



MEKONG RIVER COMMISSION

Annual Report 2009



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Photos: Virginia Addison, Khy Lim, Joe Garrison, Jim Holmes, MRC Archive

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Mekong River Commission

The Vision for the Mekong River Basin

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

The Vision for the Mekong River Commission

A world class, financially secure, International River Basin Organisation 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

Meeting the needs, keeping the balance

List of Acronyms

AIFP	Agriculture Irrigation & Forestry Programme
ASEAN	Association of South East Asian Nations
BDP	Basin Development Plan
EP	Environment Programme
FMMP	Flood Management and Mitigation Programme
FP	Fisheries Programme
HYCOS	Hydrological Cycle Observation System
ICBP	Integrated Capacity Building Programme
IKMP	Information & Knowledge Management
IWRM	Integrated Water Resources Management
JRPP	Junior Riparian Professional Project
JRP	Junior Riparian Professional
LMB	Lower Mekong Basin
MRC	Mekong River Commission
NAP	Navigation Programme
NMC	National Mekong Committee
NMCS	National Mekong Committee Secretariat
OSP	Office of the Secretariat in Phnom Penh
OSV	Office of the Secretariat in Vientiane
RBO	River Basin Organisation
SPCP	Stakeholder Participation and Communication Plan
UN	United Nations

The Lancang-Mekong Basin





The Mekong River Commission

On 5 April 1995 the governments of Cambodia, Lao PDR, Thailand and Viet Nam signed The Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, which created the Mekong River Commission (MRC) as an inter-governmental river basin organisation responsible for assisting Member Countries to both manage water resources for their mutual benefit and harness water related economic potential in a sustainable manner.

The MRC has its roots in the United Nations-founded Mekong Committee established in 1957. Guided by the wishes of the four Member Countries, the MRC holds regular meetings to discuss strategy and policy and promotes regional cooperation in order to implement the 1995 agreement.

By helping Member Countries exchange information and formulate a joint basin development plan, the MRC supports decision-making and action to promote sustainable development, poverty alleviation and achieving the UN Millennium Development Goals.

Early on in 1996, the People's Republic of China and the Union of Myanmar became MRC Dialogue Partners. China now shares hydrological data with the MRC under a formal agreement, which provides a substantial contribution to, amongst other activities, flood forecasting and river monitoring within the basin.

The MRC is led by a Council, whose membership consists of a minister or cabinet member from each country. This Council meets once a year. Reporting to the Council is the MRC Joint Committee, which meets twice a year and functions as a Board of Management.

The MRC Secretariat manages the day-to-day operations of the organisation.

The Secretariats of the National Mekong Committees in each Member Country work with the MRC Secretariat to provide a link to each respective national government and co-ordinate



activities through the relevant line agencies.

The MRC is funded through the contributions of Member Countries and Development Partners from a range of countries. In addition to funding, Development Partners also have a valuable and significant role in the organisation through twice yearly meetings with the Joint Committee and Council and through the provision of technical support for many MRC programmes.

The MRC has partnered with a broad coalition of stakeholders, including the governments of Member Countries, development banks, United Nations agencies, the private sector, other intergovernmental organisations, such as ASEAN, and civil society.

MEKONG RIVER COMMISSION GOVERNANCE STRUCTURE

Member of MRC Council



H.E. Mr. Lim Kean Hor

Minister of Water Resources
and Meteorology, Cambodia

Member of the
MRC Council for Cambodia



H.E. Mme Khempheng Pholsena

Minister to the
Prime Minister's Office, Lao PDR

Member of the
MRC Council for Lao PDR



H.E. Mr. Suwit Khunkitti

Minister of Natural Resources
and Environment, Thailand

Member of the MRC Council for
Thailand, Chairperson of the
MRC Council for 2009/2010



