00 | 0.00 | 47.81 | 1,002.48 | 561.05 | 66.15 |

| | Active Projects | Closed Projects | Total |
|---|---|---|---|
| Total Disbursed (IBRD and IDA): | 348.68 | 5,721.13 | 6,069.81 |
| of which has been repaid: | 10.75 | 3,296.55 | 3,307.30 |
| Total now held by IBRD and IDA: | 1,340.44 | 2,428.01 | 3,768.45 |
| Amount sold : | 0.00 | 196.73 | 196.73 |
| Of which repaid : | 0.00 | 196.73 | 196.73 |
| Total Undisbursed : | 1,002.48 | 3.15 | 1,005.63 |

a. Intended disbursements to date minus actual disbursements to date as projected at appraisal.

Note:
Disbursement data is updated at the end of the first week of the month and is currently as of 30-Jun-99.

## Annex 8

# Status of Bank Group Operations in Lao Peoples Democratic Republic
## Operations Portfolio
As of 12-Jul-99

| Project ID | Fiscal Year | Borrower | Purpose | Original Amount in US$ Millions | | | | Difference Between expected and actual disbursements a/ | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | IBRD | IDA | Cancellations | Undisbursed | Orig | Frm Rev'd |
| Number of Closed Projects: 17 | | | | | | | | | |
| Active Projects | | | | | | | | | |
| LA-PE-42237 | 1999 | LAO PDR | LA-PROVIN. INFRAST. | 0.00 | 27.80 | 0.00 | 26.77 | -.45 | 0.00 |
| LA-PE-59305 | 1999 | GOL | LA DIST UPLAND DEV | 0.00 | 2.00 | 0.00 | 2.01 | .33 | 0.00 |
| LA-PE-44973 | 1998 | | SOUTHERN PROVINCE RE | 0.00 | 34.70 | 0.00 | 33.42 | 1.20 | 0.00 |
| LA-PE-4210 | 1997 | GOVT. OF LAO PDR | HIGHWAY IMPROV. III | 0.00 | 48.00 | 0.00 | 35.79 | 13.40 | 0.00 |
| LA-PE-4208 | 1996 | GOVT. OF LAO PDR | LAND TITLING | 0.00 | 20.70 | 0.00 | 16.41 | 2.38 | 0.00 |
| LA-PE-4200 | 1995 | LAO PDR | HEALTH SYS. REF. & M | 0.00 | 19.20 | 0.00 | 12.29 | 7.96 | 0.00 |
| LA-PE-4196 | 1994 | GOVT OF LAOS | FOREST MGT & CONSERV | 0.00 | 8.70 | 0.00 | 6.01 | 6.13 | 0.00 |
| LA-PE-4201 | 1994 | GOVT OF LAOS | H'WAY IMPROVE II | 0.00 | 30.00 | 0.00 | 3.22 | 1.72 | 0.00 |
| LA-PE-4207 | 1994 | GOVT OF LAO PDR | LUANG NAMTHA PROV DE | 0.00 | 9.67 | 0.00 | 2.84 | .15 | 0.00 |
| LA-PE-4203 | 1993 | LAO PDR | EDUCATION DEVELOPMEN | 0.00 | 19.00 | 0.00 | 6.77 | 4.03 | 0.00 |
| Total | | | | 0.00 | 219.77 | 0.00 | 145.53 | 36.85 | 0.00 |

| | Active Projects | Closed Projects | Total |
|---|---|---|---|
| Total Disbursed (IBRD and IDA): | 68.79 | 336.69 | 405.48 |
| of which has been repaid: | 0.00 | 6.74 | 6.74 |
| Total now held by IBRD and IDA: | 219.77 | 320.79 | 540.56 |
| Amount sold : | 0.00 | 0.00 | 0.00 |
| Of which repaid : | 0.00 | 0.00 | 0.00 |
| Total Undisbursed : | 145.53 | 1.41 | 146.94 |

a. Intended disbursements to date minus actual disbursements to date as projected at appraisal.

Note:
Disbursement data is updated at the end of the first week of the month and is currently as of 30-Jun-99.

# Annex 8

## Status of Bank Group Operations in Vietnam
## Operations Portfolio
As of 12-Jul-99

| Project ID | Fiscal Year | Borrower | Purpose | Original Amount in US$ Millions | | | | Difference Between expected and actual disbursements a/ | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | IBRD | IDA | Cancellations | Undisbursed | Orig | Frm Rev'd |
| Number of Closed Projects: 4 | | | | | | | | | |
| Active Projects | | | | | | | | | |
| VN-PE-4828 | 1999 | SOC REP OF VIET NAM | HIGHER EDUC. | 0.00 | 83.30 | 0.00 | 82.11 | 3.00 | 0.00 |
| VN-PE-4833 | 1999 | MOF, GOVERNMENT OF VIETNA | URB TRAN IMPROVEMENT | 0.00 | 42.74 | 0.00 | 41.54 | 2.22 | 0.00 |
| VN-PE-4845 | 1999 | GOV | MEKONG DELTA WATER | 0.00 | 101.80 | 0.00 | 97.42 | 0.00 | 0.00 |
| VN-PE-51553 | 1999 | SOCIALIST REPUBLIC OF VIE | SANITATION | 0.00 | 80.50 | 0.00 | 79.49 | 0.00 | 0.00 |
| VN-PE-45628 | 1998 | GOV | TRANSMISSION & DISTR | 0.00 | 199.00 | 0.00 | 190.32 | 101.31 | 0.00 |
| VN-PE-4839 | 1998 | GOVT OF VIET NAM | FOREST PROT.& RUL DE | 0.00 | 21.50 | 0.00 | 20.49 | 2.79 | 0.00 |
| VN-PE-4843 | 1998 | GOVT OF VIET NAM | INLAND WATERWAYS | 0.00 | 73.00 | 0.00 | 70.57 | 5.95 | 0.00 |
| VN-PE-4844 | 1998 | GOV | AGRI DIVERSIFICATION | 0.00 | 66.85 | 0.00 | 65.88 | 2.50 | 0.00 |
| VN-PE-39021 | 1997 | GOV'T OF VIET NAM | RURAL TRANSPORT | 0.00 | 55.00 | 0.00 | 30.32 | 3.12 | 0.00 |
| VN-PE-4830 | 1997 | GOV | WATER SUPPLY | 0.00 | 98.61 | 0.00 | 89.91 | 32.01 | -.44 |
| VN-PE-4842 | 1997 | GOVT OF VIET NAM | HIGHWAY REHAB II | 0.00 | 195.60 | 0.00 | 159.87 | 54.89 | 0.00 |
| VN-PE-36042 | 1996 | SOC. REP. OF VIETNAM | BANKING SYSTEM MODER | 0.00 | 49.00 | 0.00 | 42.97 | 45.95 | 1.79 |
| VN-PE-42236 | 1996 | GOVT. OF VIETNAM | POWER DEV | 0.00 | 180.00 | 0.00 | 5.69 | .54 | 0.00 |
| VN-PE-4838 | 1996 | SOCIALIST REPUBLIC OF VIE | NATIONAL HEALTH SUPP | 0.00 | 101.20 | 0.00 | 75.60 | 19.13 | 0.00 |
| VN-PE-4841 | 1996 | SOC REP OF VIET NAM | POPULATION & FAMILY | 0.00 | 50.00 | 0.00 | 31.80 | 11.10 | 0.00 |
| VN-PE-4847 | 1996 | GOV | RURAL FINANCE | 0.00 | 122.00 | 0.00 | 48.84 | 28.61 | 0.00 |
| VN-PE-4834 | 1995 | GOV | IRRIGATION REHABILIT | 0.00 | 100.00 | 0.00 | 63.22 | 15.45 | 0.00 |
| VN-PE-4836 | 1995 | EVN PC2 PC3 | POWER SECTOR REHAB & | 0.00 | 165.00 | 0.00 | 26.84 | 41.98 | -37.00 |
| VN-PE-4832 | 1994 | GOVT OF VIET NAM | HIGHWAY REHAB | 0.00 | 158.50 | 0.00 | 48.72 | 53.04 | 41.56 |
| VN-PE-4835 | 1994 | SOC REP OF VIET NAM | PRIMARY EDUCATION | 0.00 | 70.00 | 0.00 | 29.56 | 21.44 | 2.32 |
| Total | | | | 0.00 | 2,013.60 | 0.00 | 1,301.16 | 445.03 | 8.23 |

| | Active Projects | Closed Projects | Total |
|---|---|---|---|
| Total Disbursed (IBRD and IDA): | 609.39 | 342.27 | 951.66 |
| of which has been repaid: | 0.00 | 6.87 | 6.87 |
| Total now held by IBRD and IDA: | 2,013.60 | 333.83 | 2,347.43 |
| Amount sold : | 0.00 | 0.00 | 0.00 |
| Of which repaid : | 0.00 | 0.00 | 0.00 |
| Total Undisbursed : | 1,301.16 | 2.20 | 1,303.36 |

a. Intended disbursements to date minus actual disbursements to date as projected at appraisal.

Note:
Disbursement data is updated at the end of the first week of the month and is currently as of 30-Jun-99.

# Annex 8

## Status of Bank Group Operations in Cambodia
## Operations Portfolio
As of 12-Jul-99

| Project ID | Fiscal Year | Borrower | Purpose | Original Amount in US$ Millions | | | | Difference Between expected and actual disbursements a/ | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | IBRD | IDA | Cancellations | Undisbursed | Orig | Frm Rev'd |
| Number of Closed Projects: 2 | | | | | | | | | |
| Active Projects | | | | | | | | | |
| KH-PE-4030 | 1999 | GOVT OF CAMBODIA | KH-RD REHABIT. | 0.00 | 45.31 | 0.00 | 43.22 | 0.00 | 0.00 |
| KH-PE-50601 | 1999 | | KH-SOCIAL FUND II | 0.00 | 25.00 | 0.00 | 23.95 | 1.00 | 0.00 |
| KH-PE-58841 | 1999 | CAMBODIA | KH NORTHEAST VILLAGE | 0.00 | 5.00 | 0.00 | 4.82 | .50 | 0.00 |
| KH-PE-45629 | 1998 | CAMBODIA | URBAN WATER SUPPLY | 0.00 | 30.96 | 0.00 | 27.05 | 6.62 | 0.00 |
| KH-PE-4033 | 1997 | GOVT OF CAMBODIA | AGRI.PRODUCT IMP. | 0.00 | 27.00 | 0.00 | 24.17 | 13.80 | .98 |
| KH-PE-4034 | 1997 | KINGDOM OF CAMBODIA | DISEASE CONTROL&HEAL | 0.00 | 30.40 | 0.00 | 21.82 | 10.72 | 0.00 |
| KH-PE-4032 | 1996 | KINGDOM OF CAMBODIA | PHNOM PEHN POWER REH | 0.00 | 40.00 | 0.00 | 4.25 | 9.17 | 0.00 |
| KH-PE-34755 | 1995 | GOVT. OF CAMBODIA | TECHNICAL ASSISTANCE | 0.00 | 17.00 | 0.00 | 3.02 | 3.56 | 0.00 |
| KH-PE-37088 | 1995 | KINGDOM OF CAMBODIA | SOCIAL FUND | 0.00 | 20.00 | 0.00 | .16 | 1.62 | 0.00 |
| Total | | | | 0.00 | 240.67 | 0.00 | 152.46 | 46.99 | .98 |

| | Active Projects | Closed Projects | Total |
|---|---|---|---|
| Total Disbursed (IBRD and IDA): | 72.65 | 101.77 | 174.42 |
| of which has been repaid: | 0.00 | 0.00 | 0.00 |
| Total now held by IBRD and IDA: | 240.67 | 102.70 | 343.37 |
| Amount sold : | 0.00 | 0.00 | 0.00 |
| Of which repaid : | 0.00 | 0.00 | 0.00 |
| Total Undisbursed : | 152.46 | 0.00 | 152.46 |

a. Intended disbursements to date minus actual disbursements to date as projected at appraisal.

