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A Vision for the Mekong River Basin

An economically prosperous, socially just and environmentally sound Mekong River Basin

A Vision for the Mekong River Commission

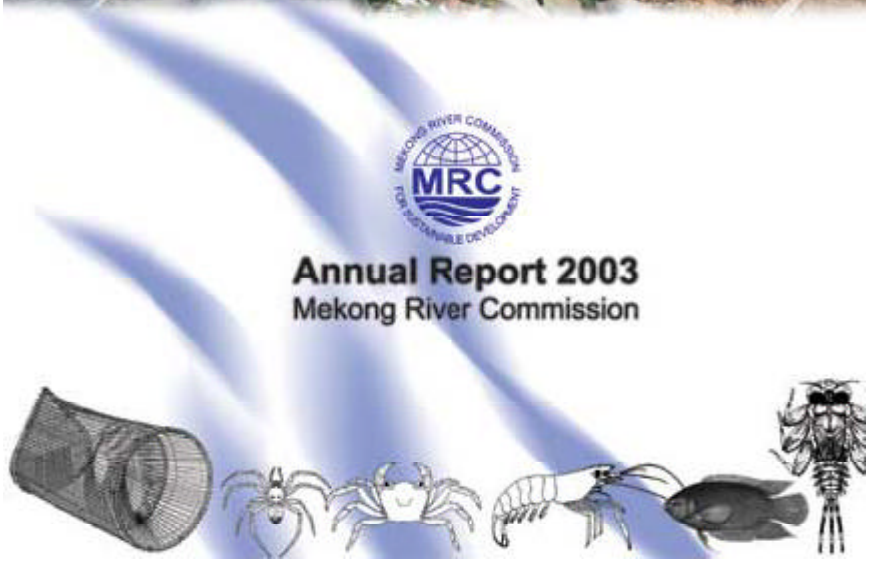
A world class, financially secure, international river basin organization serving the Mekong countries to achieve the basin vision

The Mission of the Mekong River Commission

To promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being by implementing strategic programmes and activities and providing scientific information

Photos by: MRC archive, Jim Holmes, **Chhoy Pisei.**

Annual Report 2003
Mekong River Commission



The MEKONG RIVER COMMISSION

The Mekong River Commission is an intergovernmental body created in 1995 by an agreement between the governments of Cambodia, Lao PDR, Thailand and Viet Nam.

The Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin came about as the four countries saw a common interest in jointly managing their shared natural resources. Signed on 5 April 1995, it set a new mandate for the organization "to cooperate in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin."

The agreement brought a change of identity for the organization previously known as the Mekong Committee, which had been established in 1957 as the Committee for Coordination of Investigations of the Lower Mekong Basin - the Mekong Committee.

Since the 1995 Agreement, the Mekong River Commission (MRC) has launched a process to ensure "reasonable and equitable use" of the Mekong River System, through a participatory process with National Mekong Committees in each country to develop rules and procedures for water utilisation. The MRC monitors the quality of water resources, and is supporting a joint basin-wide planning process with the four countries called the Basin Development Plan. The MRC is also involved in fisheries management, promotion of safe navigation, agricultural development, flood mitigation and hydropower planning within an overall framework of renewable resources management.

The two upper states of the Mekong River Basin, the People's Republic of China and the Union of Myanmar, are dialogue partners to the MRC.

Structure

The MRC consists of three permanent bodies: the Council, the Joint Committee (JC) and the Secretariat.

The Council, comprising one member at Ministerial and Cabinet level from each MRC member country, convenes annually and has overall governance of the Mekong River Commission.

The JC, comprising also one member from each member country at Head of Department level or higher, convenes at least two times a year. This body functions as a board of management.

The Secretariat, which provides technical and administrative services to the JC and the Council, is under the direction of a Chief Executive Officer (CEO) appointed by the Council. The Secretariat is located in Phnom Penh, Cambodia. The Assistant CEO is of the same nationality as the JC Chair and serves a one-year term.

The MRC is funded by contributions from the four member countries and from aid donors. Formal consultation with the donor community is carried out through an annual Donor Consultative Group meeting.

The National Mekong Committees coordinate MRC programmes at the national level and provides links between the MRC Secretariat and the national ministries and line agencies. The principal implementing agencies of the MRC programmes and projects are the line agencies of the riparian countries in the Lower Mekong Basin.

Message from the Chairman of the Mekong River Commission Council

On behalf of the Mekong River Commission (MRC), I take pleasure in extending to all readers my best wishes and warmest greetings.

2003 was a successful year for the MRC. We have made progress in a number of central activities within the framework of the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin. These achievements take us forward on the path to our common goal: an economically prosperous, socially just and environmentally sound Mekong river basin.

In this context, the MRC Council members, at their tenth meeting in November 2003 in Phnom Penh, have signed the final Procedures for Water Use Monitoring and Procedures for Notification, Prior Consultation and Agreement. This is a crucial achievement in our ongoing effort to put the 1995 Agreement to work and agree on the details of its implementation with regard to a fair and equitable utilisation of the Mekong water and resources.

The MRC has also made good progress in its overall planning framework, the Basin Development Plan. The BDP uses a bottom-up approach to planning, based on a participatory analysis in a sectoral and geographical perspective. This process of analysis has been nearing completion in 2003 and will form the basis for the development of proposals for transboundary cooperation projects.

The Environment Programme has been updated and revised. Important achievements include guidelines for the development of transboundary environmental assessment, ecological health monitoring, water quality assessment, environment risk assessment and a self-study river awareness kit on CD-ROM.

I am also pleased that in 2003 the MRC Council has agreed to establish the MRC Flood Management and Mitigation Programme as a core programme of the organisation. The FMMP will be a valuable programme, ensuring that the MRC can contribute to preserving the benefits of Mekong floods while at the same time mitigating their negative impacts. I am looking forward to the start-up of the programme, that will include the establishment of the Regional Flood Management and Mitigation Centre in Phnom Penh.

The MRC Council also approved the new Navigation Programme. This Programme is important as it will enable our countries to employ the Mekong as a trade and transport route for economic development - a potential that is only scarcely used today.

The present report also outlines the progress and impact of other core and sector programmes of the MRC in 2003. These programmes are part of the integrated programme approach allowing the MRC to benefit from linkages between its different areas of work. Similar cooperation links have also been maintained in 2003 with our outside partners at the bilateral and multilateral level and in the civil society. In the same vein, the MRC has continued its fruitful dialogue with the upstream Mekong countries, China and Myanmar. This enables the MRC to take developments along the full length of the Mekong into account in its work.

The Commission has made great strides in its work programme in 2003. This has been possible through the generous support extended by our partners and friends to the organisation and the strong involvement and ownership of our Member States. I am particularly pleased to convey to the MRC donor community, cooperating agencies and partners, international organisations and friends our warm regards and appreciation for their kind cooperation and assistance to the MRC in 2003, and we look forward to further fruitful cooperation in 2004.

