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Foreword

The Mekong's fisheries are a vital part of the socio-economic structure of the countries of the lower Mekong basin. They provide an essential source of food and income for many of the basin's inhabitants, especially the rural poor. At a macro-economic level, the fisheries make important contributions to the economies of all the riparian nations.

Today the annual catch exceeds 3 million tonnes with an estimated value of around US$2,000 million. It is clearly an important and precious resource.

The sustainable development of this resource is the Fisheries Programme's main concern.

The achievements of the Fisheries Programme over the past decade have been remarkable. It was instrumental in founding the Technical Advisory Body for Fisheries Management (TAB) and the annual Technical Symposium on Mekong Fisheries, forums that allow senior fisheries mangers and scientists to discuss fisheries issues of regional concern. The Programme has advanced our knowledge of the size and value of the fisheries and has greatly enhanced the capacity of national fisheries agencies to undertake fundamental fisheries research. It has also helped introduce innovative and socially just methods of fisheries management and contributed significantly to the development of improved techniques for the aquaculture of indigenous Mekong fish species.

In January 2006, the Fisheries Programme will embark on a new phase. This will focus on the development of the fisheries sector in the context of the four riparian government's drive towards poverty alleviation and economic growth. By necessity, the achievement of these goals involves extracting maximum benefit from all the bountiful resources the Mekong offers. However, they must be developed in ways that are socially just, economically sound and sustainable in the long-term.

This means that all sectors that have claim on the Mekong's water resources will have to work together to plan appropriate developmental strategies.

In this regard, the next phase of Fisheries Programme will continue to work closely with the MRC's core programmes, the Basin Development Plan, Water Utilisation Programme, Environment Programme and Flood Management and Mitigation Programme. Together they will make a vital contribution to the MRC's overarching strategic plan for 2006-10 as it develops during the coming year.

Finally, I wish to acknowledge the support the national line agencies for fisheries and the National Mekong Committees of Cambodia, Lao PDR, Thailand and Viet Nam give to the Fisheries Programme. I wish, once again, to thank the principal donor Danida and the governments of Australia, Great Britain and Sweden, for their invaluable contributions and continued support. I also want to take this opportunity to applaud all the staff who contributed to the Fisheries Programme's accomplishments to date and wish them equal success as it moves forward into a new phase.

Dr Olivier Cogels
Chief Executive Officer
Mekong River Commission

The Year in Review

The period April 2004 to March 2005 has seen very positive developments in the ongoing work of the Fisheries Programme.

Phase 2 of the Fisheries Programme, covering the years 2006-2010, was developed in consultation with National Mekong Committees and national fisheries agencies, as well as the core programmes of MRC. In December 2004, the Joint Committee reviewed the programme; it was then forwarded to the Danish and Swedish development agencies, Danida and Sida, for their joint appraisal. The appraisal, scheduled to take place in April 2005, will determine if these agencies will support funding the Programme in 2006 and beyond. Initial indications are that the donors are pleased with the technical direction of the Programme, and impressed by the commitment of the national fisheries agencies and National Mekong Committees (NMCs) to the work of the Programme.

The Technical Advisory Body for Fisheries Management (TAB) adopted a three-year work programme, covering the period 2004-2006. Funding, provided by Danida and Sida, haspenabled the TAB to take a more pro-active role in the regional management of fisheries resources.

The scientific and technical work of the Programme continues to cover the many areas related to fisheries. The development of co-management arrangements between fishing communities and government has become a priority issue for governments in the region. The Programme maintains its important work on assessing the status of fisheries through surveys of fishers' catches, markets, larval densities and consumption patterns throughout the basin. In addition, development of techniques for farming of indigenous species is making a valuable contribution to diversified aquaculture production as well as better management practices for stocking natural waterways.

The Programme has also contributed to the work outputs of other MRC programmes over the past 12 months. The Basin Development Programme (BDP) has incorporated fisheries information into models of basin development scenarios. This has shown unequivocally that fisheries are one of the most crucial factors for consideration in the assessment of development options. The Programme has allocated staff to work with a multi-disciplinary integrated basin-flow management team (under the Water Utilisation Programme and the Environment Programme); thereby ensuring other disciplines in MRC incorporate fisheries information into their projects.

Communicating information from the Programme to fisheries agencies, planners and governments remains a priority for the Fisheries Programme. The Programme issued a CD containing all Fisheries publications, as well as maps, databases, photos and other information, so providing a 'one-stop shop' for a wealth of information on fisheries in the Mekong. It also published other reports and documents during the year, adding to the impressive list of products that have come out of the Programme during the last few years.

The Mekong Fisheries Today

Introduction

The year ending (2005) is the last full year of the first phase of the MRC Fisheries Programme; phase two will begin in January 2006. Now is therefore an opportune time to review the status of the Mekong fisheries, their health and their place in the development of the natural resources of the lower Mekong basin. This review also provides a background to the objectives and activities of the next phase of the Programme.

The Size and Economic Value of the Fishery

The Mekong's fisheries are an integral and vital part of the socio-economic structure of the countries in the lower Mekong basin: Cambodia, Lao PDR, Thailand and Viet Nam. Most of the 60 million people living in the basin are in some way involved in the fisheries sector; fish and aquatic animals are an essential component of their diets and provide an important source of hard income for many poor rural households.

Our latest assessments suggest that total annual catch of fish and other aquatic products exceeds three million tonnes (see box opposite). Nearly 80% of the catch comes from river fisheries with reservoir fisheries and aquaculture contributing around 10% each.

The total value of the fisheries is about US$2,000 million. This estimate certainly understates the macro-economic significance of the fisheries sector because it does not include the incremental value derived from resale, exports or associated industries. Even so, the fisheries make significant contributions to the economies of all four riparian countries.