Note:
Disbursement data is updated at the end of the first week of the month and is currently as of 30-Jun-99.

**Annex 8**

**Thailand**
**STATEMENT OF IFC's**
**Committed and Disbursed Portfolio**
As of 31-Jul-99
(In US Dollar Millions)

| | | Committed | | | | Disbursed | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IFC | | | | IFC | | | |
| FY Approval | Company | Loan | Equity | Quasi | Partic | Loan | Equity | Quasi | Partic |
| 1979/81/84/87/91 | Siam City | 16.16 | 0.00 | 0.00 | 24.24 | 16.16 | 0.00 | 0.00 | 24.24 |
| 1984/91 | SEAVI Thailand | 0.00 | 1.46 | 0.00 | 0.00 | 0.00 | 1.46 | 0.00 | 0.00 |
| 1987/96 | HMC Polymers | 0.00 | 3.92 | .36 | 0.00 | 0.00 | 3.92 | .36 | 0.00 |
| 1988 | Peroxythai | 3.51 | 0.00 | 0.00 | 0.00 | 3.51 | 0.00 | 0.00 | 0.00 |
| 1989 | SCB-CKAP | 0.00 | .41 | 0.00 | 0.00 | 0.00 | .41 | 0.00 | 0.00 |
| 1989 | SCB-Thai Baroda | 0.00 | .78 | 0.00 | 0.00 | 0.00 | .78 | 0.00 | 0.00 |
| 1989 | TFB-Ladprao | 0.00 | .33 | 0.00 | 0.00 | 0.00 | .33 | 0.00 | 0.00 |
| 1989 | TFB-Top Easy | 0.00 | .15 | 0.00 | 0.00 | 0.00 | .15 | 0.00 | 0.00 |
| 1990 | Siam Asahi | 0.00 | 7.69 | 0.00 | 0.00 | 0.00 | 6.37 | 0.00 | 0.00 |
| 1990/95 | Shin Ho Paper | 4.83 | 7.54 | 0.00 | 5.27 | 4.83 | 7.54 | 0.00 | 5.27 |
| 1991 | VIM Thailand | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1991/93/96/98 | Ayudhya Leasing | 10.00 | 2.42 | 0.00 | 0.00 | 10.00 | 2.42 | 0.00 | 0.00 |
| 1992 | Krung Thai IBJ | 0.00 | .35 | 0.00 | 0.00 | 0.00 | .35 | 0.00 | 0.00 |
| 1993 | Advance Agro | 10.00 | 0.00 | 0.00 | 0.00 | 10.00 | 0.00 | 0.00 | 0.00 |
| 1993 | Bumrungrad | 25.00 | 2.24 | 0.00 | 29.00 | 25.00 | 2.24 | 0.00 | 29.00 |
| 1993 | Central Hotel | 0.00 | 13.95 | 0.00 | 0.00 | 0.00 | 13.95 | 0.00 | 0.00 |
| 1993 | Samui Beach | 1.93 | 0.00 | 0.00 | 3.21 | 1.93 | 0.00 | 0.00 | 3.21 |
| 1993 | Star Petroleum | 86.61 | 0.00 | 0.00 | 276.50 | 86.61 | 0.00 | 0.00 | 276.50 |
| 1993 | Sukhontha | 1.29 | 0.00 | 0.00 | 3.21 | 1.29 | 0.00 | 0.00 | 3.21 |
| 1993 | TUNTEX | 11.28 | 4.92 | 0.00 | 92.00 | 11.28 | 4.92 | 0.00 | 92.00 |
| 1994 | Dhana Siam | 18.58 | 0.00 | 0.00 | 2.86 | 18.58 | 0.00 | 0.00 | 2.86 |
| 1994 | Vinythai | 33.05 | 0.00 | 0.00 | 41.54 | 33.05 | 0.00 | 0.00 | 41.54 |
| 1995 | Finance One | 30.00 | 0.00 | 0.00 | 132.40 | 30.00 | 0.00 | 0.00 | 132.40 |
| 1995 | Saha Farms | 25.00 | 9.90 | 10.00 | 25.00 | 25.00 | 9.90 | 10.00 | 25.00 |
| 1995 | UPOIC | 0.00 | 1.08 | 0.00 | 0.00 | 0.00 | 1.08 | 0.00 | 0.00 |
| 1995/96/98 | BTSC | 80.00 | 9.83 | 9.83 | 0.00 | 64.14 | 9.83 | 9.83 | 0.00 |
| 1996 | NFS | 17.50 | 0.00 | 0.00 | 0.00 | 17.50 | 0.00 | 0.00 | 0.00 |
| 1996 | Thai Petrochem | 76.67 | 0.00 | 20.00 | 383.33 | 76.67 | 0.00 | 20.00 | 383.33 |
| Total Portfolio: | | 451.41 | 66.97 | 40.19 | 1,018.56 | 435.55 | 65.65 | 40.19 | 1,018.56 |

| | | Approvals Pending Commitment | | | |
|---|---|---|---|---|---|
| | | Loan | Equity | Quasi | Partic |
| 1996 | NFS | 10.00 | 0.00 | 0.00 | 0.00 |
| Total Pending Commitment: | | 10.00 | 0.00 | 0.00 | 0.00 |

**Annex 8**

**Lao Peoples Democratic Republic**
**STATEMENT OF IFC's**
**Committed and Disbursed Portfolio**
As of 31-Jul-99
(In US Dollar Millions)

| | | Committed | | | | Disbursed | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IFC | | | | IFC | | | |
| FY Approval | Company | Loan | Equity | Quasi | Partic | Loan | Equity | Quasi | Partic |
| 1998 | SEF BAFCO | .77 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1998 | SEF Endeavor | .15 | 0.00 | 0.00 | 0.00 | .15 | 0.00 | 0.00 | 0.00 |
| 1998 | SEF Settha | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Total Portfolio: | | 1.92 | 0.00 | 0.00 | 0.00 | 1.15 | 0.00 | 0.00 | 0.00 |

| | Approvals Pending Commitment | | | |
|---|---|---|---|---|
| | Loan | Equity | Quasi | Partic |
| Total Pending Commitment: | 0.00 | 0.00 | 0.00 | 0.00 |

**Annex 8**

**Vietnam**
**STATEMENT OF IFC's**
**Committed and Disbursed Portfolio**
As of 31-Jul-99
(In US Dollar Millions)

| | | Committed | | | | Disbursed | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | IFC | | | | IFC | | | |
| FY Approval | Company | Loan | Equity | Quasi | Partic | Loan | Equity | Quasi | Partic |
| 1994 | Hanoi Metropole | 3.67 | 0.00 | 3.50 | 12.12 | 3.67 | 0.00 | 3.50 | 12.12 |
| 1995 | Baria Serece Prt | 2.25 | 0.00 | 0.00 | 1.18 | 2.25 | 0.00 | 0.00 | 1.18 |
| 1995 | Foremost Dairy | 5.60 | 0.00 | 0.00 | 4.55 | 5.60 | 0.00 | 0.00 | 4.55 |
| 1996 | Kyoei Steel | 12.86 | 0.00 | 0.00 | 0.00 | 12.86 | 0.00 | 0.00 | 0.00 |
| 1996 | Morn.Star Cement | 30.00 | 0.00 | 0.00 | 64.61 | 30.00 | 0.00 | 0.00 | 64.61 |
| 1996 | Sucre de Bourbon | 22.00 | 0.00 | 0.00 | 20.00 | 22.00 | 0.00 | 0.00 | 20.00 |
| 1996 | SMH Glass Co. | 10.00 | 0.00 | 0.00 | 4.50 | 10.00 | 0.00 | 0.00 | 4.50 |
| 1996 | Vimaflour | 8.00 | 0.00 | 0.00 | 3.00 | 8.00 | 0.00 | 0.00 | 3.00 |
| 1996 | VILC | 0.00 | .75 | 0.00 | 0.00 | 0.00 | .75 | 0.00 | 0.00 |
| 1997 | Nghi Son Cement | 30.00 | 0.00 | 0.00 | 26.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1997 | Saigon Hilton | 13.05 | 0.00 | 0.00 | 18.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1998 | MFL Vinh Phat | .30 | 0.00 | 0.00 | 0.00 | .15 | 0.00 | 0.00 | 0.00 |
| Total Portfolio: | | 137.73 | .75 | 3.50 | 154.46 | 94.53 | .75 | 3.50 | 109.96 |

| | | Approvals Pending Commitment | | | |
|---|---|---|---|---|---|
| | | Loan | Equity | Quasi | Partic |
| 1998 | BA RIA | 24.20 | 4.00 | 0.00 | 49.00 |
| 1998 | BAWC | 12.50 | 0.00 | 0.00 | 12.50 |
| 1997 | NGHE AN SUGAR | 20.00 | 0.00 | 0.00 | 30.00 |
| 1997 | SEM HOTEL | 0.00 | 0.00 | 4.50 | 0.00 |
| 1996 | VIETNAM INTL LSE | 5.00 | 0.00 | 0.00 | 0.00 |
| 1997 | VINAFOOD | 10.50 | 0.00 | 0.00 | 13.50 |
| Total Pending Commitment: | | 72.20 | 4.00 | 4.50 | 105.00 |

**Annex 8**

**Cambodia**
**STATEMENT OF IFC's**
**Committed and Disbursed Portfolio**
As of 31-Jul-99
(In US Dollar Millions)

| FY Approval | Company | Committed IFC Loan | Committed IFC Equity | Committed IFC Quasi | Committed IFC Partic | Disbursed IFC Loan | Disbursed IFC Equity | Disbursed IFC Quasi | Disbursed IFC Partic |
|---|---|---|---|---|---|---|---|---|---|
| Total Portfolio: | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | Approvals Pending Commitment | | | | | | | |
| | | Loan | Equity | Quasi | Partic | | | | |
| 1998 | CPP | 15.00 | 0.00 | 4.30 | 45.20 | | | | |
| 1997 | SLP INVESTMENTS | 5.25 | 0.00 | 0.00 | 2.25 | | | | |
| Total Pending Commitment: | | 20.25 | 0.00 | 4.30 | 47.45 | | | | |

# Annex 9
## MRC: Water Utilization Program
## Transboundary Analysis

1. The 65 million inhabitants of the Mekong Basin depend to a great extent on the natural resources of the basin for their livelihood. Few of the economic benefits of the extraordinary economic growth that occurred in the surrounding region of Southeast Asia were experienced in the basin. Poverty is widespread, and the stress on the natural resources of the basin is increasing. About 75% of the population depend on agriculture and fisheries. Fish is the major source of low-cost and high quality protein for the people of the basin, and an important source of employment and income in rural areas. Wetlands that are vital for the maintenance of the fishery and support globally significant bio-diversity, depend on the annual ebb and flow of the Mekong River system to sustain these sensitive ecological systems. Exploitation of these wetlands in increasing, and in some cases they are being drained for cultivation. There is great pressure on the sensitive upland areas that are the source of runoff and groundwater recharge because of the lack of cultivable land and alternative sources of income – shifting cultivation and illegal forest exploitation are degrading the watersheds, increasing erosion, and threatening the water supplies on which so many of the people of the basin depend.