H.E. Dr. Pham Khoi Nguyen

Minister of Natural Resources
and Environment, Viet Nam

Member of the
MRC Council for Viet Nam

Member of MRC Joint Committee



H.E. Mr. Sin Niny

Vice-Chairman of Cambodia
National Mekong Committee

Member of the MRC Joint
Committee for Cambodia



Mrs. Monemany Nhoibouakong

Permanent Secretary, WREA

Member of the MRC Joint
Committee for Lao PDR



Dr. Saksit Tridech

Permanent Secretary, Ministry of
Natural Resources and Environment

Member of the MRC Joint
Committee for Thailand



Dr. Le Duc Trung

Director-General of Viet Nam
National Mekong Committee

Member of the MRC Joint
Committee for Viet Nam

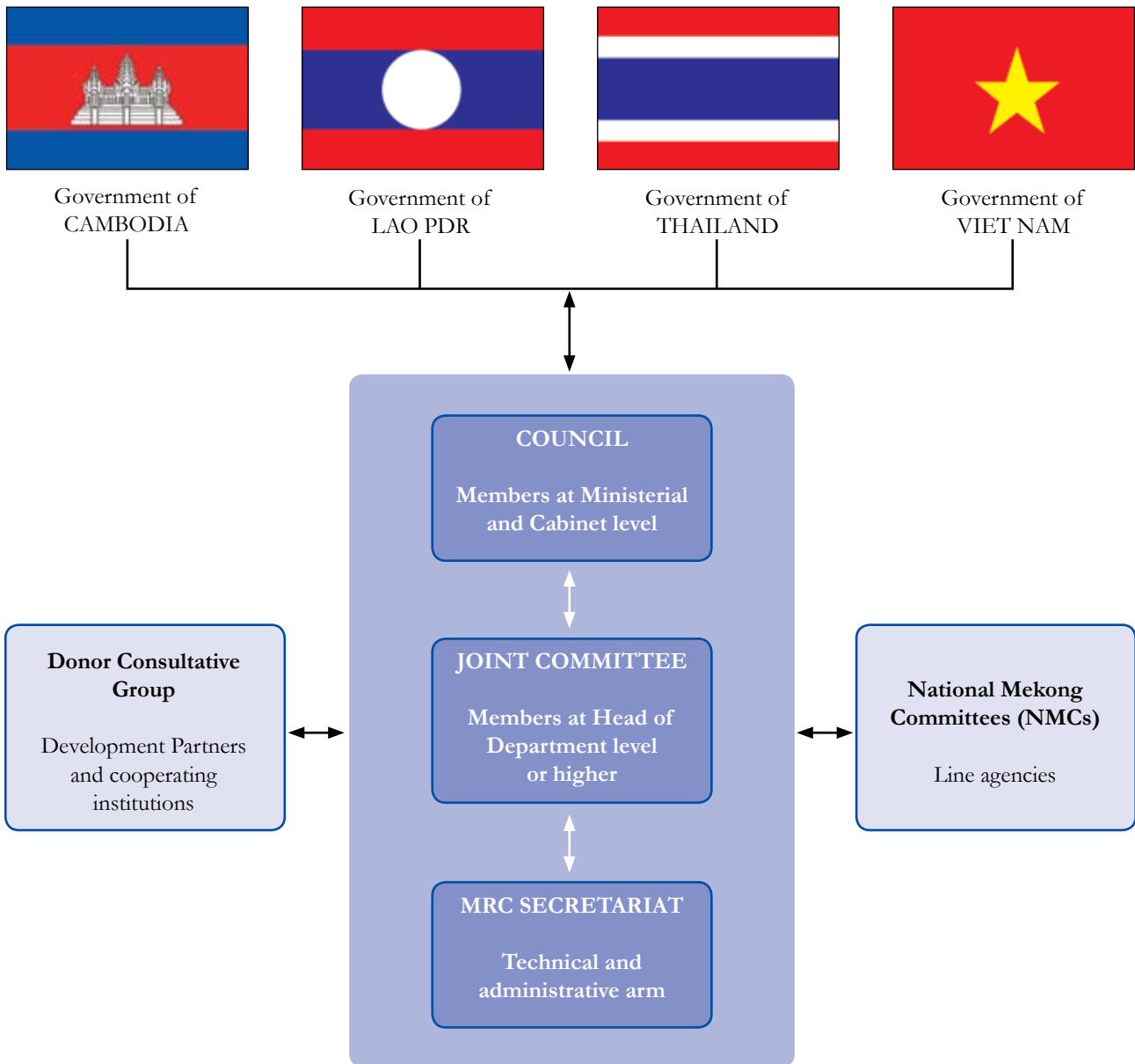
MRC Secretariat

Responsible for technical and administrative services



Jeremy Bird
Chief Executive Officer

ORGANISATION OF THE MEKONG RIVER COMMISSION



Our Dialogue Partners

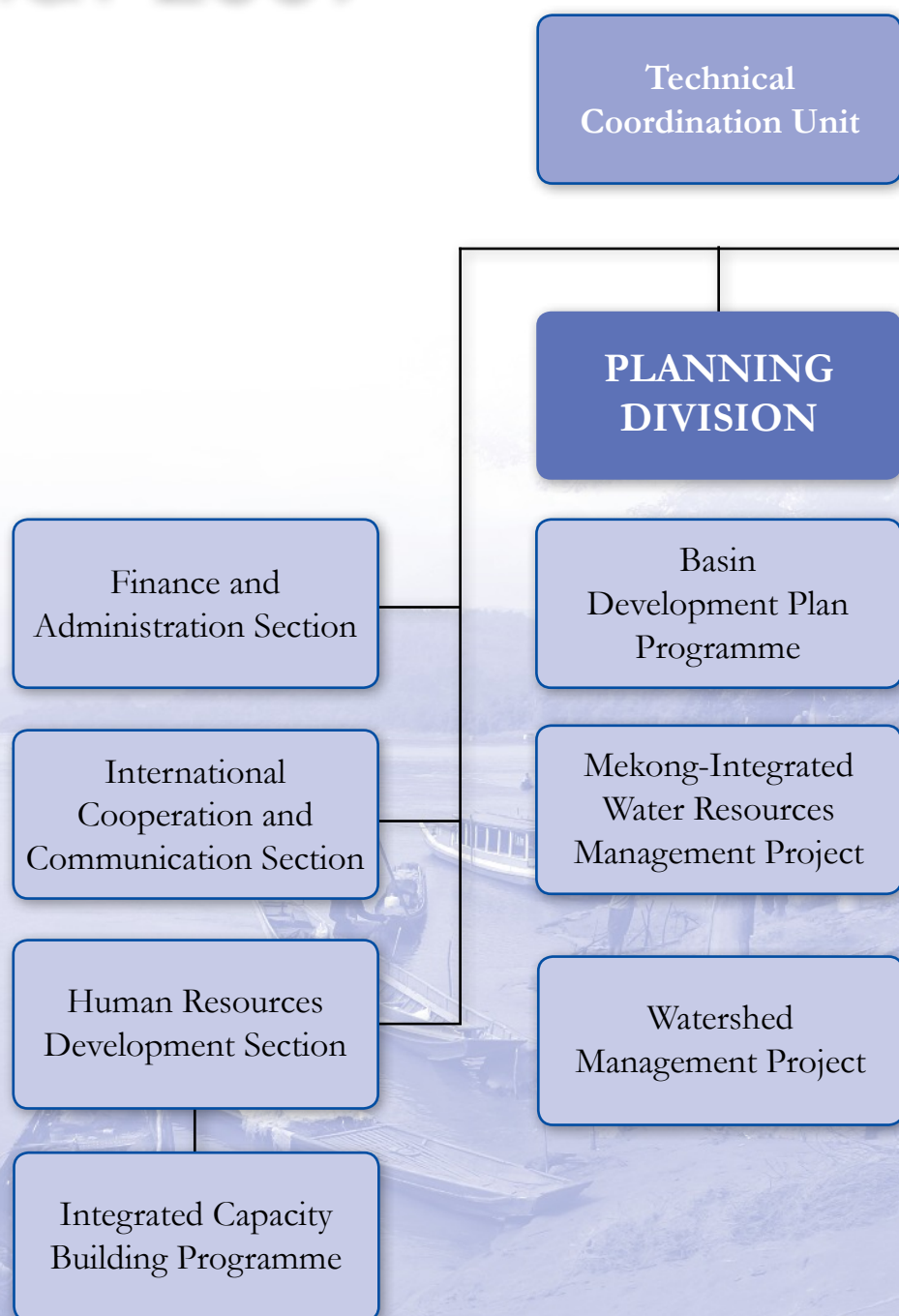


China



Myanmar

Structure of the Mekong River Commission Secretariat 2009





CEO

Office of the CEO

**ENVIRONMENT
DIVISION**

Environment Programme

Climate Change and Adaptation Initiative

**TECHNICAL
SUPPORT
DIVISION**

Flood Management and Mitigation Programme

Information and Knowledge Management Programme

Drought Management Project

**OPERATIONS
DIVISION**

Agriculture and Irrigation Programme

Fisheries Programme

Navigation Programme

Initiative on Sustainable Hydropower



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Message from the Chairperson of the MRC Council for 2009-2010

I am delighted to present the 2009 Annual Report on behalf of the Mekong River Commission. April 2010 will mark the 15th anniversary of the signing of the 1995 Agreement on Cooperation for the Sustainable Development of the Mekong River Basin, which created the Mekong River Commission in its current form. As we approach this important date in the history of the MRC we reflect on its many achievements as well as the many challenges still facing the organisation.

The year 2009, which we reflect upon in this report contained its fair share of such challenges. The countries of the Mekong grappled with the effects of the global financial crisis and climate change. This placed an additional burden on nations already working hard to fight poverty and ensure food security, especially in remote areas. The water resources of the Mekong Basin are important to achieving economic recovery. The lives of 60 million people living in the Lower Mekong Basin depend on its sustainable use in agriculture, for energy production and river-borne trade, in addition to the significant livelihood values that its waters and eco-systems support. The MRC Member Countries are committed to boosting economic growth to overcome poverty and the 1995 Mekong Agreement provides a framework to effectively accomplish this through regional cooperation, while at the same time protecting this unique environment.

Interest in hydropower development has grown significantly over recent years and in 2009 the MRC initiated a Strategic Environmental Assessment of the dams proposed for the mainstream Mekong. Careful study of the impacts and risks of hydropower from many angles and viewpoints, to take account of how different scenarios will affect areas such as livelihoods; fisheries; sediment and nutrient flows; water quality; and navigation, is the primary purpose behind this environmental assessment. In order to achieve this, expertise from around the region and world has been engaged and leveraged to better understand the opportunities and contributions that dams can make to the development of our region. The assessment forms a framework for the formal process of prior consultation on proposed mainstream hydropower projects agreed to by Member Countries under the 1995 Mekong Agreement.

The effect of climate change in the basin is an emerging issue. After the 2008 Mekong flood and cyclone Nargis, typhoon Ketsana in September/October 2009 was another example of the type of extreme weather event that scientists expect to happen more frequently in our region due to climate change. The MRC's Climate Change and Adaptation Initiative that commenced in 2009 is working to address this issue and discover ways that people living in the basin can adapt to changing rainfall patterns, increases in the likelihood of drought and sea water inundation in the delta and increased vulnerability for communities.

The Flood Management and Mitigation Programme also has an important role to play and throughout the year it continued developing and strengthening new flood protection systems both at national and regional levels. To achieve this, there is a considerable need to improve services; build capacity of Member Countries; and achieve full coordination of national and regional action to more effectively mitigate the effects of floods and enhance responses to them.

The MRC has taken steps towards strengthening the process of encouraging stakeholder dialogue and involvement in the planning of development issues. This year there was greater engagement of stakeholders in the decision-making process that included successful consultations on the Basin Development Plan as well as Sustainable Hydropower. The MRC is also developing a stakeholder participation policy, which will make the views of a wider set of stakeholders more accessible to the MRC's governance bodies. Another important achievement was the approval of the Communications Strategy and Disclosure Policy that has already contributed to making the organisation more open and transparent.

In 2009, the MRC increased regional cooperation with its dialogue partners, the People's Republic of China and the Union of Myanmar. China provides the MRC with real time data in support of flood forecasting during the wet season. An extension of the hydrological data coverage is presently being considered. Representatives from China and Myanmar have attended all major MRC regional meetings and participated in discussions on topics as diverse as flood management, hydropower development, navigation and regional planning. Specific partnerships were set up for the MRC Strategic Environmental Assessment of mainstream dams and are being explored for the MRC Climate Change and Adaptation Initiative. Further areas of potential cooperation are currently being identified.

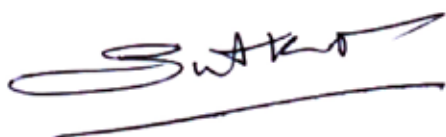
The MRC is reaching the end of the current Strategic Plan period and preparation is underway for the Strategic Plan 2011-2015 that will redefine MRC core functions and performance objectives. The organisation has taken solid steps towards increasing riparian programme and policy ownership and the four Member Countries have increased their financial contribution to the organisation.