The fishery sector accounts for nearly 12% of Cambodia's GDP and contributes more to the country's economy than does rice production. The value of the catch in Lao PDR is equivalent to 7% of that country's GDP. Although they are proportionally less important, the Mekong fisheries sector in Thailand and Viet Nam still add well over US$750 million to the economies of each country.

At present, the fisheries seem to be in relatively good condition; the overall tonnage of the catch appears to be stable. However, the composition of the catch is changing. The proportion of some large, late-maturing, fish is declining and the average size of several commercially important species is getting smaller. In addition more fishing effort is now required to catch the same quantity of fish. These are symptoms of approaching overexploitation. The root causes are few alternative employment opportunities for rural people, and the availability of cheap and highly effective fishing gears.

In addition to overexploitation, fish stocks are also are increasingly at risk from loss of natural habitat, barriers to migration and changes to the natural flood pulse of the river.

The Environmental Health of the Mekong

The health of the fisheries and the environmental health of the Mekong are closely related. Natural selection has finely tuned the reproductive cycle of most migratory fish to take maximum advantage of the ecological benefits provided by the seasonal inundation of the river's floodplains. Changes to the river's hydrology and water quality will disrupt the life cycle of many fish species with knock-on implications for the productivity of the fisheries.

At present, the Mekong is healthy. The river's annual flow is regular and its waters are largely free from industrial and agricultural pollutants. However, it is becoming clear that the seasonal flow of the river and aspects of its water quality are changing.

There is strong evidence from hydrological records going back over many decades that the amplitude of the Mekong's seasonal flood-recession cycle is gradually, but progressively, getting smaller. While the amount of water the Mekong discharges annually has remained remarkably consistent, the height and duration of the annual flood has attenuated and the flow during the dry season has increased. At the same time the sediment load carried by the river has fallen. As there have been no climatic changes during this period that could have produced these effects, it is likely they are the result of human interventions especially water management developments.

Destruction of habitat is the principal reason for falling biodiversity across the basin. In particular, the widespread conversion of forested floodplains to rice paddy has reduced the area of wetlands. Many migratory fish use these as habitats for spawning, rearing and feeding.

Records of fishery catches over the same period are incomplete and inaccurate and therefore we cannot assess precisely the impact these ecological changes have had on fish populations. At a local scale however, the intervention of human activity in the environment is well documented. This can take many forms. Dams and weirs can impede the passage of migratory fish cutting them off from spawning and feeding sites, flood mitigation schemes may prevent floodwater from inundating wetlands, clearing waterways to improve navigation may remove precious habitat in the mainstream channels.

While these interventions can cause serious damage to local fish populations, their impact may also spread far afield, and can impinge on the fisheries of neighbouring countries. These 'trans-boundary' effects are another facet of the complex interrelationship between the users of the Mekong, its waters and the fisheries they support; the river and its fish do not recognise international borders.

Looking Forward

We do not know if, or for how long, fish stocks can absorb current levels of exploitation and habitat degradation before the damage to them becomes irreparable. Furthermore, the stress on fisheries will increase as the population of the basin grows. Sustaining fish stocks that can support current and future demands requires careful and innovative fisheries management at all levels from local communities to national government. It also requires enhanced techniques to improve the aquaculture of indigenous Mekong fish species for consumption and to stock the river, reservoirs and lakes.

Further pressure on wild fish stocks will also come from increasing exploitation of the Mekong's natural resources by other development sectors. But these developments must proceed, if we are to tackle poverty and underemployment in the basin. The difficulty arises in balancing social benefits and costs to the environment in a way that ensures development of water resources is socially just and environmentally acceptable. It must be to the maximum benefit the people of the Mekong basin, especially the rural poor.

The Next Phase of the MRC Fisheries Programme

These then are the challenges that today face the Mekong's fisheries - pressure from overexploitation and competing demands for the river's water resources. We have designed the objectives and activities planned for the second phase of the Fisheries Programme around three distinct, but linked, facets of these challenges.

The first is the need to develop our knowledge of the biology of commercial species, as well as the ecological factors that underlie fish production. We must also determine the economic and social value of the fisheries, in order to achieve fair comparison with other development sectors. This is a prerequisite in planning basin-wide water resource developments. The Capture Fisheries Ecology, Valuation and Mitigation Component (FEVM) will undertake this work.

Effective governance and fisheries management at all levels is essential to ensure use of the resource is equitable and socially just. The role of the Fisheries Management and Governance Component (FMG) is to support existing local and national fisheries bodies design and implement suitable and practical, management measures.

Exotic species are common in aquaculture operations in the Mekong, as fish farmers tend to utilise species for which the production techniques are well known. Exotic fishes that escape from aquaculture farms can compete strongly with indigenous species, often replacing them in their natural habitats. This can cause great damage to wild stocks. The activities of the Aquaculture of Indigenous Mekong Fish Species Component (AIMS-2) aim to improve culture technology of indigenous species with the objective of reducing the demand for exotic species for use in aquaculture.

In addition to the roles of these 'field-based' components, the Fisheries Programme also carries the responsibility to communicate information on fisheries to users, national fisheries agencies, to MRC's other programmes and its managers and to anyone else with an interest or stake in the Mekong's fisheries. This is one of the principal roles of the Programme Management and Communication Component (PMC).

The combined efforts of the four components have one objective, *'sustainable and coordinated development, utilisation, management and conservation of the fisheries of the Mekong basin'.*

Programme Objectives

The overall goal of the Fisheries Programme is the sustainable development, utilisation, management and conservation of the fisheries of the Mekong basin. This will be achieved by:

- building awareness of the size and value of the fisheries and their place in the socio-economic fabric of the riparian countries.
- developing the technical and managerial capacity of national fisheries agencies and the MRC.
- conceiving and implementing a basin-wide plan to ensure the fisheries resources are developed in a socially fair and environmentally responsible manner.