**Sustainable Water Resource Development**

2. Economic development and investment are imperatives in the Mekong Basin, and water resources development is a major focus and priority for this investment. Agriculture is the predominate economic sector and a key element in each riparian country development strategy. Because of the long dry season irrigation development is essential for long term growth of the agriculture sector, especially in Cambodia in the lower basin where little development has so far taken place. Increased productivity of existing agriculture, especially in northeast Thailand and the Vientiane plain in Laos in the upper basin, and in the delta of the lower basin in Vietnam, will also be led by expanding irrigation water supplies to support intensification, and new irrigation and drainage infrastructure to improve water control to increase productivity. Hydropower development is also a high priority, both as a source of export earnings in Laos, and as a key growth factor in each country's national development – in 1993 electrification reached just 4% of Cambodian households, 13% in Laos, and 10% in Vietnam. The importance of inland navigation along the mainstream and the principal tributaries will remain high because the road and rail network is extremely limited.

3. More than 80% of the basin's population is rural, of which a high proportion depend on the river system and the aquatic ecosystem for an important part of their subsistence livelihood. Changes in the flow pattern (flow, water level, timing, quality, sediment load) brought about by proposed developments of new water uses can have a major impact on these fragile social and economic systems if not carefully planned with these concerns in mind. Rural economic development will eventually relieve this pressure, but in the meantime, serious ecological and social damage could occur with the attendant increases in rural-urban migration and poverty if the water resources of the basin are not planned and managed with these concerns in mind.

4. ***Transboundary Issues and Concerns.*** These issues are not entirely national. Decisions about water use and development in different parts of the basin have a significant effect on

different parts of the annual flow pattern of the Mekong river system, the hydrologic functioning of Tonle Sap, the unique and demanding hydrologic regime of the major wetland areas in the basin, water availability particularly in the dry season when irrigation supply is needed and water depths in the mainstream are critical for inland navigation, water use, water quality and aquatic ecosystems elsewhere in the basin. The major transboundary concerns as they relate to sustainable water use and ecological resources, and their transboundary character, are summarized in Table 1. Until recently, too little was known about the specific linkages in the Mekong Basin to help formulate regional guidelines that will protect these resources or prevent unacceptable harm. The major ongoing investment in these areas by MRC, the riparian countries, and their donor partners to develop basic ecological and social and economic knowledge is expanding the availability of these data, and should enable WUP to make significant progress in integrating these considerations into development plans and policies.

5. A combination of regional and national actions is required to address these transboundary issues, and to protect water and ecological resources. In the Mekong it seems clear from experience to date that both the process and technical and institutional capacities needed to develop the regional framework to implement the Agreement are also critical to guiding the countries towards national policies for sustainable water and ecological resource development.

6. ***Global Benefits of Cooperation in the Mekong Basin.*** There are two main areas in which timely and catalytic intervention can prevent further degradation and conserve water and ecological resources resulting in substantial global benefits:

(a) *Ecological Resources*. The basin contains globally significant bio-diversity,wetlands and flooded forests in the Tonle Sap basin (Cambodia alone has an estimated 5% Asian wetlands of international importance as estimated by IUCN), in the Plain of Reeds in Vietnam and Cambodia (a nearly 1 million ha multiple use wetland, a third of which are acid-sulphate soils requiring managment), extensive mangrove forests in the delta, and the coastal and marine resources connected to the river where it empties into the South China Sea. Tonle Sap is one of the most unique natural Lake-River systems in the world. It is a vast shallow Lake in the center of the Cambodian plain, filled in part from its own drainage basin, and from reverse flows through the short Tonle Sap River during the months of peak flow in the Mekong River. In the dry season the Lake slowly drains through the Tonle Sap River into the Mekong River near the head of the delta, providing a substantial part of the dry season flow in this part of the basin and help significantly to control salinity intrusion and conserve the mangrove forests. The Lake basin contains extensive wetlands and flooded forests (the latter have already been reduced by half from an estimated 1 million ha) that are critical to the lower basin fishery and other bio-diversity resources.

(b) *Regional Cooperation*. Cooperative and integrated management of transboundary water resources of international river basins is one of the most pressing of current problems in sustainable natural resources management. The earth's largest reserves of accessible and usable freshwater resources are contained in its more than 200 transboundary lake and river systems. In nearly two-thirds of these systems implementation of a wide variety of agreements are being implemented and monitored by international river basin organizations. Their success is critical not only to the protection and wise use of these water resources, but to securing the broader social and economic benefits of cooperation and water use. The Mekong is one of the largest international river basins in the developing world to have reached the stage of creating a comprehensive Agreement for sustainable management of shared resources. Moving from agreement to cooperate, to cooperative and sustainable management of water resources has

proven to be an elusive and difficult goal not only in the Mekong Basin but elsewhere in the world. A timely and catalytic intervention by GEF, carefully coordinated with other key donors such as UNDP offers the opportunity to demonstrate globally how this difficult but critical transition can be made.

**Existing Regional Framework**

7. ***The Mekong Agreement.*** The riparian countries have long recognized the need for cooperation to develop the water resources of the Mekong Basin. Cooperation among the riparian countries of the Mekong River Basin has its origin in the establishment of the Committee for the Coordination of Investigations of the Lower Mekong Basin in 1957. This Committee and its successor, the Interim Mekong Committee, carried out a large number of investigations and technical studies, including extensive work on the establishment of a hydro-meteorological network, a mathematical modeling capability and a large number of pre-investment planning studies. This approach, however, was not sustainable. Civil and international conflict prevented major investments with regional benefits from being undertaken, and the committee approach did not have the essential elements of a legal framework for cooperation.

8. Recognizing more recently the vital role that water resources development will continue to play in the social and economic development if each of the riparian countries, and hence the need to ensure that these valuable natural and environmental resources are developed and managed sustainably, the four riparian countries of the Lower Mekong River Basin (Cambodia, Laos, Thailand and Vietnam) signed and ratified the "Agreement on the Cooperation for the Sustainable Development of the Mekong Basin" (Agreement) in April 1995.

9. The Agreement provides a legal framework for cooperation that commits the four riparian countries to "sustainable development, utilization, conservation and management of the Mekong River Basin". The parties agreed to cooperate to optimize the multiple use and mutual benefits of all riparians, and to minimize the harmful effects that might result. In particular, it was agreed to protect the environment, natural resources, aquatic life, and ecological balance of the Mekong River Basin from pollution and other harmful effects resulting from any development plans and uses of water and related resources in the Basin.

10. ***Institutional Framework for Cooperation.*** The Agreement establishes the Mekong River Commission (MRC) as an international body and the institutional framework for cooperation in the Mekong River Basin. The MRC consists of three permanent bodies: (i) the Council, a Ministerial-level body which provides policy direction and makes decisions necessary to implement the Agreement; (ii) the Joint Committee (JC, whose members are to have a rank not less than the level of Head of Department – present representatives are at the level of Director General or Vice-Minister) implements policies and decisions of the Council, and is charged with preparing a Basin Development Plan, mobilizing resources to implement the programs and projects in the plan, exchanging information and data, conducting studies and assessments for the protection of the environment of the Basin, and supervising the annual Work Program of the Secretariat; and (iii) the MRC Secretariat (MRCS) which provides operational capability and technical and administrative support to assist the Council and the Joint Committee to implement their mandates.

11. ***National Mekong Committees (NMCs).*** Each of the parties to the Agreement has established a National Mekong Committee (NMC) normally chaired by the country's representative on the Joint Committee (in the case of Cambodia, the chair is the Minister of

Public Works). The NMCs typically consist of senior representitives of all the concerned line agencies in the respective country. In the case of Laos, Cambodia and Vietnam, the NMC includes a full time secretariat. NMC members provide the membership of the JC's Sub-committees on Water Quantity Rules, Water Quality Rules, and the Basin Development Plan. Although the NMC s are not referred to in the Agreement they have become key groups in the functioning of the MRC, and the countries intend to strengthen their capacity to coordinate Mekong Basin related activities in their country and play a strong role in the Commission.

12. ***Relations with the Upper Riparian Countries.*** The two upper riparian countries, China and Myanmar are not parties to the Agreement and are not likely to become so in the near future. Nevertheless, MRC has made serious efforts to enhance and sustain dialogue with both countries. China and Myanmar have been designated as dialogue partners and are regularly invited to meetings of the JC and the Council where they are allowed to speak. At a technical level, the MRCS has made continuing efforts to establish a permanent technical working group with Chinese experts to discuss common issues particularly concerning the hydrology of the upper basin. *Ad hoc* expert level meetings are currently held about twice a year. These efforts have continued because of the importance of planned developments of the upper basin by the Chinese. Their portion of the basin (16% of the drainage area, and about 18% of the average annual flow – just 2% of the drainage area is in Myanmar) has very large potential for hydropower development involving at least one very large reservoir (with an estimated potential of 4800 MW) whose regulation of the river would have significant positive effect on dry season flows downstream.

**The Strategic Regional Problem of the Mekong Riparian Countries**

13. Each Mekong country has an economic and social development agenda in which the protection and development of water resources plays an important if not vital role. But each country is uncertain of the motives and plans of the other riparians, and each country is concerned that plans and future opportunities not be foreclosed or delayed by disagreement, or that its people and vital ecological resources not be harmed by the actions of the other riparians.

14. National and sector policy actions in each of the countries, required to accelerate development, and ensure that its economic impact is environmentally and socially sustainable, are constrained by this uncertainty. Moreover, without clarity on the ground rules for implementing the Mekong agreement, particularly the provisions for notification and consultation, and maintenance of flows on the mainstream, it is difficult if not impossible in some cases to mobilize external financial resources to undertake urgently needed major investments in water resources. Only limited investment in irrigation and hydropower are going forward in the face of this constraint, but major projects are planned and in an advanced stage of preparation such as the Nam Thuen II project (hyrdopower) in Laos, and Kok/Ing/Nan and Khon/Chi/Mun projects (irrigation) in Thailand.