H.E. Mr Lim Kean Hor
Chairman of the MRC Council in 2003/2004

STRUCTURE OF THE MEKONG RIVER COMMISSION

Members of the MRC Council

Members at Ministerial and Cabinet level, responsible for policy and decision-making

H.E. Mr Lim Kean Hour

Minister of Water Resources and Meteorology

Member of the MRC Council for Cambodia

H.E. Mr Somphong Mongkhonvilay

Minister of the Prime Minister's Office

Member of the MRC Council for Lao PDR

H.E. Mr Prapat Panyachatraksa

Minister of Natural Resources and the Environment

Member of the MRC Council for Thailand

H.E. Mr Le Huy Ngo

Minister of Agriculture and Rural Development

Member of the MRC Council for Viet Nam

Members of the MRC Joint Committee

Members at Department Head level or higher, responsible for implementing policies and decisions

H.E. Mr Sin Niny

Vice-Chairman of Cambodia National Mekong Committee

Member of the MRC Joint Committee for Cambodia

H.E. Mr Sitaheng Rasphone

Vice-Minister of Agriculture and Forestry

Member of the MRC Joint Committee for Lao PDR

Dr Plodprasop Suraswadi

Permanent Secretary, Ministry of Natural Resources and the Environment

Member of the MRC Joint Committee for Thailand

Mr Nguyen Hong Toan

Secretary-General of Viet Nam National Mekong Committee

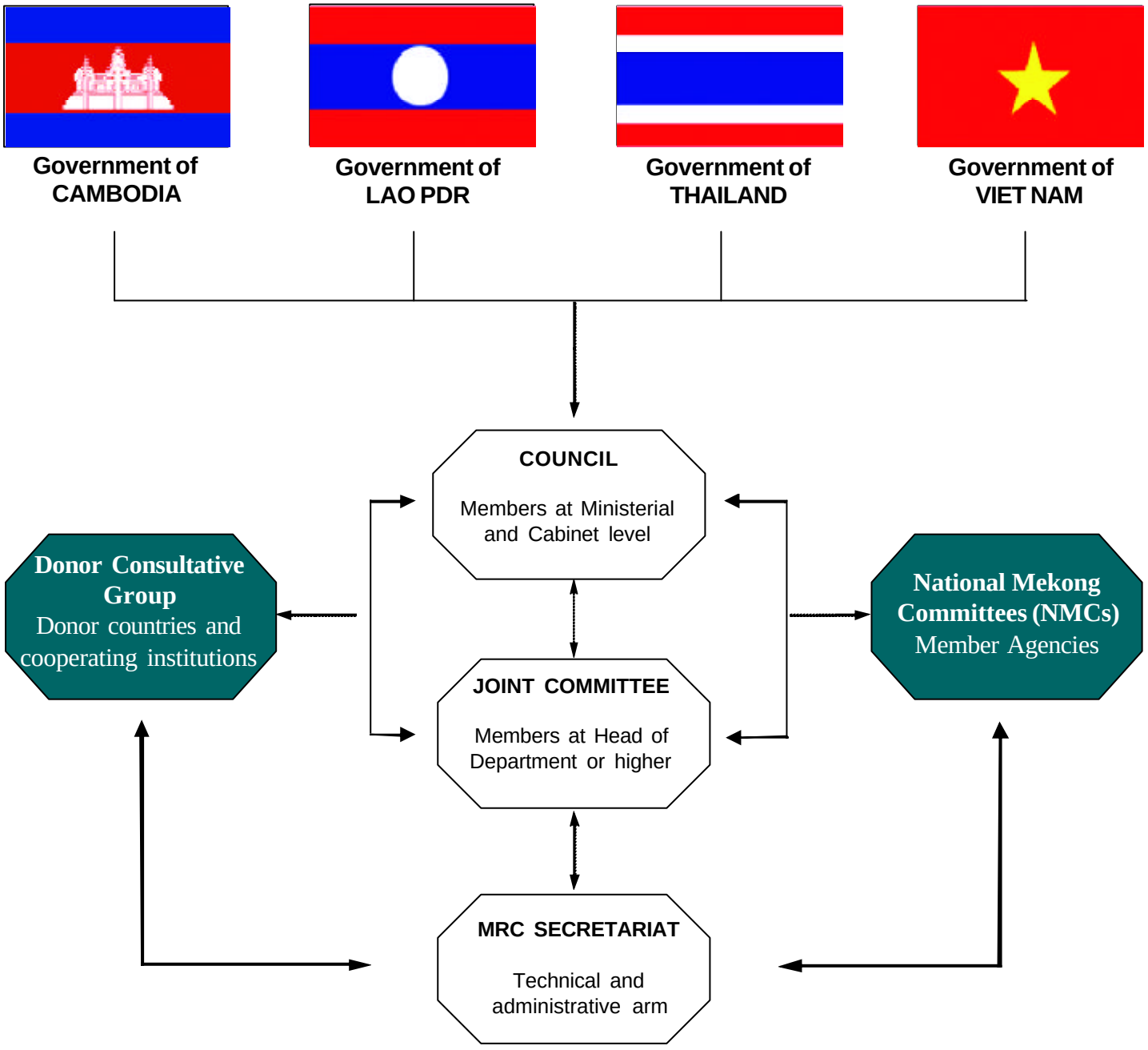
Member of the MRC Joint Committee for Viet Nam

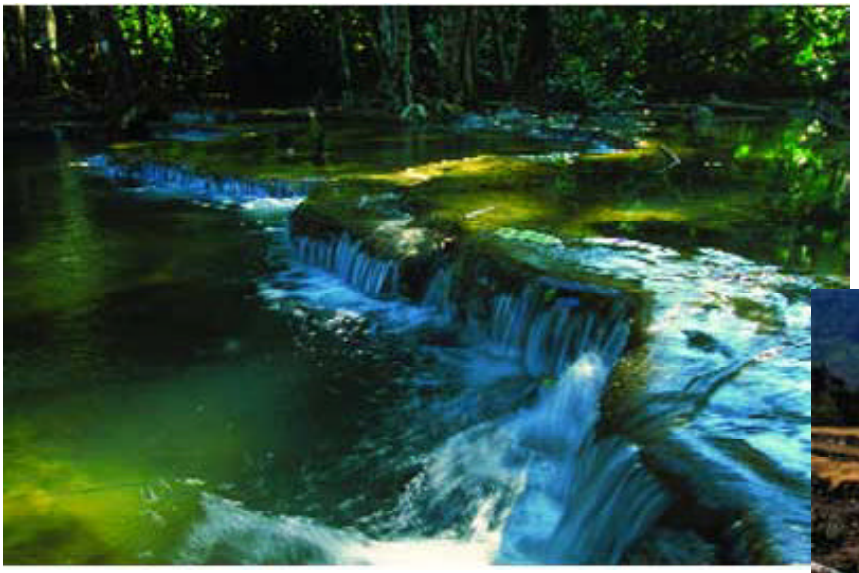
MRC Secretariat

Responsible for technical and administrative services

Dr Dao Trong Tu
Officer-In-Charge of MRC Secretariat

ORGANOGRAM OF THE MEKONG RIVER COMMISSION





PROGRESS REPORT 2003

WATER UTILISATION PROGRAMME

Following an intense schedule of negotiations, MRC member countries signed off two new procedures on water use at the Tenth MRC Council meeting in November 2003 in Phnom Penh. They were procedures on notification, prior consultation and agreement, and procedures for water use monitoring. This now completes the Water Utilisation Programme (WUP) schedule of agreements on procedural rules, and paves the way for the two upcoming technical agreements in the second half of the programme: rules for water quantity and quality.