Through these processes the Fisheries Programme conforms to the broader vision of the MRC, namely, *'an economically prosperous, socially just and environmentally sound Mekong River Basin'.* In order to do this it will take full account of the social issues of, poverty alleviation, environmental sustainability, good governance, social justice, gender equity and conflict mitigation.

Poverty alleviation: About one third of the population of the basin live in poverty. Fisheries play a vitial role providing food security and hard income for many impoverished rural families. A prime objective of the Fisheries Programme is to ensure these people can continue to rely on this resource. This can be achieved through better fisheries management and improved aquaculture techniques.

Environmental sustainability: A healthy Mekong means healthy fisheries. Conservation of critical habitats, such as wetlands and deep pools, is the key to maintaining robust fish stocks. The Fisheries Programme fosters conservation by increasing the awareness of users and the national fisheries agencies of environmental issues and promoting responsible fishing practices.

Good governance: This is essential if the resources of the Mekong are to be developed equitably. The Fisheries Programme works closely with fishing communities and government agencies to enhance co-management of local fisheries.

Social justice: The fisheries are an open resource across much of the basin. Many poor rural communities depend on free access to this resource for their livelihoods. Any activity, in the fisheries or beyond, that cuts off or limits this access presents a major challenge to their well-being. The Fisheries Programme aims to limit this threat by communicating information on fisheries to a broad audience and by acting as the interface between fisheries and other development sectors.

Gender equity: The Fisheries Programme aims to ensure the equitable allocation of power and resources to women and men so that both can share in the benefits of the Mekong's fisheries as meets their particular needs.

Conflict mitigation: The Mekong fisheries are a common property resource. This can lead to conflict at many levels, between local fishers and lot owners, between *dai* owners and other commercial fisheries, between the various competing users of reservoirs and other water bodies, potentially even between nations. The Fisheries Programme supports many activities which directly, or indirectly, help mitigate these conflicts. These range from promoting equable resource management at community level to sponsoring forums, like the Technical Advisory Body for Fisheries Management, where senior fisheries administrators can discuss fisheries issues with regional or trans-boundary implications.

Our financial supporters

Denmark is the major donor to the programme, and has been so since the mid-1990s. Danida, the international development agency of the Danish Government, provides about 90 percent of the funding for the Fisheries Programme. The programme's success has been largely due to Danida's sustained commitment to developing fisheries in the Mekong Basin. Funding from Danida allows the programme to maintain core functions and operating capacity, thereby facilitating efficient entry into the programme by other donors.

Swedish International Development Assistance (Sida) funds several activities of the Technical Advisory Body (TAB) for Fisheries Management. The TAB has the charter to develop and implement fisheries policy, particularly that relating to transboundary resources in the Lower Mekong Basin.

The Australian Centre for International Agricultural Research (ACIAR) provides funding for studies on the genetic composition of an important and abundant group of cyprinid fishes, commonly known as trey riel in Cambodia and ca linh in Viet Nam. Often preserved, they are important for food security, especially in poor rural communities. The purpose of the research is to provide information on stock composition and to train managers in the use of genetic information.

The United Kingdom, through its Department for International Development (DFID), funds two related studies on data collection and sharing in fisheries co-management and adaptive learning approaches for enhancing fisheries. The funding is channelled through MRAG, a UK-based consulting firm dedicated to promoting sustainable use of natural resources. Both studies will enable information generated in the Mekong region to be used in fisheries development in other countries.

Assessment of Mekong Capture Fisheries

Capture fisheries make by far the largest contribution to the Mekong's fisheries. Evaluating the size and value of the capture fisheries and recognising trends and patterns in the catch provide invaluable indications of the both the health of the river and its fish stocks. This is essential information in fisheries planning and development.

Many of the component's activities in 2004 were the continuation of work initiated during 2003. Results from some of these were presented at the Asian Fisheries Forum in Penang (Dec 2004) and at an FAO-sponsored nutrition workshop in Bangkok.

The main studies undertaken during the last year were:

Catch monitoring: Fishers' catches were monitored basinwide in a trial to establish systems for detecting trends in the fishery. Over 100 fishers, using a wide range of gears, were included. The study also provided valuable field experience for agency staff and facilitated agency-fisher dialogue. This work will continue as a long-term monitoring exercise using the fishers who provided the best quality data in each country.

Market monitoring: Markets were surveyed and individual traders monitored at key locations in each country. Markets are a key employer of women in fisheries. The results provided useful information on species composition and sizes and prices, as indicators of trends in the fishery, as well as useful information on methods and costs of establishing market-monitoring systems. Monitoring will continue at a reduced level.

Consumption study: Household consumption was monitored in each country with the objective of developing quantitative methods for such studies and comparing the results of interviews with actual consumption data. A report of this study is in draft and preliminary results were presented in workshops.

The component also supported several other studies in Cambodia and Viet Nam, including the following:

Dai fishery monitoring: 2004-5 was the 10th year of monitoring of the Tonle Sap Dai fishery, and the results showed the highest catch yet, a major recovery from the low catches of 2003-4. The catches were higher than predicted from flood levels, perhaps as a result of improved field enforcement of regulations to prevent fishing for fry in the closed season.

Fish larvae monitoring: Catches were higher than in 2003, reflecting the slightly above-average flood level.

Dai Trey Linh: This study in 2004 showed much higher catches than in 2003, reflecting a higher flood and probably also improved control of illegal fishing.

Yield per habitat: Several studies documenting the yields from rice fields and other habitats were completed. These provide important data for basin wide estimates of production.