15. Since the signing of the Agreement, the parties have not been able to agree on how the key provisions should be interpreted, nor which issues and provisions should be given priority or emphasis at this stage. The small progress achieved so far has been a struggle ever since the Agreement was signed requiring difficult accommodations at each step. Each Mekong country is committed to cooperation as the cornerstone of sustainable development and use of their shared water resources of the Mekong basin. But for there to be cooperation, they must know the ground rules and procedures for cooperation. Creating these ground rules and procedures is itself a critical cooperative action, one that all view as the way to launch the long term process of cooperation for sustainable development and the realization of the goals of the agreement.

16. ***The Main Causes for the Lack of Progress on Cooperation.*** It has been four years since the Agreement was signed and there has been little or no progress on its implementation. There are two principal causes for this:

(a) *Weakness of the Institutional Framework of MRC*. The institutional framework established in the Agreement is appropriate and should prove in the long-term to be effective. However, the weakness of the Secretariat (MRCS) has severely constrained the MRC. There are two principal causes for this:

(i) first, the MRCS was established with a weak financial base. MRCS has three sources of funds: contributions of the riparians, overhead charges of 8% on each donor grant, and treasury operations on the advances and other funds in the possession of MRCS. Each country contributes equally (despite the enormous disparity in GNP among the countries) and the total amount of these contributions is currently US$740,000 per year. MRCS's current operating budget is about 2.4 million/year, and the difference is derived from donor funded projects and treasury operations. This imbalance has forced MRCS to concentrate on mobilizing an ever larger amount of donor funds for projects to ensure its income and maintain a large staff and its office overhead. A large proportion of its staff have become project officers devoted to project management and administration Mobilization of donor funds, without a sense of program strategy and priority aimed at the immediate steps required to implement the agreement, has been the driving force in MRCS's work program, with the result that it has lost its focus on the core functions of MRC. Some would argue that this is caused by narrow and specific interests on the part of the donors, and this is in some cases an important factor, but the root cause is the lack of a coherent strategy nad program on the part of MRCS that would ensue that the portfolio produces the right results; and

(ii) second, due to lack of any real strategy or priorities related to the core functions of MRC, MRCS did not create the internal structure, staffing pattern, working culture or essential links with stakeholders, that would ensure its success. It is doing everything from monitoring and basic planning to investment project preparation. Although many parts of its work program focus on key environmental and natural resources management areas where the knowledge base is weakest (fisheries, wetlands, hydrologic monitoring including water quality, and forestry and watershed management) the overriding focus on accumulating and managing projects has caused it to lose sight of why it is doing these studies.

(b) *Lack of an Appropriate Shared Knowledge Base*. The national governments, particularly the Laotian and Cambodian line agencies and to a lesser extent the Vietnamese line agencies, are hampered considerably by the lack of a basin information and knowledge base. MRCS, despite over US$40 million in donor assisted projects since 1995, has failed to build this knowledge base -- which contains not just a large body of basic data though that is necessary as well, but information in the form of models, interpretations and analysis of the data, guidelines and good practice, and other knowledge of the physical, ecological, social and economic conditions so important to good planning and natural resource management. Data is collected but never used, and in some instances is not even shared within MRCS. A significant portion of this program will be vital in the immediate future to WUP and to the BDP, but so far almost no use has been made of this expanding body of data and knowledge, for example, on hydrology, fisheries, wetlands, water quality, or the social and economic conditions in the basin. Exchange

and sharing of data between the countries and the MRCS is informal and limited because there is neither the underlying protocol to promote sharing, nor the information system in place to encourage sharing and to show the countries the valuable service that MRC can provide.

**MRC Strategic Plan**

17. In 1997 and 1998 MRC took its first steps to rectify this situation – it began the preparation of a Strategic Plan with the assistance of UNDP, and with the assistance of GEF and the World Bank, it began preparation of a water utilization program (WUP). The JC and the MRC Council adopted the Strategic Plan, and the MRCS WUP proposal, in October 1998. The importance of these steps should be appreciated – the Strategic Plan sets both MRC and the Secretariat on a new course, and agreement on the comprehensive and integrated approach proposed for WUP resolves long standing disagreements among the countries on how to begin a process leading to implementation of the Agreement.

18. The Council took two other important actions in October 1998. It decided to develop regional or basin wide guidelines on EIA that may form and important part of the future notification and consultation procedures under the Agreement, and for the first time recognized the importance of participation as a key part of MRC water and natural resource planning. The latter decision reinforced and expanded its earlier mandate to MRCS to give greater attention to social and economic factors in its planning.

19. The MRC Strategic Plan, prepared with extensive consultation among and with the riparian stakeholders sets out a "vision" for the Mekong Basin and the Mekong River Commission. The plan includes a mission statement for the MRC, establishes 5 specific goals for the mid-term, and identifies four "key result areas":

- Natural resource planning and development;
- Environmental management and social considerations;
- Data bases and information systems; and
- Organization management and cooperation.

20. In the plan, specific objectives are identified for each "key result area", a strategy is proposed for each area that addresses these objectives, and measures of success are identified. While the plan and the strategic planning process are necessary steps, they are not sufficient to ensure that MRC becomes a more effective and supportive partner seen by the riparian countries as adding real value – for this MRCS must make substantial progress on the each of the "key result areas" (KRAs).

21. The plan makes an initial attempt to link the MRCS work program to the strategy, and adopts criteria for assigning priorities to projects and activities. The need for a transition period in which MRCS would restructure and prioritize its work program is explicitly recognized in the MRC Plan because so many projects and activities are ongoing. The importance of this initial Plan, and in particular the strategic planning process, cannot be overemphasized – if the process is continued at regular intervals in the same participatory manner then one may expect real progress if the MRC's external partners are supportive. So far, the donors have reacted in a positive way to MRC's actions.

**Immediate Follow-up Actions.**

22. The two highest priority activities identified in the work program for the MRC's Strategic Plan are:

- Preparation of the Basin Development Plan (BDP) as called for in Chapter IV, Article 24 of the Agreement; and
- Negotiation of the Rules for Water Utilization (referred to as the Water Utilization Program, or WUP) as called for in Articles 5 & 6, and Article 26, of the Agreement.

23. The BDP is seen by the countries as a way to move beyond the operational requirements of the Agreement (the rules for water utilization) to embrace the broader theme of environmentally and economically sustainable development (including the first and second "key result areas") which is the basic tenet of the Agreement. The Swedish Government is currently implementing the first phase of BDP preparation with the aim of reaching agreement with the MRCS and the JC in July 1999 on the final terms of reference and plan for carrying out this program.

24. WUP would address the critical first step in implementing or making operational the Agreement. Equally important WUP would provide the analytical tools and knowledge base ( the second and third "key result areas") required to support negotiation of the rules and their implementation, and provide the technical and institutional capacities required for longer-term cooperation to sustainably manage the basin's water and ecological resources.

25. UNDP has prepared a Phase II project of capacity building both in MRCS and the National Mekong Committees (NMCs) that addresses the fourth "key result area". Progress under the UNDP Phase II project is critical to the success of both the BDP and WUP. As noted in paragraph 16(a) above, the weakness of MRCS has been a root cause of the lack of progress on cooperation among the riparian countries, and UNDP's proposal addresses many of the fundamental problems within MRCS noted in that paragraph.

26. Genuine collaboration will be required between the BDP and WUP teams, with UNDP, and within MRCS and with the NMCs and their line agency partners. Moreover, progress on the broader MRCS work program, particularly in areas such as fisheries, wetlands and their linkages with the flow pattern and hydrology of the Mekong river system, and on monitoring both water quality and quantity, will be needed to ensure that data and knowledge are available concerning key transboundary ecological resources.

**Role of the GEF WUP Project**

27. As noted above WUP will make a major contribution to two of the MRC's "Key Result Areas". By concentrating on developing the analytical framework to support consultations on the rules for water utilization, and supporting the consultations themselves, WUP will be the catalyst needed to start a long-term process of genuine cooperation that will prevent the loss of future development opportunities and protect ecological resources of great value in the Basin and globally .

28. The design of the WUP Project is based on four principles or aims:

- *Institutional Capacity*. WUP is designed to be a long term program of institution and capacity building complimentary to and coordinated with UNDP's Phase II. Production of reports, carrying out of studies or making calculations are not the primary aim. The key riparian stakeholders must develop the capacity to manage and use the tools needed to negotiate and implement the rules;

- *Stakeholder Participation*. The riparian stakeholders, including the NMCs and the concerned line agencies, must participate at each step in the implementation of WUP, doing the work to develop the knowledge base and tools in order to ensure that all local knowledge is utilized and that the necessary capacity is developed for the longer-term. Equally important, this institutional capacity gained at the regional level should lead to better national and sector planning and policies.

- *Analytical Tools*. A shared knowledge base of the basin and the related functional information systems and data bases, and analytical tools in the form of a basin modeling package, are required as the foundation for cooperation.

- *Hydrological and Ecological Linkages*. Because of the need to integrate the analysis of water and ecological resources, water quantity and quality, and transboundary issues and concerns, the knowledge base and basin modeling package will incorporate components to allow the direct assessment of transboundary impacts on ecological, social and economic resources and conditions. This novel approach may be initially limited in some areas because of the lack of data on specific linkages with respect to some issues or in some areas of the basin, but its incorporation into the basic design and framework for WUP will promote a more focused prioritized work program in the MRCS that should lead to rapid progress in filling these information and analytical gaps given the major support it receives for work on ecological issues from the donors.

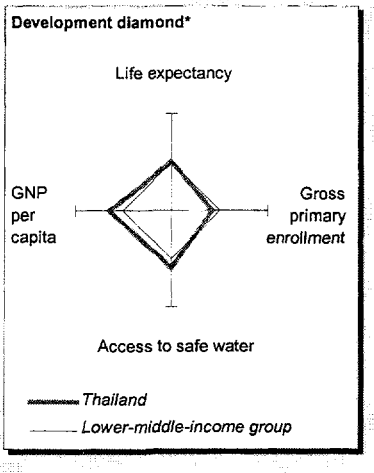
- *Consultations to Formulate the Rules.* A process of consultation and negotiations, well supported by the knowledge base and basin modeling package is essential for the formulation and agreement on the rules and for their implementation. This is also a long process so it must be started early in the Project focusing first on the procedural rules that depend less on the basin models.

29. WUP is therefore targeted on the root causes constraining cooperation in the Mekong basin, and on the "key result areas" in the MRC Strategic Plan.