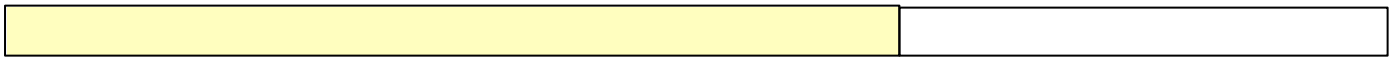
A working copy of the Decision Support Framework (DSF) was completed by consultants by the end of the year, with the final model to be presented by March 2004. The DSF is a software package designed to assist "players" - government and public policy advisors - to balance various scenarios, decisions and uncertainties. Training in the use of the package was carried out during the year and the final version is expected to support the basin development planning process in its analysis of scenarios.

A new project, Integrated Basin Flow Management (IBFM), was developed and is now being implemented under the joint supervision of MRC's Environment Programme and the WUP. The project will generate information to support the development of rules for the maintenance of flows on the mainstream, to be undertaken by WUP in 2004.

WUP and the Environment Programme also jointly supervised a two-year water quality diagnostic study, financed by the government of France.

Modelling activities of the Tonle Sap continued through coordination of work with Finnish and Japanese consultants.

BASIN DEVELOPEMENT PLAN



Due to the need to ensure that all stakeholders are fully on board the planning process, the Joint Committee and donors to the Basin Development Plan agreed in 2003 to extend the life of the BDP by six months, with no further funding sought.

The two aims of the programme are to establish a planning process at national and regional levels that will enable the Lower Mekong countries to jointly plan the development of the river basin, and to produce the first regionally-owned basin development plan based on an agreed strategy and project ideas that have emerged from joint discussions. National Mekong Committees are closely involved in the planning process. Coordination meetings between national coordinators and BDP staff at the MRC Secretariat have been held every six weeks to ensure a common approach across the four countries.

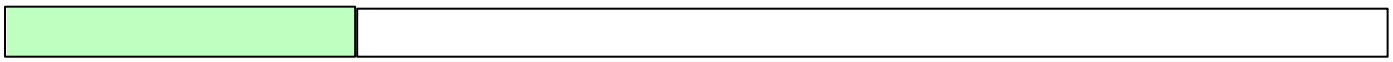
The planning process is based on studies carried out in ten "sub-areas" comprising clusters of sub-catchments.

Information from the studies is collated for discussion with local representatives from government agencies, line ministries and departments, universities, international organisations and civil society. A first round of stakeholder meetings in the sub-areas were carried out in three out of four countries in 2003 to share the information and identify issues and concerns regarding the type and pace of development in the area. A second round of meetings will follow in 2004 to jointly prepare possible scenarios for development.

The scenario-building approach adopted by the BDP is new to the region (see story on page 18) and its innovative nature has been recognised and welcomed.

With support from the Murray-Darling Basin Commission, the BDP team at the MRC secretariat also conducted three rounds of training in basin planning during the year, with a fourth round to follow in the form of a river basin tour in 2004.

ENVIRONMENT PROGRAMME



The Environment Programme, which has operated since early 2001, revised its implementation plan in 2003. The revised programme for 2004-2008 was approved by the Council in November.

The 15-year-old water quality monitoring network in the Lower Mekong Basin was revitalised in 2003 with new equipment and training of staff. Information from the monitoring network is being complemented by a study of water quality in the river basin. The MRC pilot-tested a system of ecological health monitoring at various locations in the river basin. Full monitoring operations will start in 2004.

A common wetland classification system has been developed and forms the basis for a basin-wide map of wetland types, together with an inventory and assessment of the ecological, economic and social functions and values of important wetland types. This information is intended to provide the basin development planning process with additional tools to assess the possible impacts of development initiatives.

The Environment Programme has also begun preparation of advice to government at a senior level on the development of a transboundary system of environmental impact assessments (EIA). Environmental risk assessments have been carried out by regional teams in the areas surrounding Vientiane/ Nong Khai and Phnom Penh. A comprehensive review of environmental conflicts in the region was completed as a first step in considering how the MRC can be engaged in environmental conflict mediation and resolution.

A large amount of educational and training material has been prepared and some of it is being translated into the languages of the Mekong region. This material includes a self-study kit on river ecology on CD-ROM, a total of seven training units and 20 case studies on environmental management, the landmark State of the Basin Report 2003, and an electronic atlas of People and the Environment, done in collaboration with WWF.

FLOOD MANAGEMENT AND MITIGATION PROGRAMME

2003 Preparation phase — 2010

The new six-year Flood Management and Mitigation Programme will begin full-scale implementation in the second half of 2004 as a core programme of the MRC. In 2003 the programme was in the start-up phase and has been preparing for the set-up of a Regional Flood Centre in Phnom Penh. Flood forecasting operations were carried out as usual in 2003, which was a low flood year. It is expected that the forecasting operations will move from the Secretariat to the new centre when it is ready.

In October, the 2nd Annual Mekong Flood Forum was held in Phnom Penh, on the theme "Information Sharing, Partnership and Networking". The forum took a more echnical approach than in previous years, drawing over 100 specialists on disaster-preparedness and hydrology.

Community-based flood referencing activities began as a pilot phase in six floodplain villages in the provinces of Kandal and Prey Veng, Cambodia. (See full story on page 22.)

A project to assess and improve the usefulness and accessibility of the flood maps at the MRC Secretariat was successfully completed.

FISHERIES PROGRAMME

2003 Revised programme began — 2005 and ongoing

The Fisheries Programme works towards the coordinated and sustainable development, utilisation, management and conservation of the fisheries of the Mekong River Basin.

Most of the work of the programme is carried out through the government fisheries departments. This approach builds capacity in the departments and heightens the relevance and ownership of specific activities that are undertaken. It also builds greater awareness of the need for regional cooperation in managing the Mekong's fisheries resources.

The Fisheries Programme has four thematic areas: fisheries ecology and impact assessment; enhancing livelihoods; fisheries management; and communication.

In 2003 the programme firmly re-established its direction after disruption in 2002 following cuts in donor funding and staff turnover. The new direction has been recognised and well-supported by donors.

The year 2003 saw some significant achievements:

· Hosting of the very successful 2nd international symposium on the management of large rivers for fisheries (LARS2) jointly with the Cambodian Department of Fisheries and the Food and Agriculture Organisation (FAO), drawing over 220 scientists and fisheries professionals from around the world.