Viet Nam Delta fisheries film: Shooting footage was completed for a film on the fisheries of the Mekong Delta in Viet Nam.

Viet Nam gear catalogue: Work began on documenting gears in all 12 provinces in the delta.

Inland fish as aquaculture feed: Counterparts surveyed the use of wild inland fish as a feed source in aquaculture of fish and crocodiles. The results will be presented at an international workshop in June 2006 in Viet Nam.

The component aims also to encourage the effective implementation of mitigation and management of development impacts. Following earlier workshops on fisheries EIA and mitigation in Lao, national workshops were held in 2004 in Cambodia and Viet Nam.

Counterparts began work on an ACIAR-sponsored project for the genetic analysis of a key Mekong species group, the small carps, *Cirrhinus lobatus/ C. siamensis.* Field sampling was carried out in the four countries and analyses of tissues began in Australia.

In each country, counterparts continued to receive various other kinds of training support, including report-writing, English, statistics and databases, and fisheries courses.

To ensure that information on the size and value of the fishery is incorporated in development planning requires effective reporting of results. Several reports were prepared during the year, and several more are in late stages of drafting. Work is continuing on cleaning databases and analysing and reporting data, and it is expected that the Viet Nam film and gear catalogue will be completed in 2005 or early 2006.

In 2005, we also expect to begin working on the valuation of the fisheries; we will hire an international advisor to undertake the project. This work will link to the core programmes of MRC, because assessments of fisheries are required in all evaluations of alternative development scenarios. Work will also continue on environmental assessments, involving both programme advisors and fisheries counterparts.

Management of River and Reservoir Fisheries

In recent years, governance reforms such as decentralisation and co-management have become accepted ways of improving the management and the development of many inland fisheries. In most instances, this means devolving authority from national to grass roots levels.

Management in the sense of deciding and implementing technical measures (such as gear restrictions, stocking or others) is happening largely at local level. However, it is not happening in isolation. The natural resources of the Lower Mekong Basin, such as the land, water, forest and fish, are shared resources, their usage is interdependent at all levels and scales.

By necessity, fisheries governance and management is a multi-layered and overlapping undertaking that reaches from the local to the regional. Most Mekong fish are migratory, and therefore developments outside local fisheries can have major implications. As a result, there is a need to link local to nationally and regionally coordinated management.

The MRRF Component supports fisheries institutions in the riparian countries to deal with these down- and upward management issues. During 2004, it emphasised the consolidation and propagation of examples of participatory local fisheries management, which can serve as models for the Lower Mekong Basin as a whole. In addition, it supported fisheries agencies to identify and take cross-scale linkages into consideration, address requirements and make use of opportunities at local, national and international levels.

Examples of MRRF's achievements in 2005-2005 include:

Improved reservoir fisheries management: Practical management measures, such as systematic stocking of reservoirs, maintenance of no-fishing zones, and enforcement of fishing regulations have shown positive results. These include:

- Doubling the production of some reservoirs in Lao PDR since 2000.
- Significantly increasing the income of some poor fishing communities in Viet Nam. Illegal fishing also fell by 80% in these villages.
- Supporting participatory fisheries management at 18 water bodies in Cambodia, Lao PDR, Thailand and Viet Nam. Many are now into their fourth year of operations and their managers are able to continue to administer the fisheries despite reduced involvement of the Component.

Propagation and out-scaling of participatory fisheries management: Participatory fisheries management is now declared government policy in a number of riparian countries.

In 2004, MRRF supported participatory management by:

- Helping establish and strengthen five new Community Fisheries at reservoirs and Mekong deep pools in the Cambodian stretch of the Mekong.

- Bringing together stakeholders from three districts near Khong Island, Champassak Province, Lao PDR, to address the complex task of management in this fishing area of regional significance.

- Undertaking participatory rural appraisals with a view to developing basin-wide negotiated fisheries management of the Songkhram River, one of the Mekong's major tributaries. This will be an important contribution to the reduction of conflicts between users and government agencies in this region.

- Fostering participatory resource management of rice/shrimp-culture in Viet Nam's Soc Trang Province in the Mekong Delta. This is an example of a 'local/global' linkage, as the region is a major producer in the world shrimp market. However, this experience also shows that bringing together managers at different levels is a complicated and long-term undertaking.

Identification and establishment of alternative sources of income: With increasing pressure on fisheries, MRRF recognises the development of alternative, or complementary, non-fishing incomes as an important function of fisheries management. MRRF has organised training workshops on alternative income generation in all the riparian countries.

This is already achieving positive results:

- In Cambodia, Thailand and Viet Nam income from such activities as handicrafts, trading, food processing and fish-culture is improving family livelihoods.

- In Cambodia, in particular, such activities also cater to the income needs of community-based management organisations providing an incentive for their members to participate.

- Credit mechanisms supported by the Component in Viet Nam (savings groups) and Cambodia (cow/rice banks) give their members much needed help in emergencies and purchase substitute gear that complies with fishing regulations.

Integrating fisheries management and fish marketing: Tasks and responsibilities of local management organisations have so far centred on issues of fisheries management planning, resource and habitat enhancement and protection and regulation of fisheries. However, sustainable management requires community management organisations to secure a fair share of profits to cover their costs and create an incentive for their members to participate.

- In Lao PDR, the Component developed an integrated marketing/management system for reservoirs in Vientiane Province.

Development of data collection and sharing systems for co-managed fisheries: Inefficient information flow and lack of coordination are major obstacles to better aquatic resources management.

- Following a workshop held in Thailand in 2005, MRRF established a data collection and sharing system using information from Huay Luang Reservoir in Udon Thani Province. Data collection and sharing will now comprise not only fisheries and aquatic resource use in the basin around Huay Luang, but also a wider range of resource users, from fishers to domestic users, irrigators and tourism operators.