Annex 10

# Thailand at a glance

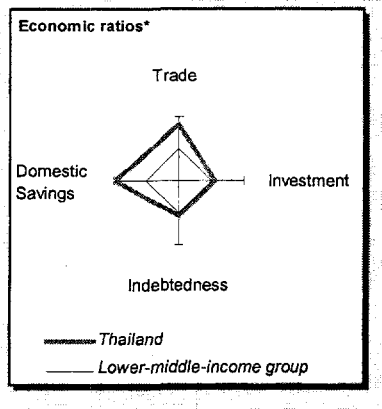
| POVERTY and SOCIAL | Thailand | East Asia & Pacific | Lower-middle-income |
|---|---|---|---|
| **1998** | | | |
| Population, mid-year *(millions)* | 61.1 | 1,817 | 908 |
| GNP per capita *(Atlas method, US$)* | 2,200 | 990 | 1,710 |
| GNP *(Atlas method, US$ billions)* | 134.4 | 1,802 | 1,557 |
| **Average annual growth, 1992-98** | | | |
| Population *(%)* | 1.1 | 1.2 | 1.1 |
| Labor force *(%)* | 1.6 | 1.6 | 1.5 |
| **Most recent estimate (latest year available, 1992-98)** | | | |
| Poverty *(% of population below national poverty line)* | 13 | .. | .. |
| Urban population *(% of total population)* | 21 | 35 | 58 |
| Life expectancy at birth *(years)* | 69 | 69 | 68 |
| Infant mortality *(per 1,000 live births)* | 33 | 37 | 38 |
| Child malnutrition *(% of children under 5)* | .. | 20 | .. |
| Access to safe water *(% of population)* | 89 | 77 | 75 |
| Illiteracy *(% of population age 15+)* | 5 | 15 | 14 |
| Gross primary enrollment *(% of school-age population)* | 87 | 117 | 103 |
| Male | .. | 119 | 105 |
| Female | .. | 118 | 100 |




**KEY ECONOMIC RATIOS and LONG-TERM TRENDS**

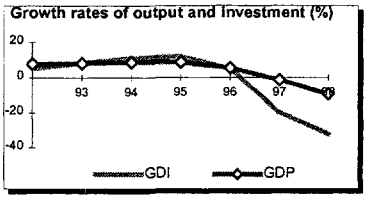
| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| GDP *(US$ billions)* | 19.8 | 50.5 | 149.1 | 111.3 |
| Gross domestic investment/GDP | 26.9 | 27.9 | 30.1 | 25.3 |
| Exports of goods and services/GDP | 20.0 | 28.9 | 48.4 | 58.9 |
| Gross domestic savings/GDP | 21.5 | 28.4 | 32.2 | 41.8 |
| Gross national savings/GDP | 21.5 | 27.1 | 30.2 | 40.6 |
| Current account balance/GDP | -5.5 | -0.7 | -2.0 | 12.8 |
| Interest payments/GDP | 0.6 | 2.1 | 2.3 | 1.8 |
| Total debt/GDP | 16.9 | 40.3 | 62.7 | 86.8 |
| Total debt service/exports | 13.7 | 21.9 | 15.4 | 6.4 |
| Present value of debt/GDP | .. | .. | 59.3 | .. |
| Present value of debt/exports | .. | .. | 119.4 | .. |

| | 1977-87 | 1988-98 | 1997 | 1998 | 1999-03 |
|---|---|---|---|---|---|
| *(average annual growth)* | | | | | |
| GDP | 5.8 | 6.9 | -1.3 | -9.4 | 2.7 |
| GNP per capita | 3.6 | 5.5 | -2.1 | -8.5 | .. |
| Exports of goods and services | 9.5 | 11.3 | 6.6 | -0.8 | 5.0 |

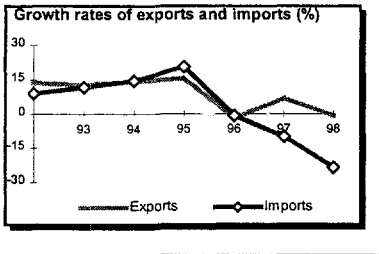



**STRUCTURE of the ECONOMY**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(% of GDP)* | | | | |
| Agriculture | 24.8 | 15.7 | 9.7 | 11.2 |
| Industry | 29.3 | 33.3 | 41.3 | 41.2 |
| Manufacturing | 20.2 | 24.3 | 31.2 | 32.1 |
| Services | 45.9 | 50.9 | 49.0 | 47.7 |
| Private consumption | 67.9 | 60.2 | 57.7 | 47.5 |
| General government consumption | 10.6 | 11.3 | 10.1 | 10.7 |
| Imports of goods and services | 25.4 | 28.3 | 46.3 | 42.4 |




| | 1977-87 | 1988-98 | 1997 | 1998 |
|---|---|---|---|---|
| *(average annual growth)* | | | | |
| Agriculture | 3.5 | 2.6 | -0.1 | -0.4 |
| Industry | 6.9 | 8.8 | -0.6 | -12.6 |
| Manufacturing | 6.2 | 9.3 | 2.5 | -10.0 |
| Services | 6.1 | 6.5 | -2.1 | -8.6 |
| Private consumption | 4.6 | 5.7 | -0.9 | -16.4 |
| General government consumption | 6.6 | 5.8 | -1.6 | 4.6 |
| Gross domestic investment | 4.1 | 6.2 | -19.7 | -32.0 |
| Imports of goods and services | 4.4 | 9.0 | -10.0 | -23.8 |
| Gross national product | 5.6 | 6.9 | -1.1 | -7.7 |



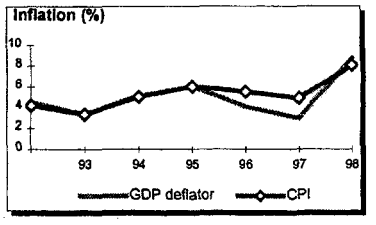

Note: 1998 data are preliminary estimates.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

# Annex 10

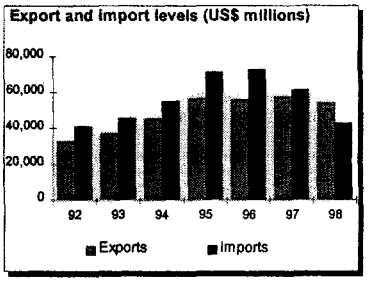
**PRICES and GOVERNMENT FINANCE**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| ***Domestic prices*** | | | | |
| *(% change)* | | | | |
| Consumer prices | .. | 2.5 | 4.9 | 8.1 |
| Implicit GDP deflator | 6.0 | 4.7 | 3.0 | 8.7 |
| ***Government finance*** | | | | |
| *(% of GDP, includes current grants)* | | | | |
| Current revenue | 12.9 | 15.3 | 18.1 | 15.6 |
| Current budget balance | 1.2 | 1.1 | 7.2 | 3.1 |
| Overall surplus/deficit | -2.9 | -2.1 | .. | .. |



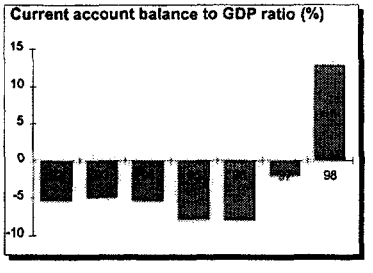

**TRADE**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Total exports (fob) | 3,490 | 11,654 | 57,604 | 54,340 |
| Rice | 656 | 884 | 2,075 | 2,099 |
| Rubber | 302 | 799 | 1,832 | 1,340 |
| Manufactures | .. | 6,989 | 45,113 | 42,323 |
| Total imports (cif) | .. | 13,471 | 61,353 | 42,895 |
| Food | .. | .. | 2,041 | 1,774 |
| Fuel and energy | .. | 1,733 | 5,367 | 3,159 |
| Capital goods | .. | .. | 29,796 | 19,747 |
| Export price index *(1995=100)* | .. | 95 | 136 | 156 |
| Import price index *(1995=100)* | .. | 71 | 130 | 157 |
| Terms of trade *(1995=100)* | .. | 133 | 105 | 99 |



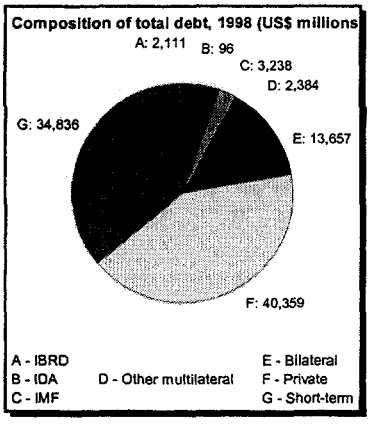

**BALANCE of PAYMENTS**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Exports of goods and services | 3,985 | 14,665 | 72,415 | 65,913 |
| Imports of goods and services | 5,083 | 14,361 | 72,437 | 48,536 |
| Resource balance | -1,098 | 304 | -22 | 17,377 |
| Net income | -38 | -894 | -3,481 | -3,562 |
| Net current transfers | 39 | 225 | 479 | 415 |
| Current account balance | -1,098 | -365 | -3,024 | 14,230 |
| Financing items (net) | 1,106 | 1,277 | -15,226 | -17,452 |
| Changes in net reserves | -9 | -912 | 18,250 | 3,222 |
| ***Memo:*** | | | | |
| Reserves including gold *(US$ millions)* | .. | .. | 26,202 | 28,842 |
| Conversion rate *(DEC, local/US$)* | 20.4 | 25.7 | 31.4 | 41.4 |




**EXTERNAL DEBT and RESOURCE FLOWS**

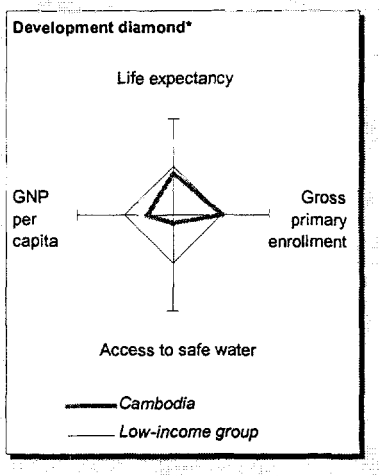
| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Total debt outstanding and disbursed | 3,344 | 20,385 | 93,416 | 96,681 |
| IBRD | 346 | 3,413 | 1,728 | 2,111 |
| IDA | 19 | 111 | 98 | 96 |
| Total debt service | 572 | 3,458 | 11,716 | 4,451 |
| IBRD | 44 | 445 | 296 | 301 |
| IDA | 0 | 1 | 3 | 3 |
| Composition of net resource flows | | | | |
| Official grants | 14 | 129 | 78 | .. |
| Official creditors | 165 | 30 | 5,930 | 1,621 |
| Private creditors | 165 | -103 | 7 | -873 |
| Foreign direct investment | 106 | 352 | 3,745 | .. |
| Portfolio equity | 0 | 115 | -308 | .. |
| World Bank program | | | | |
| Commitments | 138 | 34 | 767 | 1,015 |
| Disbursements | 75 | 157 | 443 | 498 |
| Principal repayments | 19 | 181 | 194 | 181 |
| Net flows | 56 | -25 | 249 | 317 |
| Interest payments | 25 | 265 | 105 | 123 |
| Net transfers | 31 | -289 | 145 | 194 |