· Publication of fisheries research findings as reports and CD-ROM products. The fisheries newsletter, Catch and Culture, was revamped to have a greater focus on current issues and events in fisheries management. Most publications have been translated into the languages of the Mekong region, and can be downloaded free of charge from the MRC website.

· Various major regional workshops and consultations. One of these has resulted in a widely-circulated report on the most successful methodologies for improving statistics on the inland capture fishery.

· A three-year programme of development and implementation of community fisheries management was completed, and is being considered for extension to new areas in the basin.

· Research began into the genetics of the most important market species in the Mekong.

AGRICULTURE, IRRIGATION AND FORESTRY PROGRAMME

2003 2008

The Agriculture, Irrigation and Forestry Programme (AIFP) began work on a watershed management component in August 2003, so all activities are at an early stage. The aim of watershed management is to ensure that the natural resource benefits of watersheds will continue, through the sustainable management of land and land-related resources. The component emphasises the strong inter-relationships between upstream and downstream interests.

Major achievements in 2003 were:

· Establishment of national watershed management working groups in each of the MRC member countries through government links.

· Conducting of important baseline studies. A training strategy, a comparison of community forestry approaches in Cambodia and Lao PDR, and a study on policies and institutional frameworks for watershed management have been completed.

· Maintenance and improvement of the MekongInfo website for natural resource management information.

· Research on the best methods for monitoring of land-use changes in the Mekong watersheds, including the acquisition and analysis of GIS and satellite images of the basin.

· Set-up of a training programme for watershed management planners in the Mekong region, in partnership with two German organisations, INWENT (Capacity Building International) and DED (German Development Services).

· Research cooperation with the University of Gottingen, Germany, to study the long-term impacts of land-use changes in uplands on the river system.

WATER RESOURCES MANAGEMENT PROGRAMME

2003 Preparation phase

The Water Resources Management Programme (WRMP) has gone through several changes in the past two years. Flood management operations, which were formerly part of the programme, have been established separately as a new core programme of the MRC.

Hydropower planning remains its main function. Under the hydropower development strategy formulated in October 2001, the programme will now concentrate on supporting the basin development planning process currently under way. Construction and related detailed studies rest with the countries and their lending agencies.

In 2003 the WRMP began preparation of an implementation programme based on the 2001 hydropower strategy. The programme's immediate objectives are to identify the best options for sustainable hydropower development in the basin, and to recommend criteria for prioritisation. The programme will also strengthen the capacity of the Lower Mekong governments for hydropower planning and development, and provide information and advice on specific projects to the member countries.

The programme is scheduled to begin in 2004 with the approval of the Joint Committee and the Council.

NAVIGATION PROGRAMME

2003 Approval of new programme 2009

Regional and national workshops and consultation visits took place throughout the year in preparation for a jointly-owned four-country navigation strategy and programme. The MRC navigation strategy was endorsed by the Joint Committee in August 2003 and a detailed six-year programme was approved by the MRC Council in November.

The programme consists of five components: socio-economic analysis and waterborne transport planning; strengthening the legal framework for cross-border navigation; traffic safety and environmental sustainability; information, promotion and coordination; and institutional development.

Closer working cooperation has been fostered with United Nations bodies and with the World Bank, the Asian Development Bank and ASEAN, through meetings and the joint organisation of specialist workshops.

Institutional support and capacity building of the Cambodian government continued through bilateral aid funding. A master plan for water transport on the Mekong River system in Cambodia is being developed out of these activities.

Training in digitising of MRC's hydrographic atlas and navigation maps also continued in Cambodia, Lao PDR and Thailand, using the S57 standards of the International Hydrographic Office (IHO) to support the future production of electronic navigation charts. These digitised charts will be used in planning improvement of the waterways, and will make updating of the maps in future almost effortless.

TOURISM PROGRAMME

2003

Funding is being sought for a new tourism programme

INTEGRATED CAPACITY BUILDING PROGRAMME

2000 Ongoing

The Integrated Capacity Building Programme (ICBP) began in 2000, with the aim of developing both people and systems of the MRC as a river basin organisation. This encompasses strengthening the various MRC entities including MRC Secretariat, National Mekong Committees and line agencies.

The programme comprises several aspects:

· An integrated training programme brings the various training needs of the MRC under one umbrella and sponsors selected studies in water resources management for Mekong region professionals. In 2003, 10 nationals of the Mekong countries were sponsored on short courses for their professional development in Denmark, and four were provided with scholarships to complete degrees at Master's level.

· The Junior Riparian Professional (JRP) programme provides two- to three-year internships for young people with professional qualifications relevant to river basin management. In 2003 there were six JRPs working at the MRC Secretariat.

· A twinning programme with the Murray-Darling Basin Commission assists in building organisational capacity, technical capacity and engagement with the public.

· A communications component provides in-house expertise to the programmes for effective public information to be disseminated through events, general and technical information resources in print and electronic media, and press liaison.

CORPORATE HIGHLIGHTS

MOVING TO VIENTIANE

The MRC Council's decision to shift the Mekong River Commission Secretariat from Phnom Penh to Vientiane gathered speed in 2003 with the completion of a new building on the banks of the Mekong. Recruitment and training of Lao support staff also began in the second half of the year. Relocation activities have been undertaken according to a road map approved by the Joint Committee in 2003.

The Secretariat's home-to-be is a five-storey building overlooking a broad stretch of the Mekong as it flows through Lao PDR's capital city. The new location is a strong symbol of regional cooperation, providing a clear view of houses and shops on the opposite bank of the Mekong, in Thailand.

Most professional staff will move in May 2004, and some administrative staff will travel from Phnom Penh to Vientiane to be part of a one-year handover period.

MEKONG RESEARCH ON WATER AND FOOD

Scientific research in the Mekong region received a US$10 million boost in 2003 with the funding of projects to improve water use efficiency in agriculture through the Challenge Programme on Water and Food. The MRC coordinates research submissions to the Challenge Programme through its network of partners in river basin management. The projects that received funding will contribute in many ways to ensure that water abstractions from the Mekong do not exceed sustainable levels.

Among many research topics, the projects funded will:

· Design better farming systems for concurrent agriculture and fish culture.

· Improve rice-growing technology.

· Develop rice varieties that can cope with high levels of salinity.

· Make more use of the Mekong's seasonal floodwaters for rearing fish and shrimp.

Launched in Nairobi last year, the Challenge Programme is a global research programme spread across nine major river basins in Africa, Asia, the Middle East and South America. The river basins serve as living laboratories where the impacts of development can be clearly measured. Each basin has its own set of problems. In the Mekong River Basin, the challenge is how to achieve sustainable agricultural, fisheries and economic development, while alleviating poverty and preserving the unique environment and biodiversity of the basin.

GATEWAY TO INFORMATION ON THE MEKONG

Work on an exciting new web portal began in 2003 through an MOU between the MRC, the Canadian Space Agency and the Canadian Centre for Remote Sensing.