Exchange of experiences between managers: Supporting communication between managers is an important activity of MRRF. Fisheries mangers can learn much by sharing mutual experiences with each other. Last year MRRF facilitated meetings at national as well as cross-boundary levels. These included:

- A visit by Lao women to Isaan to exchange experiences and learn about each country's rich heritage in fish processing.

- The Component also arranged meetings and forums where government managers at national level could exchange of experiences and develop common concepts. Cases in point are MRRF's inputs into the formulation of a co-management concept for the fisheries of Viet Nam, and the implementation of the work plan of the Technical Advisory Body on Fisheries Management (TAB).

During the coming year 'up-scaling' will gain momentum in fisheries management in the LMB. The Component will implement pilot field activities and experiments to develop other examples of cross-scale management. These include:

- Linking local user groups to national and, potentially, international user organisations (with an emphasis on Cambodia).

- Linking management by users across the basin of a major Mekong tributary (Songkhram).

- Facilitating cross-boundary management between Stung Treng, Cambodia and Champassak, Lao PDR.

Aquaculture of Indigenous Mekong Species

Freshwater ecosystems are among the world's most degraded habitats. Research shows that their biodiversity has halved since 1970. Invasive alien species (IAS) are the second most important cause of falling biodiversity after habitat loss. Alien species may reduce native biodiversity through competition, predation and the introduction of disease.

Although under increasing pressure, the environment of the Mekong basin is still relatively healthy. However, aquaculture in the basin commonly uses alien species. Some of these have escaped from farms, colonised parts of the basin, and displaced native fish species.

AIMS endeavours to support environmental management in the basin by developing aquaculture techniques for indigenous fish species. Successful aquaculture will lower the demand for exotic species in fish farming and reduce the need to introduce alien species. AIMS supports a network of counterparts working in fisheries line agencies in the four riparian countries and is involved in research and development activities at 11 aquaculture stations across the region. In addition, AIMS is engaged in the development of regional codes of practice to achieve more control over movement of both alien and indigenous species.

The main studies undertaken during the last year were:

Domestication of Cirrhinus microlepis: Joint research effort by the four riparian countries has enhanced the aquaculture techniques used on this popular species. Success rates are now closer to the levels required to make commercial cultivation feasible. In the past year, stations in Lao PDR, Thailand and Viet Nam successfully induced spawning of brood stock. Furthermore, Vietnamese stations successfully raised larvae obtained from captive brood stock.

Other priority species: The cooperating stations now have well developed techniques for inducing spawning in the remaining eight priority species and brood stock are widely available. The positive results over the past year were to a large degree a result of training in fish feed manufacture and feeding techniques during the previous year. Improved feed formulation, particularly for brood stock, and better systems for feed delivery contributed to higher egg and larvae quality, and thus better growth and survival of fry.

Fish stocking: During the year, AIMS, in cooperation with national fisheries agencies from the four riparian countries, stocked a number of lakes and reservoirs. In several cases, AIMS carried out stocking in cooperation with MRRF-supported fisheries management institutions. This is an important relationship, since the measurement of successful fisheries enhancement should reflect the benefits that accrue to the communities that live around the water body. Surveys show the presence of a local

fisheries management institution greatly increases the likelihood of a positive outcome.

Mobile hatcheries: Increasing use was made of the mobile hatcheries that AIMS developed in previous years. This enables managers to produce seed using local brood fish to ensure it is genetically similar to the wild populations.

Fish biology and classification: This year the component in Viet Nam also worked on the classification of the indigenous fish species, *Anabas testudineus*, *Channa spp. and Trichogaster pectoralis.* Local populations of these species may live in the Mekong Delta. Defining the distribution and occurrence of naturally occurring populations is a first step in reducing the risk of adverse affects on biodiversity caused by movement of non-indigenous or domesticated types.

Work on the nine priority species will continue in the coming year. However, as the optimum culture and artificial reproduction techniques for most of these species are now well understood and applied, the focus of the component's work will shift towards developing on-farm grow-out and on-farm hatcheries.

The coming year will see the implementation of more than 50 sub-activities, including on-station and on-farm research as well as workshops. The component also plans to hold additional training covering project management, technical and other issues. There will also be national and regional study tours.

Technical Advisory Body on Fisheries Management (TAB)

During the past year the Technical Advisory Body on Fisheries Management (TAB) made a number of important steps towards defining its role and objectives and creating a plan of work for the coming years.

At meeting in Hanoi in early 2004, the body reviewed its past performance and formulated clear a mission statement and vision for its future development. During a subsequent meeting, held in Luang Prabang in June, the TAB agreed on a three-year work plan.

In the short to medium-term this involves increasing the uptake of information on fisheries management and development into government policies and action plans. In the longer term, the TAB will work with other agencies to further the concept of regional, Mekong-basin wide fisheries management. The work plan comprises 17 activities; these will strengthen management capacity, create knowledge through research, and assist information flow.

As a priority, the TAB will develop and implement a training course for the provincial staff of national fisheries agencies on local, national and regional trans-boundary fisheries management. This will incorporate some of the experiences made and lessons learned from the FP's regional co-management capacity building during the period 2001-2003.

Other activities will include:

- Studies on 'regional fisheries issues' of mutual interest.
- Publishing of a series of short briefing documents (Mekong Fisheries Management Recommendations) for key fisheries policy makers.
- Publishing a regular newsletter.
- Study visits for senior government line agency staff to develop a better understanding of Greater Mekong Sub-region (GMS) and the opportunities for and constraints to fisheries development in the region.
- Supporting TAB members to participate in Asian regional forums relevant to fisheries management and development.
- Establishing a secretariat, the TAB Support Group, or TSG.