The 15th anniversary of the signing of the Mekong Agreement and the founding of the MRC will be marked with the First Mekong River Commission Summit in April 2010. This event will help reaffirm the commitment to the mission of the MRC from the heads of government of Member Countries and MRC partners. The second report of the 5-yearly State of the Basin is also under production and will be released in 2010 at the First MRC Summit. It will contribute to a better understanding of the Basin and its natural resources and help stimulate constructive dialogue among the various stakeholders who will determine the future of the Mekong River Basin.

With the continuing support of its development partners, the MRC is constantly evolving and is now regarded as an effective River Basin Organisation. I would like to thank the Member Countries for their programme commitments to help make the vision of the MRC as a world class organisation a reality. Without such commitment, the MRC could not fulfil its mandate effectively and in the best interests of stakeholders.

As I write this message at the end of my term in late June 2010 the First MRC Summit has already been held and was a resounding success. All four Mekong leaders reconfirmed their commitment to the sustainable development of our precious resource and to regional cooperation.

Finally, the year 2010 is a year of transition, as the MRC is getting ready for a range of profound organisational and strategic modifications that will make it more efficient in addressing the challenges facing the sustainable development of the basin and its water resources.

A handwritten signature in dark ink, appearing to read 'Suwit', with a long horizontal line underneath it.

H.E. Mr. Suwit Khunkitti
Minister of Natural Resources and Environment
Chairman of Thai National Mekong Committee
Member of the MRC Council for Thailand
Chairman of the MRC Council for 2009/2010

Co-hosted location of the MRC Secretariat from 2010

In 1996, one year after the signing of the 1995 Mekong Agreement that established the MRC, the MRC Council agreed that the location of the Secretariat would rotate between Phnom Penh and Vientiane every five years.

From 1998 the Secretariat was based in Phnom Penh and then in 2004 moved to its current building in Vientiane. The practical reality of moving every five years was a logistical challenge for the Secretariat. Besides the cost implications of moving, there was the potential for disruption to its work programmes, concerns over human resources and challenges for the strategic direction of the organisation.

Recognising the need for a more cost-effective and efficient solution, the MRC Council in 2007 agreed that a permanent co-hosted location would be adopted. This would reduce the cost and disruption associated with a five-year rotation. In November 2009, this decision was confirmed when the Council agreed that the MRC will establish two permanent offices: one in the current office in Vientiane and the other at the premises of the MRC's existing Regional Flood Management & Mitigation Centre in Phnom Penh.

The office of the Chief Executive and heads of corporate services sections, together with two divisions will remain in the current location in Vientiane, while the other two divisions, as well as representative staff of corporate services sections will permanently relocate to Phnom Penh in 2010.

Programmes to be relocated to the Office of the Secretariat in Phnom Penh (OSP) include the Agriculture and Irrigation Programme, Fisheries Programme, Navigation Programme and Drought Management Project under the Operations Division. The Information and Knowledge Management Programme under the Technical Support Division, will also join the Flood Management and Mitigation Programme already based in Phnom Penh. Those programmes remaining at the Office of the Secretariat in Vientiane (OSV) include the Basin Development Plan Programme, the Initiative on Sustainable Hydropower, the Mekong Integrated Water Resources Management Project and the Watershed Management Project under the Planning Division, and the Environment Programme and Climate Change Adaptation Initiative under the Environment Division.

The OSP will officially begin operating from 1 July 2010 and the move of programmes will take place gradually up to the end of 2010.

The location of the different portfolios reflects the principles of cost effectiveness, efficiency and sustainability and 2010 will see significant changes within the organisation as a result of this decision. New technology and working arrangements will be introduced so that the MRC becomes a more effective river basin organisation, ensuring that it can fulfil its mandate in the best interests of all stakeholders.



Office of the Secretariat in Phnom Penh (OSP)



Office of the Secretariat in Vientiane (OSV)



15 year anniversary of the MRC

Preparations for the First Mekong River Commission Summit to take place from 2-5 April 2010 in Hua Hin, Thailand were intensified following the Council meeting in 2009.

The Summit, to be reported in detail in the 2010 Annual Report, will gather together regional political leaders and a range of experts in the field of integrated water resources management. Its aim is to strengthen regional cooperation between Member Countries, Dialogue Partners and civil society at large. Details can be found on the MRC website at <http://www.mrcsummit2010.org/>

This event will also mark the 15th Anniversary of the Mekong River Commission and serve to reaffirm at the highest level, political commitment of Member Countries to the mission of the MRC. It will aim at further enhancing and strengthening relationships that the organisation has with its Dialogue Partners - the People's Republic of China and the Union of Myanmar - and discuss a range of challenges and opportunities facing the Mekong Basin today, especially the long-term effects of climate change and the role of river basin organisations in poverty alleviation.



15th Anniversary 1995 - 2010



Integrated Mekong development – the Basin Development Plan (BDP)

From a purely financial perspective, the Mekong Basin remains among the poorest areas of Southeast Asia, with poverty affecting up to 40 percent of the population in some parts; yet it is rich in natural resources. Many of the 60 million people living in the basin, especially those in rural areas, depend on these natural resources for their livelihood.

The four Member Countries of the MRC, Cambodia, Lao PDR, Thailand and Viet Nam, recognise that sustainable development of the Mekong River system is important to achieving national goals of economic prosperity, environmental sustainability and social equity. The MRC-facilitated Basin Development Plan Programme (BDP) provides the planning process required to establish strong partnerships of basin stakeholders to effectively link future water resources development with the conservation of the basin's rich biodiversity and with social equity.

The BDP uses an 'Integrated Water Resources Management (IWRM) approach,' which brings national policies, plans and projects into an integrated basin-wide assessment framework. The goal is to ensure an acceptable balance between economic, environmental, and social outcomes of development schemes in the Lower Mekong Basin (LMB) and mutual benefits to the riparian countries. The BDP is gaining more importance in the region as plans for proposed hydropower schemes on the mainstream of the Mekong are reaching an

advanced stage, together with other accelerating water resources developments. Public awareness of the opportunities and risks of these schemes and increasing recognition by riparian states of the need to coordinate national developments are leading to growing interest in the basin planning process.

The second phase of the programme (BDP2) began actual implementation in 2008. The programme will prepare a rolling IWRM-based Basin Development Plan that supports the decision-making process of Member Countries on sustainable development in the Mekong Basin and comprises:

- Basin-wide Water Resources Development Scenarios, which will provide the information that governments and other stakeholders need in order to develop a common understanding of the most acceptable balance between resource development and resource protection in the various parts of the LMB;
- An IWRM-based Basin Development Strategy, which will be a statement by the LMB countries of their intention to share, use, manage and protect the basin's resources in an equitable and sustainable way for economic growth and poverty reduction.



The Basin Development Plan

The BDP is assessing the following scenarios and their predicted impact for development in the basin

1. **Baseline Scenario:** the development conditions that existed in the basin in the year 2000.
2. **Chinese Dam Scenario:** the Baseline Scenario, plus the hydropower cascade that is being developed on the Lancang in the Upper Mekong Basin. The main purpose of this scenario is to assess the impact of the Chinese dams on the LMB.
3. **Definite Future Scenario:** the Chinese Dam Scenario, plus the significant water resource developments on the LMB tributaries that have been constructed since 2000 or are being constructed (such as Nam Theun 2, Nam Ngum 2 hydropower projects, and several irrigation projects). This scenario reflects the reality of “definite future situation” for LMB planning purposes.
4. **LMB 20-Year Plan Scenario:** the definite Future Scenario, plus the current development plans of the LMB countries for the next two decades, including the proposed 11 dams on the mainstream Mekong in Lao PDR and on the Lao/Thai border and in Cambodia, realistic diversions from the mainstream to Northeast Thailand, considerable increases in irrigation, in particular in Cambodia and Lao PDR, and other developments that are planned for the next 20 years.
5. **LMB 20-Year Plan Scenario without Mainstream Dams:** the current water resources development plans of the LMB countries for the next two decades without the proposed 11 dams on the mainstream Mekong.
6. **LMB 20-Year Plan Scenario without Mainstream Dams in the Middle and**

Lower LMB: the current water resources development plans of the LMB countries for the next two decades, without the proposed dams on the mainstream Mekong downstream of Vientiane/Nong Khai.