The portal is designed to provide access to data and information held by the MRC. The portal, to be known as the MRC-IS or MRC Information System, has been discussed for a long while but only in 2003 did funds and partnership expertise become available.

Comprising three main sections, the portal will provide users with an entry to listings of MRC's datasets on river levels, water quality, fisheries and more. A document management system will provide advanced search functions to the Documentation Centre's electronic catalogue.

The portal also provides access to satellite services for earth observation. While much satellite imagery is freely available on the internet, the portal directs users to the data with links and information on which services are best suited to specific uses such as land use monitoring, weather monitoring or flood analysis.

Full utilisation of the portal is expected to take some time and will be preceded by a test version to be launched on the secretariat's intranet by the end of April 2004.

UPSTREAM RELATIONS

Dialogue between the MRC with China and Myanmar continued on a positive note as the parties met formally on 1 October 2003 following a meeting of the Joint Committee in Phnom Penh. The meeting, the eighth in a series of annual talks with the upstream countries, gave rise to further technical cooperation, with the government of the Union of Myanmar proposing to establish river level monitoring operations in cooperation with the MRC.

China has had ongoing technical cooperation for well over a year, based on an April 2002 agreement by China to provide daily data on river levels to the MRC for use in flood forecasting. To support the operation, the MRC has assisted China in modernising two river monitoring stations in Yunnan province on the Upper Mekong, or Lancang as it is known in China.

At the dialogue meeting, China's permanent representative to the United Nations Economic and Social Commission for the Asia-Pacific (UN-ESCAP), Mr Zhang Wanhai, assured delegates that, "We have fully realised that economic growth must not be achieved at the cost of environment or resources…The Chinese government will never engage in activities that will benefit itself at the expense of others. On the basis of working shoulder-to-shoulder…I am confident that we could consolidate and expand our cooperation to get more and more achievements."

SCENARIOS FOR MEKONG DEVELOPMENT

It is the year 2020. Population in the Lower Mekong Basin has reached 80 million, up from 55 million in the year 2000. Urban centres have grown hugely as one-third of the people live in cities. Small farms have slowly been replaced by large agro-industrial holdings.

Cambodia and Lao PDR have powered ahead with irrigated agriculture, based on plans made in the early years of the 21st century. Half a million hectares of land have been brought under irrigation since that time, including areas on the Vientiane and Savannakhet plains, around the Tonle Sap Lake, and on the floodplains of eastern and southern Cambodia. The markets are full of fresh fruit and vegetables, but river fish is more expensive than pork.

Urban homes all have piped water facilities, but water rationing is in force from the months of February to May. Water supply is an election issue in every town and city.

The Mekong River Commission is evaluating scenarios such as this one as part of a four-year basin development planning process (BDP), due to end in July 2005.

Scenarios are simply a way of asking "What if?" They provide a structured method of thinking about possible future options, opportunities and risks and how these interact. Scenario-based planning is widely used in business to help companies work through the types of change that might affect their business. Scenarios are also used internationally in water resources planning, as a way of analysing likely outcomes of decisions.

The BDP teams at the MRC Secretariat and at the National Mekong Committees are using scenarios to describe and assess possible changes to water resources in the Lower Mekong Basin over the next five to 20 years, based on the development plans of the four countries as well as on observed regional trends. The scenarios are built up by describing:

· **Available water resources**, defined by the balance between the supply of water, determined mainly by climate, and current uses. Water use can be consumptive, as in irrigation, domestic and industrial use, or non-consumptive, as in fisheries and navigation.

· **Trends** that affect water use or availability, such as population growth, increased irrigation or climate change.

· **Interventions**, which may be physical - for example, dams, weirs and irrigation works - or non-physical, in the case of new management systems, tariffs, water use policies and laws.

As part of the scenario-building approach, public meetings are held in defined "sub-areas" that are under study, many in border regions. The meetings bring in targeted interest groups and community representatives to identify issues of concern to local people, including the opportunities and risks of different development activities.

The outcomes of possible scenarios are then evaluated using a combination of hydrological modelling tools and expert opinion. The basin models and decision support framework (DSF) developed under the MRC's Water Utilisation Programme have been designed to give a detailed description of water availability and flows under different scenarios.

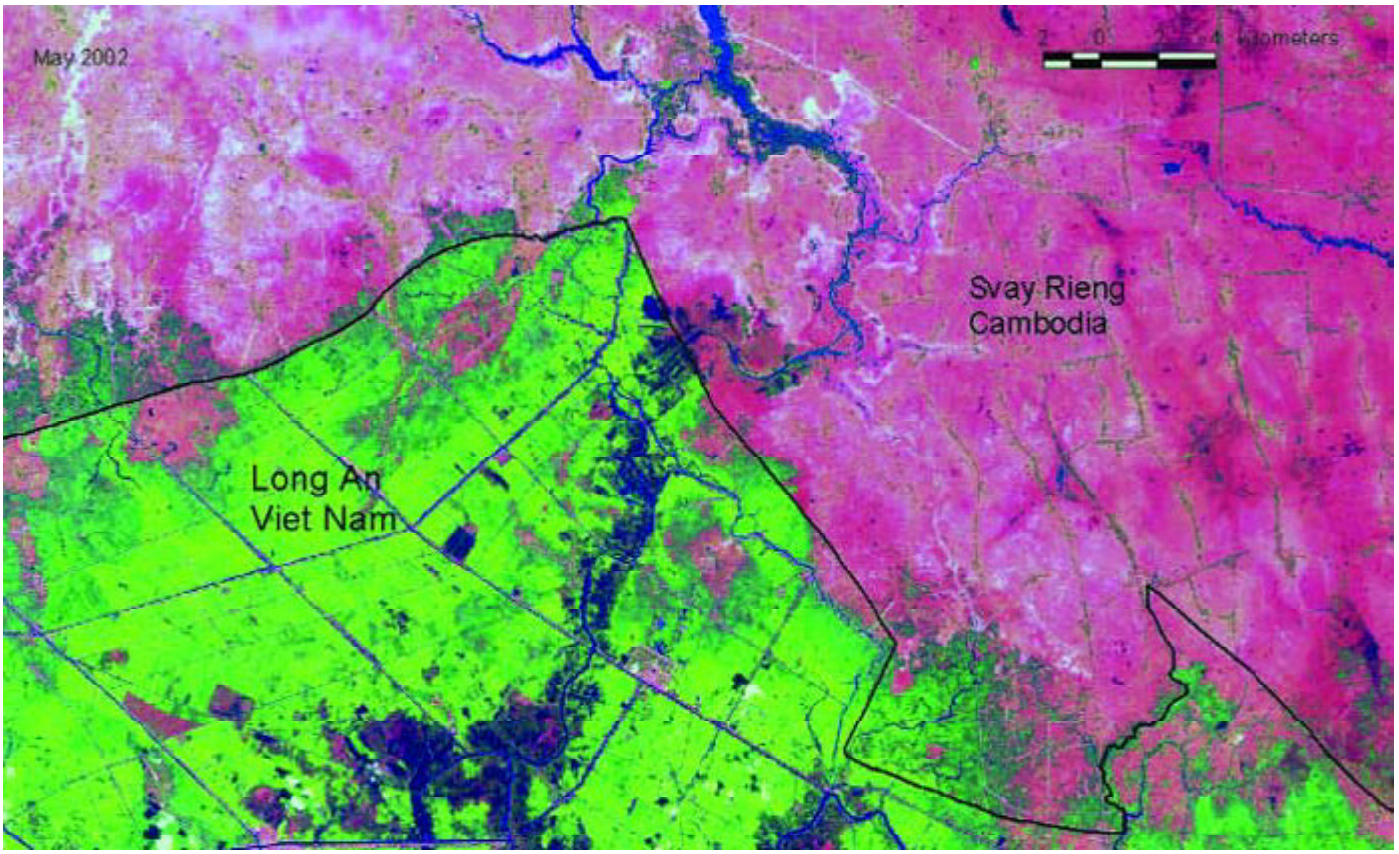
When information about river flow is known, conclusions can then be drawn about how these will affect the environment, fisheries and livelihoods. But can we fully predict all outcomes? Some impacts may be poorly understood, difficult to quantify, or there may be little data available. In this case, the teams are asking experts to provide a qualitative assessment of the type and magnitude of impacts. Impacts can be used to draw up a "balance sheet" of the advantages, disadvantages and risks, to help compare and rank different options. It is important to remember, however, that the BDP is concerned with broad regional impacts and trends and will not evaluate individual projects.