The TAB has already initiated a number of these activities including:

- Sub-contracting specific studies to individual researchers and R&D providers (the STREAM Initiative; the Network for Promotion of Gender and Women in Fisheries; WorldFish Centre).

- Supporting TAB members' participation at international meetings and conferences (including the 7th Asian Fisheries Forum in Penang in November 2004, and the biennial Meeting of Regional Fisheries Bodies at the FAO in Rome in March 2005).
- Launching a newsletter, *TAB Update.*
- Commissioning the first set of *Mekong Fisheries Management Recommendations.* The first four issues of these policy briefs present a précis of earlier studies commissioned by the TAB.

The TAB recently defined a set of indicators and milestones that will monitor and measure the progress and impact of its work. A key early indicator of progress will be when national fisheries, water sector line agencies and other concerned organisations themselves initiate and promote cross-sector management. Typical activities could be events to explain linkages between food and livelihood security and cross-scale fisheries management or agreements between fisheries and line agencies in other sectors.

Communications

The Fisheries Programme continues to place great emphasis on communicating information on all aspects of the Mekong's fish and fisheries. The targeted readers include technical experts, fisheries managers, and people working in other development sectors and water related resources. While printed documents still dominate the range of products, the Programme is increasingly involved in other media particularly CDs, web based information and film. Annex 3 of this report contains a full listing of the available publications and CDs.

Highlights of last year's publications include:

Fisheries Information in the Lower Mekong Basin: This CD-ROM contains a wealth of published information on the Mekong's fish and fisheries. Included are over 300 technical papers, all back issues of *Catch and Culture*, all past *Proceedings of the Annual Technical Symposium on Mekong Fisheries*, annual reports and a variety databases, maps and photographs.

Catch and Culture: This year the Fisheries Programme produced two English language editions of the newsletter and an omnibus edition in each of the four riparian languages. This version of the newsletter, which is the only MRC publication translated in full, was particularly well received by people working the fisheries sector in the MRC member countries.

An Introduction to Cambodia's Inland Fisheries: Attractively laid out and easy to read, the report provides an excellent overview of one of the world's most important fisheries. It is part of the Mekong Development Series that targets a lay audience as well fisheries professionals.

Distribution and Ecology of Some Important Riverine Fish Species of the Mekong River Basin: MRC Technical Paper No 10. This report provides detailed information on the biology, ecology and life cycle of 40 key species and describes their

importance to the Mekong fisheries.

Proceedings of the Second International Symposium on the Management of Large Rivers for Fisheries. This two-volume publication contains 32 papers covering many major fisheries of the world. Produced in conjunction with the FAO, it is recognised as a world class publication by many fisheries experts. It is also available on CD-ROM.

The Fisheries Programme also continues to post articles and fisheries news on the MRC (www.mrcmekong.org) and Mekonginfo (www.mekonginfo.org) websites. Both sites are very popular with the number of hits and downloads increasing by the month.

Planned publications during the coming year include: the Proceedings of the 6th Annual Technical Symposium on Mekong Fisheries (due out in May), short films on Mekong fisheries in Lao PDR, Thailand and Viet Nam, further reports in the Technical and Development Series, and gender in fisheries and management briefs for the TAB.

Gender in fisheries

Gender equity in fisheries is one of the key social issues addressed by the Fisheries Programme. Communicating information on gender-related issues and supporting gender networks are important are aspects its work.

Communications

In August 2004, the FAO invited the Fisheries Programme to participate at an international conference on policies and programmes for advancement of rural women. The Programme gave a presentation on rural women's access and rights to natural resources, such as water, fish and fisheries. Work by members of local management committees (comprising both women and men) formed the basis of the presentation. They also attended the conference together with their Fisheries Programme counterparts.

The presentation showed that women play a more important in the management of aquatic and other resources than hitherto thought, both in aquaculture and capture fisheries. This is because women have access to other types of resources, such as capital and technology, needed to exploit their particular fishery.

Yet, there are some factors that still impede women's full access to benefits from natural resources. These include increasing demands on women's time and labour, unequal information and knowledge, and the existence of fish marketing arrangements that deny them a significant part of the proceeds from fisheries. These may prevent some women playing a full role in developing and strengthening management institutions. Nevertheless, women's participation in management decision-making is emerging and, besides an increase in production, major benefits have been an increased self-confidence and feeling of citizenship.

In November 2005, the Fisheries Programme participated at the Global Forum on Gender in Fisheries, held during the seventh Asian Fisheries Forum in Penang, Malaysia. The topic of their presentation was gender mainstreaming in the MRC Fisheries Programme.

The presentation reviewed the various strategic areas and entry points developed by Fisheries Programme for its approach to gender and women in fisheries, such as:

- Considering gender in programme formulation and organisation.
- Examining gender roles and opportunities in fisheries, with a view to dealing with gender and women-related issues in an adequate way, including in the dissemination and communication of programme results.
- Addressing women's practical and strategic concerns and priorities.
- Communicating and networking gender and women in fisheries, in particular through support to the regional Network for Promotion of Gender in Fisheries (NGF) and its national chapters.

Networking

A major breakthrough for the Network for Promotion of Gender in Fisheries has been its commissioning to undertake a study for the Technical Advisory Body on Fisheries Management (TAB). The TAB gives a lot of importance to this issue, which is one of the 'regional issues' of fisheries management in the Lower Mekong Basin. This study will allow the TAB to develop a better understanding of gender issues in fisheries management and development.

Some work has already been done in the region on this issue and the study would primarily aim to pull this information together and identify ways in which the TAB can most effectively contribute to developments in this area.