7. **Mekong Delta Flood Management Scenario:** similar to the LMB 20-Year Plan Scenario plus additional flood risk reduction and drainage measures in the Mekong Delta.
8. **LMB Long-Term Development Scenario:** a plausible continuation of currently planned water resources development over the next 50 years, as defined in the scenarios for the foreseeable future, including likely feasible hydropower developments, likely feasible irrigation developments, likely increases in other water demands, linked to increasing population and economic activities.
9. **LMB Very High Development Scenario:** the LMB 20-Year Plan Scenario, plus full potential development of water supply, irrigated agriculture, hydropower and flood management sectors in the LMB countries over the next 50 years. This would include, for example, significant diversions from the mainstream in the upper part of the LMB, a controlled diversion of early flood waters to the Tonle Sap Great Lake, supplemented with works to regulate the outflow of the Great Lake and adjacent flood plains to improve low flow conditions in the Mekong Delta.

All 20-year plan and long-term development scenarios are assessed with and without the consideration of the impacts of climate change. This includes using downscaled outputs from the global climate model for calibrating and simulating climatic and hydrological responses in the Mekong Basin. Subsequently, the results are used to predict the trans-boundary environment, social and economic impacts.



The Basin Development Plan

- A Project Portfolio of strategically important water resources development projects and non-structural projects that would underpin both investment promotions and/or strengthen governance, as envisaged in the 1995 Mekong Agreement.

The formulation of the Plan employs appropriate knowledge and tools that will ensure that it achieves benefits for all countries and that the projects comply with sound environmental and socio-economic principles.

BDP2 has also supported:

- the improvement of the MRC knowledge base of macro socio-economic development trends and sector analysis, and assessment tools;

- the development of IWRM planning capacity; and
- the building of trust and cooperation among line agencies, National Mekong Committee (NMCs), River Basin Organisations and Civil Society organisations to address the development challenges in the basin.

Preparation of the Rolling IWRM-based Basin Development Plan

2009 saw an increasing recognition of the relevance and importance of the IWRM-based Basin Development Strategy. It also acknowledged the underlying scenario assessments needed to guide national and trans-boundary planning, decision-making, and governance processes on Mekong water and related resources.

The Mekong Integrated Water Resources Management Project (M-IWRMP)

The 16th MRC Council Meeting held in Thailand in November 2009 approved the Mekong Integrated Water Resources Management Project. The new project will strengthen the capacity and processes of MRC bodies, National Mekong Committee Secretariats (NMCS), line agencies and stakeholders to implement water utilisation procedures and technical guidelines to support Member Countries in continuing the implementation of the 1995 Mekong Agreement.

The new project is based on a three 'tier' approach to addressing IWRM challenges in

the Basin, linking the implementation of the MRC procedures (Regional Component) closer with institutional and capacity development for IWRM in each country (National Component) and concrete cooperation initiatives on fisheries and water resources management between the countries (Trans-boundary Component).

The project introduces a new way for the MRC to work with International Finance Institutions, demonstrating the stronger linkage between Basin Development Planning and the enabling purpose of the MRC procedures for sustainable development. The MRC is leading the implementation of the Regional Component together with the NMCs.



The Basin Development Plan

Stakeholder Participation and the Basin Development Plan

The MRC is working to improve partnerships with different stakeholders involved in the BDP process. In October 2009, the MRC convened its second BDP Regional Stakeholder Forum, which brought over 250 community representatives, researchers, development agencies, national and regional civil society organisations, government agencies and the private sector together to discuss the options available for sustainable use of the water resources of the Mekong Basin and promote regional cooperation. Among other things, the meeting discussed the methodologies

for the assessment of the impacts of considered development scenarios in BDP2. The scenarios present a wide range of proposed irrigation, hydropower developments and other water utilisation over the next 20 years. Valuable contributions were made to improve the assessment of potential impacts on the economic sectors (agriculture, navigation, energy etc.) and on a wide range of people and environmental issues, such as social implications of the loss of capture fisheries and other resources, water quality, bank erosion, capture fisheries, deep pools, wetlands, and flagship species. Approaches for considering climate change and benefit sharing were discussed.





The Basin Development Plan

The 29th Meeting of the MRC Joint Committee endorsed the scenario formulation (see box on page 21). Detailed methodologies for the hydrological, environmental, social and economic assessments of the nine basin-wide development scenarios were completed. Information from priority sub-areas in the Member Countries was collected and will support the scenario assessment. Discussions of scenario assessment findings are going on in each LMB country and at regional level and a report is being prepared.

The second Regional Stakeholder Forum on the Basin Development Plan was held in October 2009. The Forum witnessed how the completion of a 'Stakeholder Participation and Communication Plan' can improve ways to engage stakeholders more directly on development issues.

A first draft of the Basin Development Strategy is being prepared and will be a major output of the programme in 2010. It will be essential to the MRC's river basin management functions and of central importance to the national planning process and upcoming preparation of the MRC Strategic Plan 2011-2015.

Improvement of the Knowledge Base and Assessment Tools

The BDP worked in close collaboration with other MRC programme areas in order to improve socio-economic and sector knowledge of the Mekong Basin. The Programme continued assembling and processing a wide range of new geographical, environmental and socio-economic data to support the scenario assessment in 2009. The process of obtaining this data has been extensive, and support from the National Mekong Committee Secretariats has been instrumental in tackling this challenge.

In 2009 the programme supported the preparation of the second State of the Basin Report, led by the Environment Programme.

Development of IWRM Planning Capacity

The Programme has continuously provided capacity building for line agencies, River Basin Organisations (RBO)s, and National Mekong Committees in order to help gather information, carry out sub-area analysis for basin planning and for formulating and assessing development scenarios.

The BDP also worked in collaboration with the Integrated Capacity Building Programme to prepare an IWRM training manual with Mekong River Basin specific case studies and to develop a Train-the-Trainers programme on IWRM. The objective is that the materials will be used by Member Countries themselves in support of IWRM at sub-basin level.

Stakeholder Participation and Communication Plan (SPCP)

In collaboration with Member Countries and a wide range of key stakeholders, the BDP developed a Stakeholder Participation and Communication Plan and National Stakeholder Analysis that are used to guide the participatory aspects of basin development planning in the Lower Mekong Basin (see box on page 23).

The Plan allows for more meaningful participation by those affected by planned developments in the Mekong Basin. It lays out effective communication strategies and packages, which enables stakeholders to better understand the goals of the BDP, and to effectively engage with the process throughout the BDP planning cycle.

Additional Efforts of the MRC to Engage Stakeholders

Parallel to the Stakeholder Participation and Communication Plan (SPCP), the MRC is also developing a Stakeholder Engagement Policy for the MRC Joint Committee and Council. The objective is to better reflect the views of stakeholders at the policy and strategy formulation levels within the MRC. The MRC is currently preparing a booklet summarising these stakeholder engagement activities.



Recognising, protecting and monitoring the Mekong environment – the Environment Programme (EP)

Economic development, hydropower, agriculture, tourism, mining and other industries all have an impact on the river environment and in some cases threaten the biodiversity of the Basin's aquatic systems and the livelihoods of those who depend on them. The long-term impact of many of these factors is unknown, and more research and modelling is needed to understand and plan for the future.

The MRC works to boost the ability of Member Countries to ensure a healthy environment that can support the area's rich diversity of natural resources while allowing livelihoods to flourish. In order to do this, it is necessary to supply essential data and tools for environmental planning and management to the MRC Member Country governments.

MRC expertise supports riparian government efforts to monitor water quality and ecosystem health. The MRC also helps to improve environmental policy and management through partnerships with various agencies, thereby supporting the Basin Development Plan process. In 2009 a Climate Change Adaptation Initiative began operation (see box on page 27).

Environmental Monitoring

In addition to on-going data collection and analysis, much of the environmental monitoring efforts focus on training and information dissemination. In 2009 the MRC continued to train line agencies in

Member Countries in data assessment, reporting for water quality monitoring and ecological monitoring. During 2009, the results for continued ecological health monitoring of the Mekong were published, including two report cards for the period 2004-2007 and 2008.

The MRC also developed Technical Guidelines on Procedures for Water Quality for Member Countries to better monitor water quality in rivers. These should be finalised in 2010. The aim is to establish a cooperative framework for the maintenance of acceptable water quality to promote the sustainable development of the Mekong River Basin.

Following the publication of a World Wide Fund for Nature (WWF) report on the potential impacts of water quality on the Mekong Irrawaddy Dolphin population, the MRC worked with the Cambodian Government and WWF to provide relevant information on water quality based on accumulated knowledge of almost 25 years of monitoring.