By looking at a range of scenarios, it is possible to build up a picture of how sensitive the river system is to particular types of change, and how different factors interact. For example, large withdrawals of water from the Mekong could be disastrous under current conditions during the dry season. But if the large dams planned in China hold back water when it is plentiful, and release it during the dry season, increased downstream irrigation may not have any severe impact after all. Scenarios help people to visualise what different planning decisions will mean.

At the end of the BDP process, governments will have access to scenario-based information that will enable decisions to be made within a range of acceptable choices. It will be possible to assess whether the water resources plans of the four countries are compatible, with sufficient water in the system to meet all planned uses. Various development options can be compared and ranked, with an understanding of the trade-offs inherent in the different choices.

Scenario analysis is also being used to help countries determine how much water should be left in the Mekong - the "minimum flow" that is mentioned in the 1995 Agreement on Cooperation for Sustainable Development of the Mekong Basin. A new Environmental Flows project at the MRC will use scenarios formulated with the BDP to describe environmental changes that can be expected. The countries will then be asked to decide which scenarios are "acceptable", as the basis for defining agreed-upon flow levels.

It is not possible to dictate the future. Governments can choose the types of developments in which they will invest, but the overall economic and environmental context grows out of many factors beyond their control. What is possible is to use our understanding of how different factors interact to plan so as to allow for known trends and possible risks. In this, the scenario-building approach is invaluable**.**



This dry-season satellite photo shows green fields in Viet Nam due to extensive irrigation.
In contrast Cambodia (the pink area) is little irrigated, but this may change over the next 20 years.

MEASURING ECOLOGICAL HEALTH

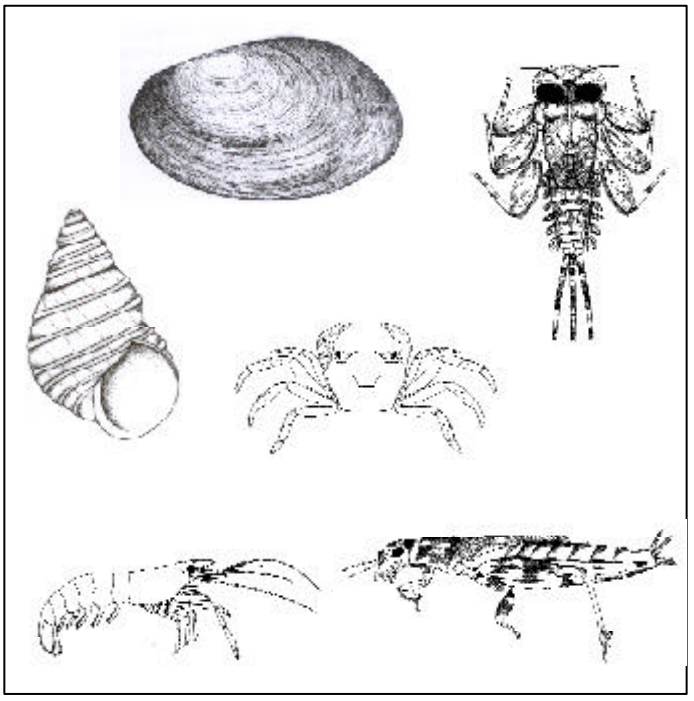
The people of the Mekong will continue to enjoy the river's natural benefits only if the river remains healthy. Healthy rivers support diverse communities of fish, insects and snails and other invertebrates and plants. They contain good-quality water that provides drink for farm animals, irrigation for crops and recreational opportunities for people. With minimal treatment, the Mekong can provide drinking water for people as well.

There are three main requirements for a river to be healthy: the water quality must be good, the habitat must be intact and the flow regime must be unimpaired. If the water quality is not good the range of animals and plants able to live in the river is reduced; some species may increase in numbers, but the total variety is less. In extreme cases it may not be possible for any animal life to survive in the water.

Unpolluted water alone is not enough for animals and plants to thrive. They also need appropriate habitat. Some fish make "nests" in sandy stretches of riverbed to lay their eggs. They cannot breed in stretches of river flowing through a bedrock channel because there is no nesting habitat. Some aquatic insects live on pieces of wood in the water, others live only in fine silt, others require clean rocks. If the habitats present are changed - for example by canalising or dredging - the animals and plants that live in the altered stretch of river will also change.

Finally, the flow regime of the river is important, especially in regulating the life cycles of many organisms that live in rivers and wetlands. For example, lotus plants flower in the dry season when water levels are low, so their flowers reach above the surface. If the water levels are too high, they cannot flower and so cannot produce seeds. Similarly, many fish breed in the dry season when water current speeds are slower, so their larvae does not get washed away downstream. If dry-season flows are increased too much, the breeding of these species is affected. They may disappear from certain stretches, or from the river altogether.

In order to maintain a healthy river we need to be able to measure river health so as to know if the river is becoming more or less healthy. Like human health, river health is difficult to define precisely and cannot be measured directly. Just as blood pressure and temperature can be used as indicators of human health, we can use a variety of indicators to measure river health. The most useful general indicators are based on the communities of organisms that live in the river, since they are sensitive to changes in all three of the requirements for river health identified above. Information on chemical water quality, changes in habitat and changes in the flow regime are also potentially



Common freshwater invertebrates of the Mekong.

useful indicators and can assist in the interpretation of biological data.

In 2003, the Mekong River Commission's Environment Programme began a new project to identify biological indicators for monitoring the ecological health of the Mekong River. These indicators can be used in conjunction with the existing chemical water quality data and hydrological monitoring data to provide a better understanding of the present health of the river and how the river is changing.