The Network for the Promotion of Gender in Fisheries (NGF) has been struggling over recent years with two problems: a lack of clarity within the Network itself on what promotion of gender in fisheries really means; and unsuccessful attempts to get donor support for projects in the area of promotion of gender in fisheries. The involvement of NGF in this study will contribute to creating this clarity, as well as providing the first opportunity for NGF to undertake a project collectively, that is as a network, as opposed to the involvement of individuals who happen to be network members. Preparatory work for this study was undertaken in all four riparian countries during national workshops, and a final joint proposal developed. The TAB has recently sub-contracted the study to the NGF, and study implementation is now underway.

Annex 1

Fisheries Programme Staff Directory

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National Programme Coordinators and Component Coordinators

Country Offices

Management of River and Reservoir Fisheries

Cambodia
Lao PDR
Thailand
Viet Nam

Assessment of Mekong Capture Fisheries

Cambodia
Lao PDR
Thailand
Viet Nam

Aquaculture of Indigenous Mekong Fish Species

Cambodia
Lao PDR
Thailand
Viet Nam

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Annex 3

New Publications

Fisheries Information in the Lower Mekong Basin

The Fisheries Information in the Lower Mekong Basin CD-ROM contains nine databases related to catch assessment and five databases related to migration and spawning. Each database has its own manual and/or data dictionary. It also offers a vast range of information produced by the Mekong River Commission's Fisheries Programme and its counterparts including technical papers, features, photographs and in-depth reports produced over the past 10 years. Users can also access and explore18 pre-made maps using the ArcReader, GIS software provided.

November 2004. US$ 5.00

An Introduction to Cambodia's Inland Fisheries

The fisheries of Cambodia are the mainstay of the country, providing income and food security for millions of people. This report draws on varied data to document the current state of the fisheries, while examining their significance and the problems they face for future sustainability.

Mekong Development Series No 4, November 2004. US$ 5.00

Distribution and Ecology of Some Important Riverine Fish Species of the Mekong River Basin

This new report complements an earlier report on fish migrations and provides more detailed information of 40 key species which are significant in the Mekong River fishery. For each species it provides notes on critical habitats, distribution and life cycle. The information has been gleaned from surveys carried out throughout the lower Mekong Basin from 1995-2001 by fisheries agencies in each country, coordinated by the MRC fisheries programme and funded by Danida.

MRC Technical Paper No 10, May 2004. US$ 5.00

Proceedings of the Second International Symposium on Large Rivers for Fisheries (LARS2)

This two-volume publication contains 32 papers covering many fisheries of the world. Produced in conjunction with the FAO, it is recognized as a world class publication by many fisheries experts.

February 2004, US$50 Also available in CD-ROM US$ 5.00

Fishing gears of the Cambodian Mekong

Fishing gears are the link between the fishers and the fish. They reflect many aspects of the behaviour of the target species, the habitats they occupy, and their movements across space and time. Fishers exercise their knowledge, accumulated over generations, in the selection and use of gears. The gears themselves display local technologies and show the decision-making processes of the fishers, including beliefs and taboos. It is important to understand these, when it comes to measures for resource conservation.

This catalogue is an essential aid for managing and studying inland fisheries. It will assist those involved in assessing or monitoring fisheries, by providing accurate specifications of gear size and characteristics, allowing calculation of catch per unit effort, for example.

Fine technical drawings accompanied by photos and concise descriptions make this fishing gears catalogue an outstanding production. It describes around 150 gear types grouped into 16 major categories, based on their principle of capture. The names of the gears are given in Khmer and English, accompanied by a short technical description, drawings and photographs. A chart shows usage of the gear in four fishery regions: the Great Lake, the Tonle Sap, the Mekong and Bassac floodplains south and east of Phnom Penh, and the upper Mekong River. There is also information about seasonal uses, gender aspects, cost and legal status.

Apart from the usefulness of this manual for the management and study of fisheries, the gears that are depicted reflect the living culture of the Cambodian people, whose lives have for centuries been based on harvesting the Mekong's riches.

Jointly published by the Mekong River Commission, the Department of Fisheries in Cambodia, and Danida in 2003. Hardback, 268 pages. US$ 25.00

The Impacts of Introductions and Stocking of Exotic Species in the Mekong Basin and Policies for their Control

Exotic fish species have been introduced into the Mekong River Basin for aquaculture, stocking of lakes and reservoirs, mosquito control and the aquarium fish trade. The authors call for a code of conduct to be established for future introductions, arguing that while the impacts of exotic species so far appear relatively minor, their uncontrolled movement is a threat to native fish species that may decline through competition, predation or genetic interference, and the possible spread of disease.

The report describes the exotic species, their known impacts, and policy suggestions.

MRC Technical Paper No. 9, May 2003. US$ 5.00

Biodiversity and Fisheries in the Mekong River Basin

This new publication in MRC's Mekong Development Series argues persuasively for the elimination of boundaries between fisheries management and biodiversity conservation, showing that when biodiversity is well managed, fisheries production goes up.

Mekong Development Series No. 2
June 2003. 35 pages. $5.00

Local Knowledge in the Study of River Fish Biology: Experiences from the Mekong

Life cycle information on important Mekong species, based on interviews with knowledgeable fishers, sellers and other local experts. The study highlights the critical influence of habitat and flood patterns on the propensity of fish species to migrate, spawn and find dry-season refuges.

Mekong Development Series No.1
July 2001. 22 pages. US$ 5.00

Fish migrations of the Lower Mekong Basin: implications for development, planning and environmental management

In the Mekong Basin, many fish species are migratory. They swim hundreds of kilometres, and often across international borders, during their seasonal migrations. Since millions of people are dependent on migratory fish for their food security and livelihoods, plans for dams and other water management projects must consider the consequences on fish migrations. To aid in these assessments, this paper identifies key features of the Mekong River ecosystem that are crucial for migratory fishes and suggests how to incorporate this information into environmental assessments.