Annex 10

# Cambodia at a glance

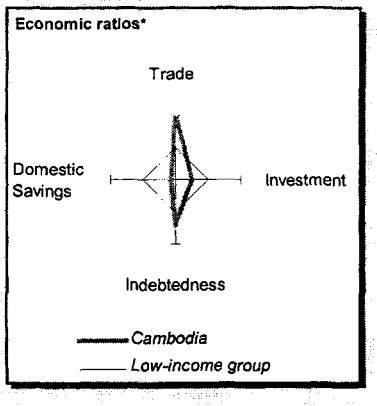
| POVERTY and SOCIAL | Cambodia | East Asia & Pacific | Low-income |
|---|---|---|---|
| **1998** | | | |
| Population, mid-year *(millions)* | 10.7 | 1,817 | 3,515 |
| GNP per capita *(Atlas method, US$)* | 280 | 990 | 520 |
| GNP *(Atlas method, US$ billions)* | 3.0 | 1,802 | 1,844 |
| **Average annual growth, 1992-98** | | | |
| Population *(%)* | 2.6 | 1.2 | 1.7 |
| Labor force *(%)* | 2.6 | 1.6 | 1.9 |
| **Most recent estimate (latest year available, 1992-98)** | | | |
| Poverty *(% of population below national poverty line)* | 36 | .. | .. |
| Urban population *(% of total population)* | 22 | 35 | 31 |
| Life expectancy at birth *(years)* | 54 | 69 | 63 |
| Infant mortality *(per 1,000 live births)* | 103 | 37 | 69 |
| Child malnutrition *(% of children under 5)* | 38 | 20 | .. |
| Access to safe water *(% of population)* | 13 | 77 | 74 |
| Illiteracy *(% of population age 15+)* | .. | 15 | 32 |
| Gross primary enrollment *(% of school-age population)* | 110 | 117 | 108 |
| Male | 119 | 119 | 113 |
| Female | 100 | 118 | 103 |




**KEY ECONOMIC RATIOS and LONG-TERM TRENDS**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| GDP *(US$ billions)* | .. | .. | 3.2 | 3.0 |
| Gross domestic investment/GDP | .. | .. | 19.0 | 15.0 |
| Exports of goods and services/GDP | .. | .. | 32.5 | 34.6 |
| Gross domestic savings/GDP | .. | .. | 9.3 | 4.5 |
| Gross national savings/GDP | .. | .. | 11.1 | 5.9 |
| Current account balance/GDP | .. | .. | -5.9 | -7.4 |
| Interest payments/GDP | .. | .. | 0.1 | 0.2 |
| Total debt/GDP | .. | .. | 66.9 | 74.2 |
| Total debt service/exports | .. | .. | 1.0 | 1.3 |
| Present value of debt/GDP | .. | .. | 52.4 | .. |
| Present value of debt/exports | .. | .. | 175.8 | .. |

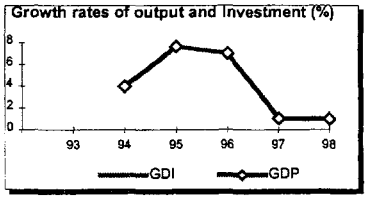
| | 1977-87 | 1988-98 | 1997 | 1998 | 1999-03 |
|---|---|---|---|---|---|
| *(average annual growth)* | | | | | |
| GDP | .. | 4.9 | 1.0 | 1.0 | .. |
| GNP per capita | .. | .. | .. | .. | .. |
| Exports of goods and services | .. | .. | .. | .. | .. |




**STRUCTURE of the ECONOMY**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(% of GDP)* | | | | |
| Agriculture | .. | .. | 50.7 | 50.6 |
| Industry | .. | .. | 14.8 | 14.8 |
| Manufacturing | .. | .. | 5.8 | 6.2 |
| Services | .. | .. | 34.5 | 34.6 |
| Private consumption | .. | .. | 81.7 | 86.6 |
| General government consumption | .. | .. | 9.0 | 8.9 |
| Imports of goods and services | .. | .. | 42.2 | 45.2 |

| | 1977-87 | 1988-98 | 1997 | 1998 |
|---|---|---|---|---|
| *(average annual growth)* | | | | |
| Agriculture | .. | 2.4 | 1.3 | 0.4 |
| Industry | .. | 8.5 | -2.8 | 1.1 |
| Manufacturing | .. | 7.1 | 7.6 | 6.4 |
| Services | .. | 6.5 | 2.8 | 1.6 |
| Private consumption | .. | 4.3 | 2.0 | 7.1 |
| General government consumption | .. | .. | .. | .. |
| Gross domestic investment | .. | .. | .. | .. |
| Imports of goods and services | .. | .. | .. | .. |
| Gross national product | .. | .. | .. | .. |



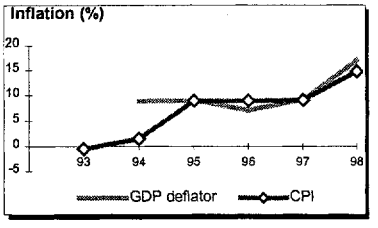

Note: 1998 data are preliminary estimates.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

# Annex 10

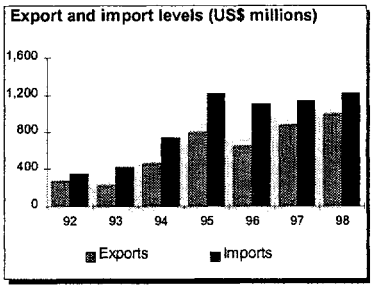
**PRICES and GOVERNMENT FINANCE**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| ***Domestic prices*** | | | | |
| *(% change)* | | | | |
| Consumer prices | .. | .. | 9.1 | 14.8 |
| Implicit GDP deflator | .. | .. | 9.2 | 16.9 |
| ***Government finance*** | | | | |
| *(% of GDP, includes current grants)* | | | | |
| Current revenue | .. | .. | 10.6 | 8.4 |
| Current budget balance | .. | .. | 1.6 | -0.3 |
| Overall surplus/deficit | .. | .. | -3.2 | -3.7 |



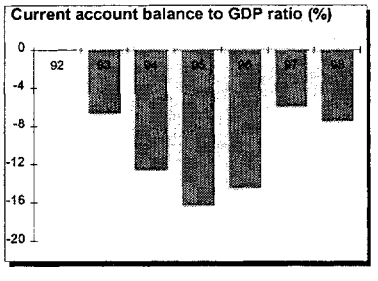

**TRADE**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Total exports (fob) | .. | .. | 874 | 999 |
| Rubber | .. | .. | 23 | 25 |
| Logs | .. | .. | 124 | 100 |
| Manufactures | .. | .. | 279 | 390 |
| Total imports (cif) | .. | .. | 1,142 | 1,227 |
| Food | .. | .. | .. | .. |
| Fuel and energy | .. | .. | .. | .. |
| Capital goods | .. | .. | .. | .. |
| Export price index *(1995=100)* | .. | .. | .. | .. |
| Import price index *(1995=100)* | .. | .. | .. | .. |
| Terms of trade *(1995=100)* | .. | .. | .. | .. |



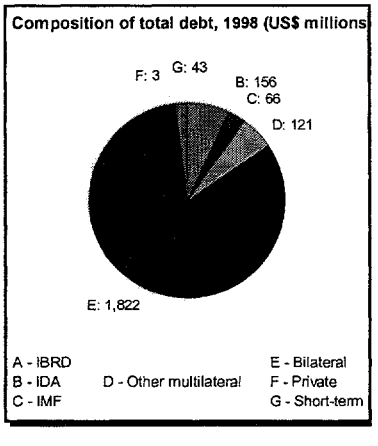

**BALANCE of PAYMENTS**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Exports of goods and services | .. | .. | 991 | 994 |
| Imports of goods and services | .. | .. | 1,285 | 1,297 |
| Resource balance | .. | .. | -294 | -303 |
| Net income | .. | .. | -17 | -18 |
| Net current transfers | .. | .. | 123 | 101 |
| Current account balance | .. | .. | -188 | -220 |
| Financing items (net) | .. | .. | 216 | 231 |
| Changes in net reserves | .. | .. | -28 | -11 |
| ***Memo:*** | | | | |
| Reserves including gold *(US$ millions)* | .. | .. | 262 | 390 |
| Conversion rate *(DEC, local/US$)* | .. | .. | 2,861.1 | 3,605.9 |




**EXTERNAL DEBT and RESOURCE FLOWS**

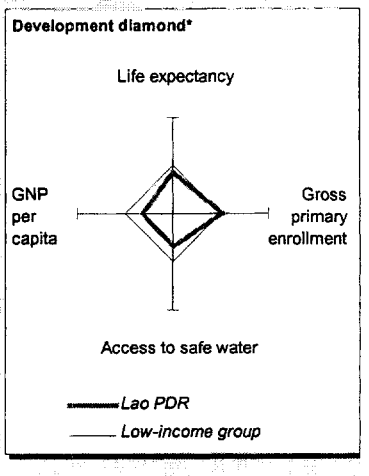
| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Total debt outstanding and disbursed | .. | .. | 2,129 | 2,211 |
| IBRD | .. | .. | 0 | 0 |
| IDA | .. | .. | 132 | 156 |
| Total debt service | .. | .. | 10 | 13 |
| IBRD | .. | .. | 0 | 0 |
| IDA | .. | .. | 1 | 1 |
| Composition of net resource flows | | | | |
| Official grants | .. | .. | 210 | 194 |
| Official creditors | .. | .. | 39 | 55 |
| Private creditors | .. | .. | -3 | -3 |
| Foreign direct investment | .. | .. | 168 | 120 |
| Portfolio equity | .. | .. | 0 | 0 |
| World Bank program | | | | |
| Commitments | .. | .. | 57 | 31 |
| Disbursements | .. | .. | 30 | 19 |
| Principal repayments | .. | .. | 0 | 0 |
| Net flows | .. | .. | 30 | 19 |
| Interest payments | .. | .. | 1 | 1 |
| Net transfers | .. | .. | 30 | 18 |



Annex 10

# Lao PDR at a glance

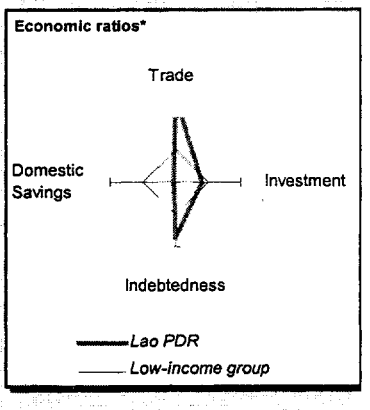
| POVERTY and SOCIAL | Lao PDR | East Asia & Pacific | Low-income |
|---|---|---|---|
| **1998** | | | |
| Population, mid-year *(millions)* | 5.0 | 1,817 | 3,515 |
| GNP per capita *(Atlas method, US$)* | 330 | 990 | 520 |
| GNP *(Atlas method, US$ billions)* | 1.6 | 1,802 | 1,844 |
| **Average annual growth, 1992-98** | | | |
| Population *(%)* | 2.6 | 1.2 | 1.7 |
| Labor force *(%)* | .. | 1.6 | 1.9 |
| **Most recent estimate (latest year available, 1992-98)** | | | |
| Poverty *(% of population below national poverty line)* | 46 | .. | .. |
| Urban population *(% of total population)* | 22 | 35 | 31 |
| Life expectancy at birth *(years)* | 53 | 69 | 63 |
| Infant mortality *(per 1,000 live births)* | 98 | 37 | 69 |
| Child malnutrition *(% of children under 5)* | 40 | 20 | .. |
| Access to safe water *(% of population)* | 51 | 77 | 74 |
| Illiteracy *(% of population age 15+)* | .. | 15 | 32 |
| Gross primary enrollment *(% of school-age population)* | 112 | 117 | 108 |
| Male | 123 | 119 | 113 |
| Female | 101 | 118 | 103 |