Environment Decision Support

During 2009, the MRC continued to develop trans-boundary Environmental Impact Assessment Guidelines. It is planned that this guidance document will be completed in 2010.

A study on the environmental impacts of tourism in the Mekong River Basin was completed in 2009 and will be published in 2010.



The Environment Programme

Water quality monitoring and trends over recent years

Water quality is extremely important to the environmental health of the Mekong Basin.

The Mekong River Commission has been monitoring the health of aquatic ecosystems since 1985, providing an ongoing record of the water quality of the river, its major tributaries, and the Mekong Delta. The water quality of the Lower Mekong Basin is in general good, but areas of high population density, agriculture and aquaculture show signs of environmental degradation. Water quality monitoring was recently supplemented by a bio-monitoring system providing more direct indicators on ecological health.

In each country, several study sites were evaluated and classified into groups (from excellent to poor) in order to determine trends and changes of environmental conditions. A significant change of ecological health over the period of 2004-2008 was found in many locations. Some locations indicated improvement whilst others a degradation.

This shows that environmental impacts, such as human disturbances and degradation of habitats and water quality are occurring in some parts of the Mekong River. Further investigations to identify the causes and effects on biological components are needed.

The Regional Forum on Climate Change

In February 2009 the MRC held a regional two-day forum with a broad range of stakeholders to discuss the possible impacts of climate change for the Mekong Basin and ways that Member Countries will need to adapt.

More than 200 participants recognised the urgent need to support Mekong River communities in understanding and responding to the foreseen consequences of climate change.

The climate change impact and adaptation assessments that were presented highlighted the context of rapid economic development in the basin as countries work to achieve the Millennium Development Goals. Climate change has the potential to impede this development and in some areas, may even reverse this trend.

Participants agreed that governments, provincial authorities, communities and the private sector need to work together better to improve the regional knowledge and data related to climate change and climate change impacts and to develop adaptation efforts at all levels. There is broad agreement across the region for the need for capacity building and awareness-raising on climate change impacts, vulnerability assessment and adaptation.

The Forum asked the MRC to further facilitate the regional sharing of climate change data and experiences, and this became the core of much of the MRC's work through 2009.

The Forum directly informed the development and formulation of the MRC's Climate Change Adaptation Initiative in consultation with Member Countries and Development Partners.



The Environment Programme

Climate change and its potential impact on the Basin

In 2009, the Mekong River Commission launched the regional Climate Change and Adaptation Initiative (CCAI) to assess the impact of climate change in the LMB and develop and implement adaptation planning in the Mekong River Basin. The CCAI is a collaborative regional initiative intended to address the climate change adaptation challenges of the Member Countries and help them achieve their goals of poverty eradication and improved food security.

The Lower Mekong Basin is recognised as being among the most vulnerable areas to climate change in the world and there is a growing concern about the possible negative impacts it may have upon the people, economies and natural resources in the basin. There is therefore an urgent need to gain a deeper understanding of these impacts.

The estimated impacts of climate change across the LMB include modifications to weather patterns in terms of their intensity and duration and in the frequency of extreme weather events. Trends show that temperature, rainfall and runoff will increase and seasonal water shortages, droughts and floods will become more common and more severe, affecting the natural ecosystems, agricultural productivity and food availability in the basin. In the Mekong Delta, a sea level rise of up to one metre is predicted by 2100. Such a rise is likely to cause tremendous social and economic problems within the Delta.

National responses to climate change include policy, institutional and adaptational responses. Each Member Country has a primary policy document that outlines its strategy, and responses to climate change and a large number of international organisations, including the MRC, are working on climate change issues.

People and Aquatic Ecosystems

The MRC works to understand how people use, benefit from and are affected by changes in the ecosystem. To this end, a pilot survey on people's dependence on aquatic ecosystems and a trial of a social impact monitoring system were completed in 2009. Taking a 15 km corridor either side of the Mekong in selected pilot areas, this study will help improve the way that social aspects, including the livelihoods of people, are incorporated into various impact assessments including the work of the BDP. The MRC developed an improved land-use and land-cover classification system in collaboration with the Food and Agriculture Organisation. This information will be used to produce an updated and improved Mekong Basin wetland map in 2010. A draft of the second State of the Basin Report was produced in collaboration with other MRC programmes. The report will be launched at the first Mekong River Commission Summit in April 2010.

Environmental Flows Management

Water resources developments affect the flow of the Mekong and its tributaries. In order to help decision-makers, the MRC analyses environmental flows that can help predict the possible consequences of development activities. In 2009, two booklets on Integrated Basin Flow Management were published.



Living with rivers that flood – the Flood Management and Mitigation Programme (FMMP)



For people living in the Mekong Basin, annual floods play a major role in agriculture and preserving the biodiversity that supports livelihoods. Many of the effects of the floods are highly beneficial, for example, they enrich aquatic habitats, replenish soil fertility and the flood pulse acts as an important signal for fish to breed and migrate. However, floods in the Mekong Basin can also be devastating, putting people at risk and causing millions of dollars worth of damage to property and crops as well as endangering food security. Flooding affects more people in the basin than any other natural disaster.

Climate change has the potential to increase the frequency and intensity of flooding in the basin, underpinning the strong need to plan, mitigate and more accurately forecast flood events. The dramatic mainstream floods of 2008 in Lao PDR and Thailand were seen by the MRC as a significant test of the organisation's ability to monitor river and weather conditions, forecast the likelihood of flooding and inform authorities. In September and October 2009, significant tributary flooding from Typhoon Ketsana was experienced (see box below), coinciding with testing of the yet-to-be implemented flash flood guidance system that will in the future, be better able to provide short-term risk assessments for this kind of flood event.

The 2009 flood season was notable for low rainfall and an early end to the rainy period, which corresponded with unusually low water levels across the basin. Yet even during this time, while the risk of mainstream flooding remained low, the tributary flooding caused by Ketsana (see box on page 29) still led to the deaths of at least 40 people in Cambodia, 26 in Lao PDR, and a significant proportion of the 163 people killed in Viet Nam by flooding that year, as well as causing over US\$900 million worth of damage.

The MRC's Flood Management and Mitigation Programme (FMMP) aims to prevent, minimise



The Flood Management and Mitigation Programme

Typhoon Ketsana

Typhoon Ketsana crossed into the southern provinces of Lao PDR from Viet Nam on 29 September 2009, weakening from a typhoon to a tropical depression as it made landfall, before moving into Cambodia. The typhoon caused devastation as it passed through the remote southern provinces of Attapeu, Sekong, Saravan, Savannakhet, and Champassack, which include some of the most vulnerable and poorest districts in Lao PDR. The storm then weakened and the water level fell in the following days. 26 lives were lost in Lao PDR, householders lost their belongings, and rice stocks and large areas of farmland were destroyed.

Upon request from the Ministry of Public Works and Transport, the MRC Navigation Programme provided its survey boats and personnel to assist the national authorities' relief efforts as local boats were not sufficiently powerful for the high river velocities. MRC employees and individuals contributed logistical support and money towards the government-led relief efforts. Initially the MRC boat was utilised in Sekong to search for survivors and transport stranded victims to Sekong city for food, shelter and medical care. The MRC Navigation Programme Team continued the distribution of food, water and medical supplies to the flood-affected communities and its boat was later used to distribute building materials.

The Flash Flood Guidance System

A 'flash flood' is a flood event characterised by rapidly rising and falling water and with little or no advance warning. Flash floods are usually the result of intense rainfall over a relatively small area and over a period of six hours or less.

The MRC has developed a Flash Flood Guidance System for the Mekong to disseminate information about possible floods on tributaries. The scheme will provide support and guidance to the National Forecast Centres, who will apply this system as the primary tool for the development of a flash flood watch and to deliver flash flood warnings. The system will provide processed satellite images and information to the National

Forecast Centres to indicate imminent threats of flash floods and produce hourly, 3-hourly and 6-hourly maps containing Flash Flood Guidance and Threats.

There are now over 30 hydro-meteorological stations established on tributaries. These verify the information from the MRC Flash Flood Guidance System and automatically feed real-time data about rainfall and water levels to the MRC for analysis and to the website every 15 minutes. The system will be fully tested in 2010.

Based on this and other information, the National Forecasting Centres have the ultimate responsibility for determining whether or not to issue warnings to the population.

and mitigate people's suffering and economic losses due to floods, whilst preserving their environmental benefits and livelihoods.