MRC Technical Paper No. 8,
October 2002. 62 pages. US$ 5.00

Freshwater aquaculture in the Lower Mekong Basin

Aquaculture, the farming of fish, other aquatic animals and plants, is an increasingly important source of income and means of assuring food security for rural people in the Lower Mekong Basin. This paper reviews the status of freshwater aquaculture in Cambodia, Lao PDR, Thailand and Viet Nam and the trends shaping aquaculture development. It also provides recommendations for increasing the importance and success of aquaculture, particularly in poor communities.

MRC Technical Paper No. 7,
October 2002. 62 pages. US$ 5.00

Fisheries in the Lower Mekong Basin: Status and Perspectives

Current data from the Lower Mekong Basin on the status of capture fisheries and aquaculture, as well as data on consumption, processing and marketing. The study includes the requirements for sustainable management of capture fisheries and aquaculture, an overview of types of development that affect fisheries, and short illustrated features on important topics related to the fisheries sector.

MRC Technical Paper No. 6,
May 2002. 95 pages. US$ 5.00

Financial analysis and risk assessment of selected aquaculture and fishery activities in the Mekong Basin

Describes financial risks that low income groups face in establishing small-scale aquaculture operations. Along with comprehensive recommendations, the report provides formulas and spreadsheets that agencies can use in assessing new aquaculture operations.

MRC Technical Paper No. 5, April 2002. 66 pages. $US5.

Mekong giant fish species: on their management and biology

An overview of the importance and status of giant fish species in the Mekong River and species synopses for *Catlocarpio siamensis; Pangasianodon gigas; and Probarbus jullieni.*

MRC Technical Paper No. 3, April 2002. 29 pages. $US5.

Deep pools as dry season fish habitats in the Mekong River Basin

This study discusses the crucial role that deep pool habitats within the Mekong mainstream and its tributaries play in maintaining fish stocks. It also provides information on fish species in the pools, hydrographic data and a set of recommendations for protection of these areas.

MRC Technical Paper No. 4, April 2002. 24 pages. $US5.

Status of Pangasiid aquaculture in Viet Nam

Discusses the status of wild river catfish larvae, and summarises the status of hatchery seed production and the status of pond and cage culture.

MRC Technical Paper No. 2, April 2002. 16 pages. $US5.

Status of the Mekong *Pangasianodon hypophthalmus* resources, with special reference to the stock shared between Cambodia and Viet Nam

This paper covers the identification, distribution and life-cycle of *Pangasianodon hypophthalmus.*
It also discusses the status of fishery exploitation, utilisation of *P. hypophthalmus* in aquaculture and provides recommendations for maintaining the viability of this species.

MRC Technical Paper No. 1,
April 2002. 29 pages. US$ 5.00

Large Dam Fisheries of the Lower Mekong Countries: Review and Assessment Report and Database 1997

A review and assessment of reservoir fisheries in Lao PDR, Thailand, and Viet Nam, including a survey of existing reservoir fisheries, benefits and hazards from large dams, prediction of impacts, and criteria for designing impact assessments for fisheries. The database contains information on 46 reservoirs in Lao PDR, Thailand, and Viet Nam regarding dam specifications and functions, reservoir morphology, physical and chemical status, fish species, and annual fish production and effort.

1997. 2 volumes.
Main report, 156 pages. US$ 15.00
Database,147 pages. US$ 10.00

Socio-economic Assessment of Freshwater Capture Fisheries of Cambodia: Report on a Household Survey

Baseline information on the socio-economic status of people living in village communities along the banks of the Mekong River who depend on fishing and related activities for food, income and employment. Also a general reference for under-standing and comparing specific local data within the wider context of the rural Cambodian economy.

1998.185 pages. US$ 15.00

Fishes of the Cambodian Mekong

This field guide by a well-known taxonomist provides descriptions, line drawings and colour plates for the identification of nearly 500 species of fish. English and Cambodian names in Khmer script are included, with notes on market uses, biology and where species are found. Published by the United Nations Food and Agriculture Organisation.

1996. 265 pages, plus colour plates. Heavy.
US$ 50.00

Mekong River Basin Diagnostic Study Final Report 1997

A study of the environmental conditions and related factors affecting human use of the water resources of the Mekong River Basin. The study includes the status of physical and ecological resources, quality-of-life issues, plans and trends in development initiatives, and country-specific assessments of environmental management capacity.

1997. 196 pages. Heavy. US$ 25.00

Mekong Fish Database

Key information on Mekong fish species including taxonomy, migration, common names, synonyms, pictures, occurrence data, maps and biological information. Information contained in the database is fully referenced and was obtained both from published material and from the results of surveys coordinated by the MRC Fisheries Programme in collaboration with riparian line agencies.

2003. CD-ROM. US$ 5.00

Fisheries in the Lower Mekong Basin Main report, summary and annexes, 1992

An overview of the fisheries sector in the Lower Mekong Basin, fisheries development issues and development needs, a review of external assistance, and proposals for future work. The annexes contain country sector reviews of the four Lower Mekong Basin countries, including production and distribution, environmental aspects, government roles and policies, and lists of development assistance projects.

1992. Main report, 92 pages. US$ 15.00
Summary, 16 pages. US$ 3.00
Annexes, 254 pages. Heavy. US$ 8.00

Fish Migration and Spawning

Information from a four-year assessment of Mekong fisheries, including digital maps showing migration routes of specific species, and information on river ecology.

2001. CD-ROM. US$ 5.00

THE MRC PROGRAMME FOR FISHERIES MANAGEMENT AND DEVELOPMENT COOPERATION

ANNUAL REPORT
April 2004-March 2005

Fisheries