**KEY ECONOMIC RATIOS and LONG-TERM TRENDS**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| GDP *(US$ billions)* | .. | 1.1 | 1.7 | 1.6 |
| Gross domestic investment/GDP | .. | 10.2 | 28.7 | 24.0 |
| Exports of goods and services/GDP | .. | 6.1 | 23.8 | 39.2 |
| Gross domestic savings/GDP | .. | 2.3 | 11.4 | 1.8 |
| Gross national savings/GDP | .. | .. | 13.8 | 5.6 |
| Current account balance/GDP | .. | -8.6 | -14.4 | -13.6 |
| Interest payments/GDP | .. | 0.2 | 0.4 | 0.5 |
| Total debt/GDP | .. | 106.8 | 132.8 | 148.0 |
| Total debt service/exports | .. | 16.1 | 6.4 | 5.9 |
| Present value of debt/GDP | .. | .. | 53.0 | .. |
| Present value of debt/exports | .. | .. | 216.8 | .. |

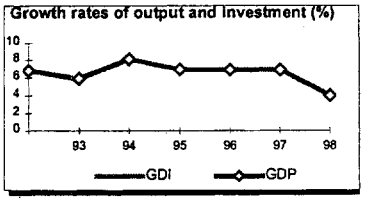
| | 1977-87 | 1988-98 | 1997 | 1998 | 1999-03 |
|---|---|---|---|---|---|
| *(average annual growth)* | | | | | |
| GDP | .. | 6.8 | 6.9 | 4.0 | 6.2 |
| GNP per capita | .. | 4.1 | 4.2 | 1.6 | 3.8 |
| Exports of goods and services | .. | .. | .. | .. | .. |




**STRUCTURE of the ECONOMY**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(% of GDP)* | | | | |
| Agriculture | .. | .. | 52.8 | 55.6 |
| Industry | .. | .. | 21.0 | 20.8 |
| Manufacturing | .. | .. | 15.9 | 15.1 |
| Services | .. | .. | 26.2 | 23.6 |
| Private consumption | .. | 89.4 | 81.2 | 89.9 |
| General government consumption | .. | 8.3 | 7.4 | 8.3 |
| Imports of goods and services | .. | 14.0 | 41.2 | 61.4 |

| | 1977-87 | 1988-98 | 1997 | 1998 |
|---|---|---|---|---|
| *(average annual growth)* | | | | |
| Agriculture | .. | 4.9 | 7.0 | 3.0 |
| Industry | .. | 13.1 | 8.1 | 4.0 |
| Manufacturing | .. | 14.3 | 9.3 | 3.7 |
| Services | .. | 5.8 | 7.5 | 3.2 |
| Private consumption | .. | .. | .. | .. |
| General government consumption | .. | .. | .. | .. |
| Gross domestic investment | .. | .. | .. | .. |
| Imports of goods and services | .. | .. | .. | .. |
| Gross national product | .. | 6.8 | 6.9 | 4.0 |



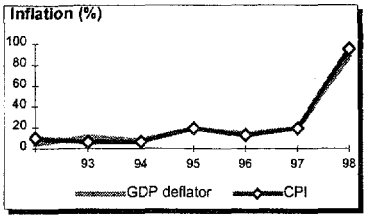

Note: 1998 data are preliminary estimates.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

# Annex 10

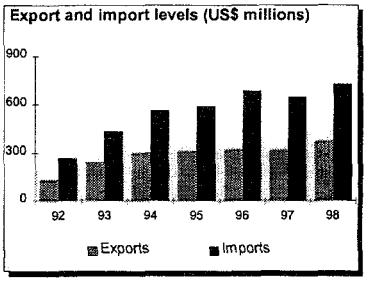
**PRICES and GOVERNMENT FINANCE**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| ***Domestic prices*** | | | | |
| *(% change)* | | | | |
| Consumer prices | .. | .. | 19.3 | 95.1 |
| Implicit GDP deflator | .. | .. | 19.3 | 87.5 |
| ***Government finance*** | | | | |
| *(% of GDP, includes current grants)* | | | | |
| Current revenue | .. | .. | 16.6 | 13.7 |
| Current budget balance | .. | .. | 7.0 | 2.8 |
| Overall surplus/deficit | .. | .. | -8.0 | -4.5 |



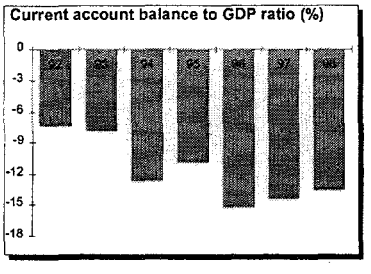

**TRADE**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Total exports (fob) | .. | .. | 317 | 375 |
| Wood products | .. | .. | 90 | 87 |
| Agricultural products | .. | .. | 18 | 23 |
| Manufactures | .. | .. | 169 | 139 |
| Total imports (cif) | .. | .. | 648 | 728 |
| Food | .. | .. | .. | 80 |
| Fuel and energy | .. | .. | 81 | 92 |
| Capital goods | .. | .. | 189 | 182 |
| Export price index *(1995=100)* | .. | .. | .. | .. |
| Import price index *(1995=100)* | .. | .. | .. | .. |
| Terms of trade *(1995=100)* | .. | .. | .. | .. |



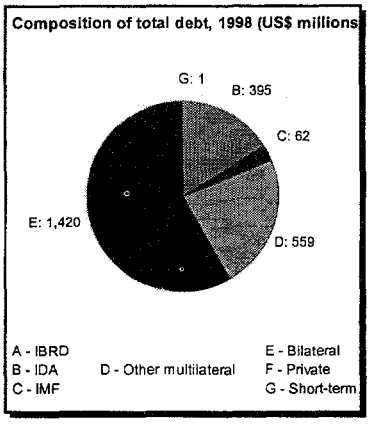

**BALANCE of PAYMENTS**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Exports of goods and services | .. | 65 | 417 | 510 |
| Imports of goods and services | .. | 147 | 721 | 800 |
| Resource balance | .. | -83 | -304 | -290 |
| Net income | .. | -14 | -21 | -16 |
| Net current transfers | .. | .. | 73 | 82 |
| Current account balance | .. | -93 | -251 | -224 |
| Financing items (net) | .. | 82 | 221 | 275 |
| Changes in net reserves | .. | 11 | 30 | -51 |
| ***Memo:*** | | | | |
| Reserves including gold *(US$ millions)* | .. | .. | 136 | 181 |
| Conversion rate *(DEC, local/US$)* | .. | 175.1 | 1,260.0 | 2,605.9 |




**EXTERNAL DEBT and RESOURCE FLOWS**

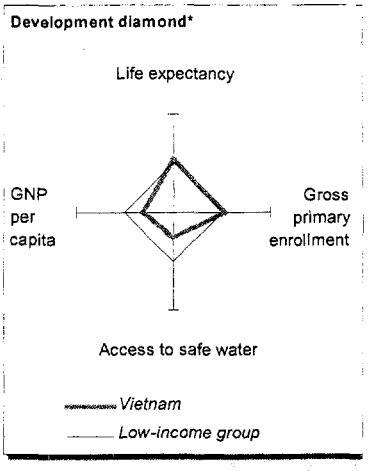
| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Total debt outstanding and disbursed | .. | 1,161 | 2,320 | 2,437 |
| IBRD | .. | 0 | 0 | 0 |
| IDA | .. | 48 | 358 | 395 |
| Total debt service | .. | 10 | 28 | 31 |
| IBRD | .. | 0 | 0 | 0 |
| IDA | .. | 0 | 3 | 4 |
| Composition of net resource flows | | | | |
| Official grants | .. | .. | .. | .. |
| Official creditors | .. | 163 | 120 | 78 |
| Private creditors | .. | 0 | 0 | 0 |
| Foreign direct investment | .. | 0 | 104 | 54 |
| Portfolio equity | .. | 0 | 0 | .. |
| World Bank program | | | | |
| Commitments | .. | 15 | 48 | 63 |
| Disbursements | .. | 5 | 42 | 25 |
| Principal repayments | .. | 0 | 1 | 1 |
| Net flows | .. | 5 | 41 | 24 |
| Interest payments | .. | 0 | 2 | 3 |
| Net transfers | .. | 5 | 39 | 21 |



Annex 10

# Vietnam at a glance

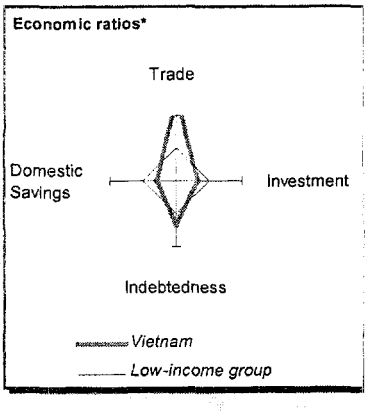
| POVERTY and SOCIAL | Vietnam | East Asia & Pacific | Low-income |
|---|---|---|---|
| 1998 | | | |
| Population, mid-year *(millions)* | 76.5 | 1,817 | 3,515 |
| GNP per capita *(Atlas method, US$)* | 330 | 990 | 520 |
| GNP *(Atlas method, US$ billions)* | 25.6 | 1,802 | 1,844 |
| **Average annual growth, 1992-98** | | | |
| Population *(%)* | 1.7 | 1.2 | 1.7 |
| Labor force *(%)* | 1.9 | 1.6 | 1.9 |
| ***Most recent estimate (latest year available, 1992-98)*** | | | |
| Poverty *(% of population below national poverty line)* | 37 | .. | .. |
| Urban population *(% of total population)* | 24 | 35 | 31 |
| Life expectancy at birth *(years)* | 68 | 69 | 63 |
| Infant mortality *(per 1,000 live births)* | 35 | 37 | 69 |
| Child malnutrition *(% of children under 5)* | 45 | 20 | .. |
| Access to safe water *(% of population)* | 38 | 77 | 74 |
| Illiteracy *(% of population age 15+)* | 17 | 15 | 32 |
| Gross primary enrollment *(% of school-age population)* | 114 | 117 | 108 |
| Male | .. | 119 | 113 |
| Female | .. | 118 | 103 |




**KEY ECONOMIC RATIOS and LONG-TERM TRENDS**

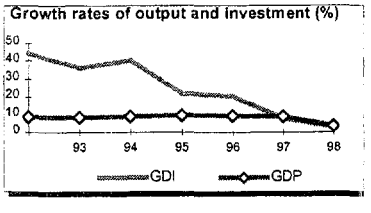
| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| GDP *(US$ billions)* | .. | .. | 24.8 | 25.9 |
| Gross domestic investment/GDP | .. | 14.6 | 27.6 | 19.8 |
| Exports of goods and services/GDP | .. | 6.5 | 47.5 | 46.4 |
| Gross domestic savings/GDP | .. | 5.1 | .. | .. |
| Gross national savings/GDP | .. | .. | 19.8 | 14.9 |
| Current account balance/GDP | .. | .. | -7.7 | -5.0 |
| Interest payments/GDP | .. | .. | 1.1 | 1.5 |
| Total debt/GDP | .. | .. | 87.0 | 86.6 |
| Total debt service/exports | .. | .. | 7.8 | 9.0 |
| Present value of debt/GDP | .. | .. | 78.4 | .. |
| Present value of debt/exports | .. | .. | 167.7 | .. |

| | 1977-87 | 1988-98 | 1997 | 1998 | 1999-03 |
|---|---|---|---|---|---|
| *(average annual growth)* | | | | | |
| GDP | .. | 7.9 | 8.8 | 3.5 | 5.1 |
| GNP per capita | .. | 5.5 | 3.7 | .. | .. |
| Exports of goods and services | .. | 25.0 | 13.3 | 3.3 | 9.1 |