A single project team, including national experts from all four riparian countries working with international mentors, has carried out the work. The bio-assessment team sampled sites in all four lower Mekong countries looking for effective indicator techniques. The sites sampled included both sites that were expected to be in very good ecological health, as well as some in which evidence of poorer health was expected. The biological assemblages tested included fish, algae and various groups of invertebrates (insects, snails and other animals without backbones). Measures of ecological processes were also taken, including respiration and primary production - the rate at which plants grow in the river.

Of the indicators tested, several will not be used in assessments in 2004. Fish are an important component of the biota, but it proved too difficult to collect a representative sample within a reasonable time for this sort of rapid ecological health assessment. Further work will need to be done to identify better ways to use fish as indicators in the Mekong. Similarly, the method used to measure primary production was too time-consuming, taking up to six hours on each site visit. In future, the team will have only two or three hours to sample each location, so unless a faster method can be developed this indicator cannot be used in future.

Some of the methods used proved to be redundant - the information they gave about the river was the same as the information provided by another, simpler method. As a result, several of the measures were deleted and others were simplified. For example one type of sampling for zooplankton will not be used because it provided no additional useful information.

In 2003 the MRC produced an initial State of the Basin Report that reported in detail on many aspects of the environment in the Lower Mekong Basin. The report included some initial evaluations of chemical water quality, with special attention given to suspended sediment, nutrients and salinity. Unfortunately there was no data available on overall ecological health of the river.

Based on the present work, together with the continuing chemical sampling programme and a diagnostic study that is looking for toxic chemicals in water and sediments, the MRC will produce a first report card on the ecological health of the lower Mekong River in 2005.

EARLY WARNING ON FLOODS

When the flood season approaches, Chie Kolap (left) makes her house ready. The two-metre poles that hold up her house are reinforced and braced. The wooden boat, that was stored upside-down in the dry season, is checked for leaks or damage. Provisions are brought in. When the water rises, as it always does on this strip of lowland rimmed by tributaries and streamlets of the Mekong, she may be cut off for days or weeks. Others in a similar situation may go to stay with relatives for the two or three months that the floods are expected. While they prepare ahead as much as possible, wind and weather conditions mean there is still a large element of chance in their preparedness.

This year, an innovative new project in her village may make a difference.

Red Cross volunteers have been marking water measures through the year on flood gauges planted in a strategic selection of sites. The readings are then linked with, or "referenced", to flood levels on the mainstream of the Mekong.

The mainstream readings come from a network of hydrological monitoring equipment installed on the Mekong all the way from Chiang Saen in Thailand in the north to Chau Doc in the delta of Viet Nam, not far from where the Mekong empties out into the South China Sea.

These readings, together with weather and other information, are used by the Mekong River Commission to develop flood forecasts up to five days ahead. Their limitation in the past was that the forecasts only applied to the situation on the mainstream. Land features, built structures and proximity to lakes and backwaters, can mean a rather different flood situation in areas not located directly on the mainstream.

With the help of the new village-based readings, over time, a reliable picture can be built up of village flooding in relation to the mainstream forecasts. It means that the daily warnings broadcast by the Mekong River Commission on the secretariat website will have increased relevance. With the referencing activities

supported at the community level by the USAID's Office for Foreign Disaster Assistance (OFDA), flood forecasts for the mainstream will also be able to predict the situation in those particular villages, based on a simple correlation formula.

During the flood season, daily flood warnings for the mainstream stations are sent out from the MRC Secretariat by email to the Red Cross and other agencies. Warnings are also posted on the MRC website. In 2003, with the help of a spreadsheet containing the correlation formula for villages in six pilot areas, Cambodian Red Cross workers at the headquarters in Phnom Penh were able to check the forecasts for specific villages.

The CRC transmits warnings of possible flooding by two-way radio or mobile phone to village volunteers in the project areas. Red Cross volunteers in the villages then write up the forecasts on notice boards at prominent village locations and also pass on explanations through word-of-mouth. In this way the flood warnings are delivered to the grassroots level.

In 2004, the pilot phase will be expanded to cover 34 more villages in a range of geographic terrain. River levels were low in 2003, which meant that the village-based data collection has been in a trial stage. Higher flooding in the years to come will put the system to the test.

Flood-referencing brings warnings to the people most vulnerable to the impacts of changing land-use patterns. Those who stand to benefit most from an effective village-based system are those like Chie Kolap, who have built homes on land that was traditionally used only for dry-season agriculture. Much of Cambodia is a floodplain, and the Mekong predictably overflows its banks annually to cover vast swathes of farmland. Local people are well aware of general flooding patterns, but land shortage and a lack of options have meant that many have been pushed to the margins, building on land that is at high-risk of severe flooding.

A survey of floodplain villages near Phnom Penh showed that people placed a high importance on receiving flood information and warnings, second only to food and ahead of other perceived needs, such as money or supplies. In the six project areas in Lvea Em and Peam Ro districts that piloted flood-referencing activities in 2003, this need will soon be answered.

CO-MANAGING THE MEKONG'S FISHERIES

"Before we never negotiated directly with the government, but today we feel free to approach and discuss with the government. The biggest advantage that I see from co-management is that people have learned how to plan…how important it is to manage the fish, if they are not to disappear."

- Mrs Keung Lankhemthong, member of the Lao Women's Union and Reservoir Fisheries Management Committee in Vientiane province, Lao PDR.

Public policy specialists and practitioners around the world have widely supported decentralisation - the moving of government functions and processes to be as close to the people as possible. Also generally accepted is the principle that all users of natural resources should be involved in decisions about those resources.

In the countries sharing the Lower Mekong, these concepts have gradually been enshrined in government policy on natural resource management. They are also reflected in the Mekong River Commission's own public participation guidelines, which emphasise the importance of bringing stakeholders inside and outside the MRC structure into decision-making on issues and activities of basin development.

The Fisheries Programme of MRC is making such policies a reality, through supporting fishers at about twenty reservoir and river sites to collectively manage their aquatic resources with local government agencies. Its approach, termed co-management, goes far beyond what often passes for public participation in government and aid-funded projects.

Stakeholder involvement is often merely consultative: the people are heard but decisions are taken elsewhere. In contrast, with the co-management approach, government agencies and the fishers decide together on what activities should be carried out. The government has the power to sanction proposed rules and regulations. It provides specialist services and facilitates the co-management process. In addition to the planning activities, users carry out the hands-on work.

Co-management depends first of all on finding or developing the organs of management and cooperation.

Wherever possible, organisational forms already in place are used. For example, co-management in Thailand is being implemented through the sub-district administration, or Aor-Bor-Tor. In Lao PDR a new form called the Reservoir Fisheries Management Committee (RFMC) was developed. Fishers' Unions were set up in Viet Nam, similar to the existing Farmers' Unions. In Cambodia, the Fisheries Programme contributed its experiences to a government-led process of placing fisheries in many areas under community control.