The Regional Flood Management and Mitigation Centre

The MRC Regional Flood Management and Mitigation Centre is responsible for implementing the core river basin management functions for the

basin and vital regional flood forecasting during the wet season. Lessons learnt from August 2008 were incorporated during the 2009 flood season.

The new Mekong Flood Forecasting System became operational in 2009. It provides more accurate forecasts from more locations within the basin and can provide longer lead times. It is more user-friendly, reliable and robust because it is less



The Flood Management and Mitigation Programme

Flood management study tours in 2009

In September 2009, 15 high-level decision-makers from the four Member Countries, as well as senior staff from the MRC Secretariat went on an Exchange Study to Europe. The visit was organised by UNESCO-IHE, Delft and aimed to train participants in methods used for trans-boundary cooperation in European river systems and modern methods for preventing and resolving differences and disputes.

The exchange study focused on The Meuse and Rhine River Basins and the different levels of cooperation needed between countries in the basins for dispute resolution. Specifically, the delegation learned about information sharing and joint modelling between the two basins, flood management measures and funding mechanisms. The trip included visits to key organisations and field visits to get a good understanding of various flood management measures taken there.

In October, a MRC-led delegation visited China to study flood control and management

approaches in the Yangtze River Basin, exchange views with the Changjiang River Water Resources Commission (CWRC), assess Chinese administrative and technical tools for enhancing cooperation between riparian states, and to identify ways that the FMMP can implement improvements to its own operations.

The delegation, which included riparian government and university representatives was particularly keen to learn about inter-jurisdictional coordination, and visited neighboring Hunan and Hubei Provinces to see how both provinces deal with river bank protection and flood risk mitigation in relation to ecological restoration.

A tour of CWRC headquarters took place, followed by a visit to the Hunan Provincial Department of Water Resources. Participants then visited the Dongting lake area, the Three Gorges Project and the Yangtze Flood Control Model. The delegation was impressed by the level of communication, coordination and cooperation for flood control and flood management in the entire Yangtze River basin and hopes to replicate some of the lessons learned.

dependent on and affected by missing data. It also provides a platform for the incorporation of new models.

Finishing touches were made to the MRC's Flash Flood Guidance System, which when fully tested in 2010, will produce and disseminate information about possible flash floods over the Internet to affected provinces and districts (see box on page 29).

Villagers participating in a pilot scheme in Cambodia, Lao PDR and Viet Nam were provided with cell phones in 2009 and trained to use them in conjunction with flood markers and flood information boards to report the likelihood of localised flooding to local forecasting agencies. The scheme is part of a regional trial to increase the level of involvement in the flood forecasting process for communities living on vulnerable flood plains,

as well as to boost the capacity of national flood forecasting agencies. The information gathered by villagers is entered into a computer and a flood forecast is fed back to villagers by their respective national flood forecasting agencies. The villagers then publicise the information on MRC provided billboards and advertise any imminent flood threat via loudspeakers.

Following the 7th Annual Mekong Flood Forum, Viet Nam organized a National Forum on Promoting Public and Private Partnerships in Flood Risk Reduction in the Mekong Delta on 1 December 2009. The National Forum achieved an action plan for strengthening cooperation between disaster risk reduction initiatives acquired by the Vietnamese Central Committee for Flood and Storm Control (CCFSC) and the Viet Nam Chamber of Commerce and Industry (VCCI).



The Flood Management and Mitigation Programme

Structural Measures and Flood Proofing

Implementation of the second stage of the Integrated Flood Risk Management project began in January 2009. The project involves applying a specific set of measures and guidelines to reduce flood risk damage at five demonstration sites. Flood hazard assessments for the five sites were completed and training began on 'best practice guidelines' for a flood risk assessment and for the preparation and evaluation of integrated flood risk management plans at national and regional level. This project offers the governments of MRC Member Countries a uniform approach to evaluating the effectiveness of potential investment in physical flood protection measures.

Enhancing Cooperation in Addressing Trans-boundary Flood Issues

The MRC works to strengthen the cooperation and capacity of the National Mekong Committee Secretariats and line agencies in addressing and resolving differences and disputes in trans-boundary flood issues. The first phase of a Capacity Building Programme Implementation Plan was finalised in December 2008 and began implementation in March 2009, finishing in November 2009. Further training will be conducted in 2010. Important Working Papers related to elaborating the mandate of the 1995 Mekong Agreement on addressing trans-boundary flood and related issues were developed, describing various options, considerations, possible steps and processes for resolving disputes.

During an Exchange Study Visit to China in October 2009 (see box on page 30), the MRC and the Yangtze Water Resources Commission expressed interest in expanding technical cooperation in the field of flood forecasting. The MRC installed automatic data collection and reporting systems for the two Chinese hydrological stations and is currently exploring the possibility of expanding cooperation on sharing data year-round for these two stations.

Land Management

In 2009 this component of the FMMP focused on the adaptation of technical software tools by the respective line agencies of all four riparian countries to help achieve better 'Flood Information Based Land Management.' Flood probability maps at a scale of 1:10,000 are expected to be finalised by the beginning of 2010 for the pilot districts involved. The FMMP also developed three user manuals and one report to support technical capacity building in this area. Training materials in data processing and using data in order to develop flood probability maps were also written and translated into the four riparian languages. A training-of-the-trainer workshop in GIS, data processing and data use was carried out in Cambodia during February and March 2009. This will be replicated in other Member Countries in 2010. A study tour to Cambodia was organised for line agency staff from Lao PDR, Thailand and Viet Nam.

Communication and Coordination

The MRC's online flood forecasting service was vastly improved in 2009 and now includes operational water level and rainfall data as well as real time operational data obtained from Member Countries. Graphs showing changes in water level at each forecast station were simplified for easier public understanding.

Following the floods of 2008 the MRC made information flow improvements between itself and Member Countries to facilitate faster response times on floods. An action plan was developed and completed before the 2009 flood season and all those recommendations have been implemented. A review mission to assess the effectiveness of the MRC's flood management programme was carried out in 2009 and its recommendations will be implemented throughout 2010. The review mission confirmed the relevance of the programme to aid sustainable development of the Mekong River Basin and raised a number of concerns to be addressed in formulation of the next phase of the FMMP.



The relationship between Mekong navigation, trade and commerce – the Navigation Programme (NAP)

Local communities use the Mekong River system for transport, linking villages for trade and social services and providing access to international commerce through a number of ports. In the Mekong Delta almost 70 percent of goods, such as rice, construction materials and consumables, are transported by water.

Despite a predicted short-term slump in demand due to the global economic recession, the Mekong River transport sector is expected to show sustained growth in coming years. After steady expansion since 2004, Phnom Penh port saw a slight decrease in cargo volume in 2008 and 2009 but is now recovering. Overall, Mekong container traffic increased significantly due to the opening of a new deep-water port at Cai Mep in Viet Nam. The new port has generated renewed focus on the Mekong River as a trade route.

The Mekong route between China and Thailand is also proving to be an important transport corridor for the region. As international demand for consumer-based products dropped temporarily in 2009, trade between Thailand and Yunnan province in China via the Lancang-Mekong River fell slightly. Despite this, port infrastructure has expanded to accommodate the expected increase in river traffic over the coming years.

Using inland waterways to transport goods has comparatively less environmental impact than

other types of cargo transport, such as by road. For example, by integrating river transport into cargo routes between Yunnan and Bangkok, it is estimated that annual savings in fuel consumption at current transport volumes would be about 4.5 million litres, compared to road only trade routes. This corresponds to a reduction of 12,400 tons of CO₂ emissions, as well as a decrease in vehicles on the roads, less pollution and fewer traffic accidents. Growth in river traffic is expected to continue with the provision of new legal frameworks for trade and improved navigation infrastructure. Nonetheless, in many parts, the Mekong River has not yet been exploited for its potential to boost trade relations and income for countries in the basin. A regional development approach is needed to contribute to poverty reduction and sustainable development of the Mekong Region.

Transport Planning for Navigation

The MRC work to improve river traffic safety involves a series of projects to survey and mark the river's natural navigation channels. In 2009, the MRC conducted a number of surveys on selected stretches of the river to update the Hydrographic Atlas of the Mekong and provide information necessary to identify safe navigation channels. In 2009, a number of condition surveys were undertaken in the Lower Mekong for improving navigation in Viet Nam and Cambodia. These included topo-hydrographic surveys, navigation channel designs, design of aids to navigation



The Navigation Programme

Signing of the Agreement on Waterway Transportation between Cambodia and Viet Nam

In December 2009 Cambodia and Viet Nam signed an agreement that will allow freedom of navigation on Mekong waterways between the two countries and increase access to the river system for foreign vessels.