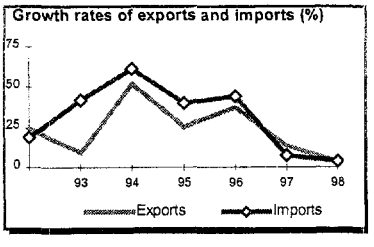



**STRUCTURE of the ECONOMY**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(% of GDP)* | | | | |
| Agriculture | .. | 39.1 | 26.2 | 28.6 |
| Industry | .. | 33.9 | 31.2 | 36.1 |
| Manufacturing | .. | 31.5 | .. | .. |
| Services | .. | 27.0 | 42.6 | 35.3 |
| Private consumption | .. | .. | 71.7 | 77.0 |
| General government consumption | .. | .. | 8.8 | 9.0 |
| Imports of goods and services | .. | 15.9 | 55.5 | 52.3 |




| | 1977-87 | 1988-98 | 1997 | 1998 |
|---|---|---|---|---|
| *(average annual growth)* | | | | |
| Agriculture | .. | 5.0 | 4.5 | 2.5 |
| Industry | .. | 12.3 | 13.1 | 7.5 |
| Manufacturing | .. | .. | .. | .. |
| Services | .. | 8.5 | 9.2 | 1.2 |
| Private consumption | .. | 7.1 | 2.7 | 2.0 |
| General government consumption | .. | 10.2 | 2.5 | 2.0 |
| Gross domestic investment | .. | 23.2 | 7.8 | 3.0 |
| Imports of goods and services | .. | 27.1 | 7.2 | 3.6 |
| Gross national product | .. | 7.8 | 5.6 | .. |



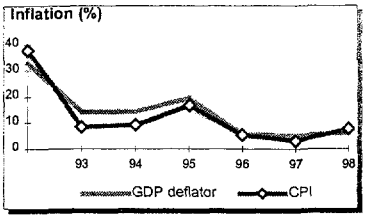

Note: 1998 data are preliminary estimates.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will the diamond will be incomplete.

# Annex 10

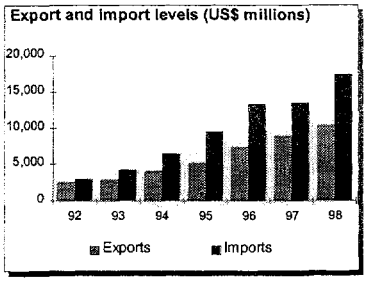
**PRICES and GOVERNMENT FINANCE**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| ***Domestic prices*** | | | | |
| *(% change)* | | | | |
| Consumer prices | .. | .. | 3.2 | 7.8 |
| Implicit GDP deflator | .. | 365.6 | 5.1 | 6.5 |
| ***Government finance*** | | | | |
| *(% of GDP, includes current grants)* | | | | |
| Current revenue | .. | 14.2 | 20.4 | 20.7 |
| Current budget balance | .. | 0.0 | 5.3 | 5.5 |
| Overall surplus/deficit | .. | .. | -0.6 | -0.5 |



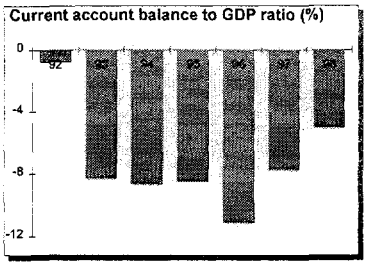

**TRADE**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Total exports (fob) | .. | 610 | 8,955 | 10,379 |
| Rice | .. | .. | 927 | .. |
| Fuel | .. | .. | 1,443 | .. |
| Manufactures | .. | .. | .. | .. |
| Total imports (cif) | .. | 1,184 | 13,466 | 17,443 |
| Food | .. | .. | .. | .. |
| Fuel and energy | .. | .. | .. | .. |
| Capital goods | .. | .. | .. | .. |
| Export price index *(1995=100)* | .. | .. | .. | .. |
| Import price index *(1995=100)* | .. | .. | .. | .. |
| Terms of trade *(1995=100)* | .. | .. | .. | .. |



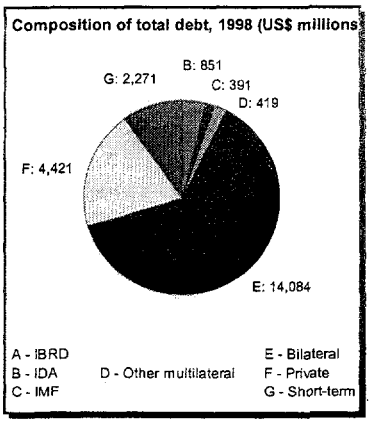

**BALANCE of PAYMENTS**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Exports of goods and services | .. | .. | 11,841 | 11,997 |
| Imports of goods and services | .. | .. | 13,841 | 13,526 |
| Resource balance | .. | .. | -2,000 | -1,529 |
| Net income | .. | -94 | -632 | .. |
| Net current transfers | .. | 27 | 712 | 950 |
| Current account balance | .. | -592 | -1,920 | -1,292 |
| Financing items (net) | .. | 295 | 2,236 | 1,307 |
| Changes in net reserves | .. | 297 | -316 | -15 |
| ***Memo:*** | | | | |
| Reserves including gold *(US$ millions)* | .. | .. | 94 | -524 |
| Conversion rate *(DEC, local/US$)* | .. | .. | 11,900.0 | 12,580.0 |




**EXTERNAL DEBT and RESOURCE FLOWS**

| | 1977 | 1987 | 1997 | 1998 |
|---|---|---|---|---|
| *(US$ millions)* | | | | |
| Total debt outstanding and disbursed | 0 | 191 | 21,629 | 22,437 |
| IBRD | 0 | 0 | 0 | 0 |
| IDA | 0 | 60 | 569 | 851 |
| Total debt service | 0 | 2 | 907 | 1,087 |
| IBRD | 0 | 0 | 0 | 0 |
| IDA | 0 | 0 | 4 | 5 |
| Composition of net resource flows | | | | |
| Official grants | 207 | 41 | 222 | .. |
| Official creditors | 0 | -1 | 382 | 1,092 |
| Private creditors | 0 | 0 | 287 | -368 |
| Foreign direct investment | .. | .. | 1,800 | 1,200 |
| Portfolio equity | 0 | 0 | -94 | .. |
| World Bank program | | | | |
| Commitments | 0 | 0 | 466 | 427 |
| Disbursements | 0 | 0 | 181 | 254 |
| Principal repayments | 0 | 0 | 1 | 1 |
| Net flows | 0 | 0 | 180 | 253 |
| Interest payments | 0 | 0 | 3 | 5 |
| Net transfers | 0 | 0 | 177 | 248 |



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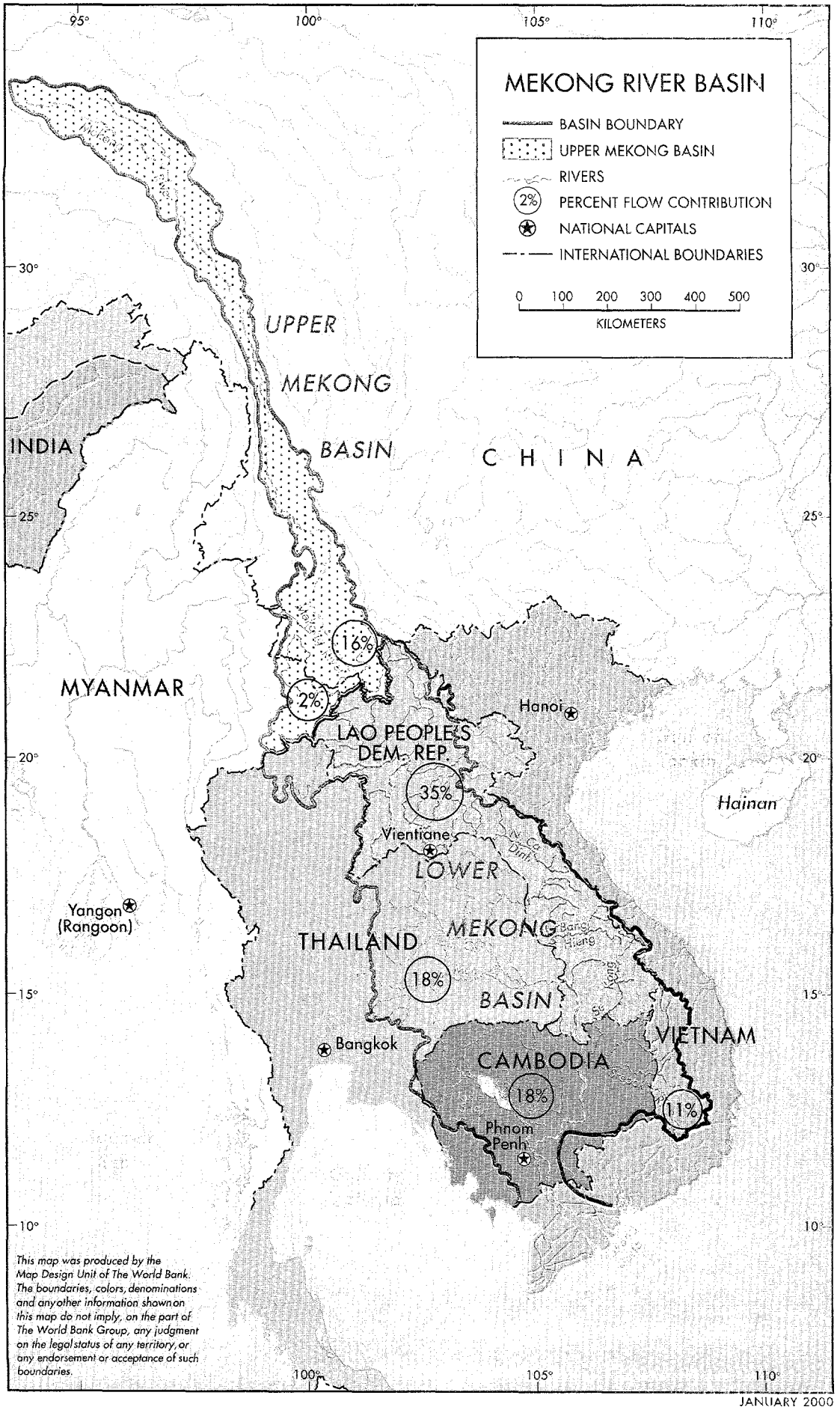


*This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.*

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