In each country, plans are developed for a one-year period. Each plan takes into account the uniqueness of its setting, and establishes or supports existing lines of communication and cooperation between micro and macro levels of management. After the first year of operation, they are reviewed, evaluated and adapted as needed. The plans can have many aspects. In Lao PDR, for example, reservoir plans concentrate on the set-up and strengthening of the Reservoir Fisheries Management Committees, the review and update of fishing regulations, stocking of reservoirs and the identification, demarcation and enforcement of conservation zones.

Positive results have been reported from the latest one-year cycles of co-management planning and implementation. This is rewarding, given that the user-managers face many problems.

"Previously, there was less participation by villagers, and conservation activities failed…Now relationships between government officers and villagers are closer. Like brothers."

- Mr Prayat Gantararuk, Aor-Bor-Tor member of Tambon Nong Buaban at Huay Luang Reservoir in Udon Thani, Thailand

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The main benefits mentioned by users are not increases in fish catches so much as better communication between users and government, their pride in sharing their own experience and competence, and an increased sense of responsibility and confidence.

Fisheries management and the benefits from it occur, for all practical purposes, on the local level. It is thus no surprise that co-management has centered on local issues and activities. But their activities may affect users outside the immediate community, or suffer impacts originating elswhere.

The cooperative, bottom-up approach of co-management contains the seeds of dispute prevention across borders. A major challenge now is how fisheries co-management can "scale up" to deal with transboundary issues. How might the existing cooperation move from the local to national and, possibly, regional levels?

"We protect the fish together. We create our own fishing rules and regulations. In this everyone takes part. I volunteer to participate, especially because it can stop illegal fishing in our reservoir."

- Mr Phea Chork; Community Fisheries Chief near Boeung Chunlen Reservoir in Kandal province, Cambodia

An important transboundary issue in fisheries management is the protection of key habitats for fish spawning and dry-season refuges. Other transboundary concerns include matters of improving communication between government agencies and users, involving users in existing management systems and developing the capacity of fisheries administrations to take on the challenge of public participation by themselves.

So far user organisations at national level are few. There is an interesting model available with fish farmer and fisher associations organised throughout the country in Viet Nam. In Cambodia, community fisheries are being coordinated through a national office in the Department of Fisheries of that country. And regionally, two fisheries research institutes in Lao PDR and Cambodia are now working with user communities in both countries to co-manage deep pools in Southern Laos and Northern Cambodia.

In the year 2000, the government ministries concerned with fisheries and aquatic resource management established a four-country Technical Advisory Board (TAB) facilitated by the MRC Fisheries Programme. The TAB has identified important transboundary issues, including the management of giant fish species and the conservation of deep pools in the Mekong. Regional training courses in fisheries co-management have also been carried out.

In view of the need to scale up co-management activities, the TAB will become more important in the future. As the transboundary issues rise higher on natural resource agendas in all four countries, their role is likely to become a crucial one.

"Based on the credit and savings groups, fishers can save money for buying nets and other pieces of equipment for fishing. The living condition of most fishers has improved steadily."

- Mrs Tram Thi Huong fisher and treasurer of Lak Fishers' Union at Lak Lake in Dak Lak Province, Viet Nam

DONOR COOPERATION IN 2003

Donors continued to show their strong support of the MRC in 2003. Funding agreements amounting to US$ 7.085 million were concluded with Japan, Switzerland, Norway, Finland, Germany, the European Commission, the Asian Development Bank (ADB), the Netherlands and the UK-based Marine Resources Management Group. Compared to funding levels over the past three years, funding in 2003 was somewhat reduced. This is due to the fact that MRC programmes and projects received full funding at the beginning of their programme or project phase, mostly starting in 2001. 2003 was a year for final implementation and completion for a number of programmes and projects, so little additional funding was required.

However, donors have expressed strong support for MRC activities from 2004 and beyond. This is reflected in the volume of formal pledging and commitments of support amounting to around US$ 21.014 million, made by Denmark, Germany, Japan, the Netherlands, New Zealand, ADB and the United Nations Development Programme (UNDP). These indications of funding will be directed towards flood management and mitigation, sustainable watershed management, basin development planning, the environment, navigation and tourism programmes, and core support to the MRC.

New Funding Agreements in 2003

Total value of new funding agreements: **US$ 7.085 million**

	Programme	Thousands of $ (Approximate Conversion)
1.	Core Support	1193
2.	Programme to demonstrate the multi-functionality of paddy fields over the Mekong Basin	318
3.	Extension of the development and coordination of the Navigation Programme	109
4	Extension of the project on modelling of the flow regime and transport phenomena on the Great Lake of Tonle Sap	278
5.	Technical cooperation on sustainable watershed management in the Lower Mekong Basin	4900
6.	Implementation of the proposal on the capacity-building on preparedness planning and response through using flood information	200
7.	Support for Annual Flood Forum 2003	52
8.	Project on uptake of adaptive learning approaches for enhancement of fisheries	35

Firm Pledging Received in 2003

Total Approximate Value of Firm Pledging: **US$ 21.014 million**

	Programme	Thousands of $ (Approximate Conversion)
1.	Gender Mainstreaming in Water Resource Development	260
2.	Environmental Governance and Flood Management in the Mekong Sub-region	1000
3.	MRC Participation in the Joint IUCN-UNDP-MRC Wetlands Biodiversity Programme	1604
4.	Flood Management and Mitigation in the Lower Mekong Basin	18150

Income and Expenditure in 2003

	2003 USD	2002 USD
Contributions		
Donors	10,232,904	11,448,269
Riparian governments	941,359	1,087,065
	11,174,263	**12,535,334**
Revenue		
Professional income	-	47,752
Interest	8,590	16,785
Miscellaneous	13,936	18,115
	22,516	**82,652**
Total Income	**11,196,779**	**12,617,986**
Expenditure		
Project expenditure		
Personnel services	5,278,623	6,285,493
Sub-contracts	256,483	693,672
Training	1,002,231	1,317,864
Equipment	468,958	1,025,032
Miscellaneous expenses	453, 254	563,298
Water Utilisation Project	2,321,371	2,632,083
	9,780,920	**12,517,442**
Relocation project		
Secretariat relocation expenditure	33,338	- -
Administrative expenditure		
Staff salary and fees	929,515	1,028,551
Common staff costs	391,311	424,872
Travel	3,639	3,948
Contractual services	100,143	92,073
General operating expenses	183,615	204,430
Supplies	26,111	18,882
Furniture and equipment	39,601	27,005
MRC meeting expenses	129,244	154,093
Support to National Mekong Committees and programmes	219,015	193,326
	2,022,194	**2,147,180**
Total Expenditure	**11,836,452**	**14,664,622**
Foreign Exchange Gain	**1,330**	**131**
Movement in Fund Balances	**(638,343)**	**(2,046,505)**
Fund Balances as at 1 January	**5,042,790**	**7,089,295**
Fund Balances as at 31 December	**4,404,447**	**5,042,790**