The Agreement on Waterway Transportation binds both countries to reducing the official restrictions that have existed for cross-border navigation.

The move will free-up regional and international trade, help avoid delays and make river-based customs and immigration procedures more efficient and straight-forward. The agreement also introduces a range of other measures that should

improve efficiency and safety for vessels using the more than 65 Cambodian and Vietnamese registered internal ports.

The agreement will also put in place a range of measures for ensuring river traffic safety and regulating the transportation of dangerous goods by river. By standardising rules and regulations, there will be a considerable improvement to the safety of the shipping of oil and hazardous liquid cargoes, port services and safe navigation.

The new regulations cover the Mekong River, the Tonle Sap, Bassac and Vam Nao rivers, as well as a number of canals in Viet Nam and apply to all kinds of vessels, including sea-going ships under foreign flag.

The MRC facilitated the agreement by assisting a legal task force in both countries.





The Navigation Programme

systems and electronic navigation charts.

The MRC is preparing a set of recommended specifications for ship locks on proposed Mekong mainstream dams. A review of international ship lock dimensions and their relevance to the proposed hydropower developments on the Mekong was completed in early 2009 and used to formulate preliminary design guidance for Mekong mainstream dams in the lower basin.

The next step will result in the formulation of standard specifications for design, construction and operation of navigation locks. The MRC Navigation Programme will undertake a Navigation Optimisation Study in association with the proposed hydropower dams in 2010.

Aids to navigation systems

An operational 'aids to navigation' system was installed in 2009 on prioritised stretches and dangerous 'hot spots' between Luang Prabang and Vientiane, and local maintenance staff were trained in relevant procedures. In 2010, the MRC Navigation Programme will continue to improve waterway safety by installing aids to navigation on selected stretches along the Mekong in the Mekong Delta in Viet Nam and on the Tonle Sap River in Cambodia.

Legal Frameworks for Cross-Border Navigation

The MRC aims to improve the legal framework for encouraging freedom of navigation in the Mekong River system, thereby implementing Article 9 of the 1995 Mekong Agreement.

After several years of negotiations and with MRC support, Cambodia and Viet Nam signed a treaty in 2009 to ease cross-border waterway transportation (see box on page 33). The MRC will assist Cambodia and Viet Nam by establishing a Bilateral Mekong Navigation Facilitation Committee (BMNC) to ensure successful implementation of this agreement, including making efforts to harmonise safety standards and national rules and regulations.

In 2010 the MRC will assist Lao PDR and Thailand to establish a legal framework for cross-border navigation between the two countries for the stretch of river downstream of Luang Prabang.

Prevention of Pollution Risks

The MRC works to establish and help Member Countries enforce common rules and regulations on environmental protection and safety measures.

In 2009, an initial risk assessment and consultation with relevant line agencies, port authorities, oil and gas companies and transport operators was established in the four MRC Member Countries. It focussed on the transport activities that have a higher risk of causing pollution, environmental facilities available, the level of mitigation measures available for pollution prevention, and contingency plans for responding to oil spills. This will be expanded in 2010 to include a Risk Analysis of all navigation activities and planning. The analysis will determine the risk of oil spills and navigation hazards in ports and waterways in the Mekong River System.

Regional Cooperation

The MRC is maintaining its strong relations with Chinese authorities to promote and coordinate the development of the navigation sector. A strong commitment for further cooperation was stated in 2009 with the People's Republic of China reaffirming publically on several occasions that one of its priorities for cooperation will be improving navigation safety on the Lancang-Mekong River.



Mekong Water Management for Food Production – the Agriculture, Irrigation and Forestry Programme (AIFP)

Today, 70 percent of the Mekong Basin's population rely on agriculture for their livelihoods and increasing populations in the region are putting pressure on food security. Agriculture is vital to raising standards of living, improving livelihoods and mitigating poverty in the basin. It is currently the most dominant water-related sector, both for subsistence agriculture and export, particularly in Thailand and Viet Nam where it generates billions of dollars of annual revenue. In Cambodia and Lao PDR, agricultural production accounts for 30 percent and 42 percent of gross domestic product respectively.

Expansion of the present level of agriculture is limited by the availability of water in the dry season, with only about two percent of the average annual flow going to this sector. The efficiency of water use in irrigated agriculture in the Mekong Basin remains low compared to other regions. Proposed dam development, especially reservoir dams upstream, could give a boost to the agricultural sector by redistributing some river flows from the wet to the dry season. The recent food crisis, as well as concerns about the future impact of climate change on food production has re-focused attention to food security in the region.

The MRC seeks to promote the sustainable development and use of land and water resources in order to benefit the basin community and contribute to poverty alleviation and food security.

Watershed Management Project

The Watershed Management Project, implemented by GTZ, aims to put individuals and communities in charge of protecting watersheds to ensure clean water. Sometimes, this may involve changing agricultural techniques or sanitation habits which contaminate nearby water sources. The programme works closely with districts and communes to find solutions to these issues.

The programme began its third and final phase in 2008 and this continued throughout 2009. After supporting capacity development in integrated watershed management skills, the programme has been implementing the concept of watershed management in pilot watersheds. The approach will demonstrate how local people can replicate the concept in other watersheds. The programme is also working closely with relevant institutions to ensure the sustainability of the project long after it is completed.

In July, the MRC signed a € 5.1 million agreement with the German Development Bank Kreditanstalt für Wiederaufbau, (KfW) to support the regional component of a project focussing on rural development, agricultural support, irrigation and investment in livestock and forestry in the Lower Mekong Basin, as well as up-scaling the sustainable management of the Nam Ton watershed, one of the pilot areas.



The Agriculture, Irrigation and Forestry Programme

The new scheme will implement priority sub-projects identified in an action plan for the Nam Ton area. Farmers will receive training and advice on how to improve irrigation systems, manage their land, manage aquatic resources, engage in agro-forestry and develop small-scale environmentally friendly businesses in their own villages. Farmers will also learn how to resolve issues associated with competition over scarce resources.

Sustainable and Efficient Water-Use in Irrigated Agriculture

Formulated in April 2009, this project focuses on the efficiency of water use in irrigated agriculture to promote better management in times of drought. Information on irrigation policies and development has been collected in the four Member Countries. The project started conducting field surveys to evaluate the management of irrigation systems in selected pilot sites.

In 2010, the field surveys will be used to help develop improvement plans for each site.

Formulation of the new Agriculture Programme

In 2009, the MRC held national and regional consultations with the Member Countries to help identify the future role of the organisation in the agriculture sector. A Strategy Paper based on these consultations was published in September and will be used to define the future Agriculture and Irrigation Programme for the period 2011-2015.





Improving and Protecting the Livelihoods Derived from Mekong Fish – the Fisheries Programme (FP)

The Lower Mekong Basin is home to the world's largest single inland fishery. About two million tonnes of fish per year are caught in the basin (close to two percent of the total world catch) with a first-sale value of at least US\$2 billion. This vast fisheries resource is immensely important for the livelihoods of people of the Lower Mekong Basin. Fish products are the primary source of animal protein, calcium and Vitamin A for many people in the basin, especially those living in poverty.

Mekong aquaculture supplements the wild catch but is a relatively minor contributor to total basin consumption. In the Delta, a major and expanding aquaculture industry based on manufactured feeds primarily supplies fish and shrimp for export. Joint management efforts by user communities and government agencies are required to protect and enhance fisheries to ensure their availability for future generations. The MRC's objective is to coordinate the sustainable development, utilisation, management and conservation of fisheries of the Mekong.

One of the most important outcomes of the Fisheries Programme in 2009 has been the continued incorporation of fisheries considerations into planning for dam development in the Mekong. This has involved working with the Basin Development Plan team on socio-economic assessments of development scenarios and with the Strategic Environmental Assessment team to

highlight fisheries related concerns. Some of the results of modelling impacts of dams as barriers to fish migration have been presented in various forums, and further publications on the issues of fisheries-dams mitigation are being prepared.

The MRC continues to place considerable emphasis on communicating information on all aspects of the Mekong's fish and fisheries and publishes its work in both English and riparian languages. In 2009, publications included:

- several draft reports currently being finalised for publication, including reports for the MRC Technical Paper Series, a draft report on dam impact assessment - forecasting and mitigation in the Lower Mekong Basin, and a report on modelling the barrier effect of proposed mainstream dams on migratory fish resources;
- a photographic book entitled "The Living Mekong" produced in conjunction with the WWF, and;
- three issues of Catch and Culture, the Fisheries Programme's newsletter, produced in English, as well as omnibus editions in all the riparian languages.

Fisheries Ecology, Valuation and Mitigation
The MRC supports the delivery of information



The Fisheries Programme

Fish Migration and Hydropower Dams

While hydropower dams have a number of potentially positive impacts for the Mekong Basin, the proposal put forward by a number of Member Countries to build hydropower schemes on the middle and lower reaches of the mainstream Mekong carries with it a range of social and environmental concerns. The most damaging of which is that dams can act as a potential barrier to fish migrating along rivers, and that this is expected to reduce the fish catch.

Mekong fish migrate mainly for breeding and feeding. Typically, migrating fish move upstream to breed; eggs, larvae or fry are then carried downstream to the floodplains, where the immature fish feed and grow. Fish also migrate to feed, moving from the mainstream onto highly productive floodplains at the beginning of the rainy season.

As dams act as a barrier the concern is that the proposed mainstream dams will reduce the ability of long-distance migrant fish to travel.

Under natural conditions, some of these commercially important species would migrate as far north as China. An example of a species that would be affected by mainstream dams is the endangered giant catfish. Dams could have an impact on critical habitats such as spawning areas, and divide the existing wild population into separate groups above and below each dam. A series of dams would further isolate populations and reduce the ability of fish to migrate.

Fish ladders or other types of fish passage are sometimes proposed as a solution to allow migrating fish to pass dam walls. There is however no evidence yet that these conventional fish-passage methods, developed in countries with lower levels of fish migration and biodiversity, would work well on the Mekong.

The MRC is presently researching the long-term impact of the 'barrier effect' that hydropower schemes may have on fish migration, as well as exploring possible mitigation methods for dam designs.

to the fisheries sector for management, planning and the promotion of mitigations measures. In 2009, work was completed to increase access to information on the ecology of fisheries. Models were developed for basin planning purposes and these were made available to basin planners and development agencies. A number of studies were continued to monitor the trends in selected fisheries and evaluate the abundance of fish in deep pools in the Lower Mekong Basin. A number of activities, such as the Regional Fish Abundance and Diversity Programme and the monitoring of Lee traps and Gill nets in Southern Laos, were still ongoing throughout 2009.

Fisheries Management and Governance

The MRC continued to provide technical and financial support to the organisation of 'Fish Release Days,' which have become major awareness-raising events in Cambodia, Lao PDR and Thailand. In Lao PDR, the MRC was involved in assisting the

National Assembly to pass a new fisheries law in 2009.

Following the efforts of the Technical Advisory Body for Fisheries Management, a project for shared fisheries management activities was implemented on the Cambodian-Viet Nam border in 2009.

Aquaculture of Indigenous Mekong Fish Species
Developing techniques for improved aquaculture of indigenous Mekong species is expected to play an increasingly important role in mitigating impacts on Mekong fisheries and food security in the basin. In 2009, a series of meetings and workshops to improve fish breeding expertise across the region took place. Training that discusses techniques to improve fish aquaculture - such as mobile hatcheries to address the problems caused by unusual variations of water levels caused by upstream dam operations - has become an important focus of aquaculture operations at the MRC.



The Big Mekong Picture – the Information and Knowledge Management Programme (IKMP)

In order to make sound environmental, social and economic decisions about the basin, Mekong governments need data, information and knowledge that is timely, accurate and comprehensive. As a knowledge-based organisation, the MRC is responsible for promoting regional knowledge and ensuring its integration into the planning and development process of the basin's water resources.

The MRC provides data services to support the activities of both its own programmes and those of Member Countries. One of the core services of the organisation is the provision of quality assured datasets such as hydro-meteorological data, geospatial datasets and modelling services. As well as providing this information and analysis, the MRC also works with riparian agencies and governments to develop the capacity of national staff.

Hydro-Meteorological Data

The MRC has implemented a real-time monitoring system gathering hydro-meteorological data from a range of locations in the basin (such as weather conditions, rainfall and water levels on the river), which is then used to help better understand the physical condition of the mainstream and major tributaries. This requires the efficient technical coordination of a wide range of data types and cooperation with a variety of institutions across the basin.

In 2009, the historical datasets that show changes to the river and weather patterns over time were quality assured. These will be stored in a master catalogue for future use and comparison against current data. The MRC is now using the Appropriate Hydrological Network Improvement Project (AHNIP) network and a newer automated system called Hydrological Cycle Observation System (HYCOS) network to provide real-time information related to flood and river monitoring. Much of this information is available online, as well as being analysed and released in bi-annual hydrological condition reports.

A strategy for upgrading and integrating the monitoring of the MRC hydro-meteorological systems was developed in 2009. Regional and national database managers are implementing this strategy at their respective levels to verify existing datasets.

A new sediment monitoring project was approved and implementation started with the recruitment of a project manager in 2009. The MRC is currently exploring options for additional funding to support the project in coming years.

Geographic Information Systems (GIS) and Databases

The MRC maintains a geographical information system that integrates geospatial data and supports



The Information and Knowledge Management Programme

the work of a number of internal and external clients.

The new 'Master Catalogue' based on GeoNetwork has been established and data quality assurance was completed for 15,000 datasets in the system in 2009. Of the 90,000 registered datasets in the MRC system, about 15 percent have now been quality assured and metadata created. The Master Catalogue is currently being tested internally and will be launched for external use upon the approval by the Technical Assistance Coordination Team and the upgrade of the MRCS Internet Portal, which will make much of this scientific data freely and more readily available to the public.

In July 2009, the MRC and FAO had further discussions regarding a proposal to upgrade land cover and wetland datasets covering the LMB in order to produce updated maps.

Modelling

Computer modelling is used to simulate many natural systems in the river and to observe how balances within these systems change due to either human activity or climate change (for instance: water flow, erosion, or sedimentation). Different scenarios are modelled to see how the river may react. Modelling is a valuable tool that the MRC has for assessing the potential impacts of proposed hydropower schemes on the river, heavy rainfall, drought and climate change.

In 2009, the work of the modelling team mainly focussed on supporting Basin Development Planning to model future development scenarios. In March 2009, a workshop was held to present the results of much of this modelling. A significant result was achieved with the modelling team completing a total of twelve possible scenarios (making computer models of various development options) in 2009.





Balancing the Opportunities and Risks of Hydropower – the Initiative on Sustainable Hydropower (ISH)

The Lower Mekong Basin has considerable hydroelectric potential, but only a small proportion of this has been developed and approximately 20 percent of people in the basin still do not have household electricity supply. Electricity demand in the basin is projected to grow significantly over coming years as populations expand and economies grow.

MRC Member Countries such as Cambodia and Lao PDR see many benefits from the revenue that could flow from cross-border power trade involving hydropower projects. Hydropower has the potential to stimulate regional economies, support modernisation and diversification and contribute to the alleviation of poverty. Hydropower is a renewable energy source and produces relatively low amounts of carbon compared to other means of generation.

However, despite the potential long-term benefits of hydropower schemes, damming rivers in the basin brings with it concerns regarding impacts on the environment, fisheries and the livelihoods of people. The need to develop coordinated and integrated impact assessments, consistent and fair mitigation measures, and sustainable hydropower development strategies and policies is becoming increasingly apparent to the governments, communities and other stakeholders of the Lower Mekong Basin.

The MRC's role is to assess the risks and opportunities of hydropower development in the Mekong. It does this by providing independent and impartial advice regarding the benefits and adverse effects of hydropower projects - both existing and proposed - and facilitates coordination amongst the riparian nations on hydropower sustainability assessment and strategic development. Similarly, it encourages dialogue and communication between governments, the private sector stakeholders, civil society and local communities to include sustainability considerations in the hydropower decision-making processes.

The MRC began formulating this revised approach to appraising and analysing sustainable hydropower in the latter half of 2008. A multi-year work plan was endorsed in principle by the Joint Committee in March 2009 and finalised in July 2009.

The strategic and technical bodies to help implement the initiative were established in 2009, including a riparian Technical Review Group and an advisory committee.

One of the key challenges of the MRC is to clearly communicate the opportunities and risks of sustainable hydropower to stakeholders, as well as providing a voice for people to share concerns and opinions on hydropower. To this end, in 2009 the MRC website was upgraded to include an expanded hydropower section.



The Initiative on Sustainable Hydropower

Hydropower in 2009

Despite concerns that the global economic downturn might reduce electricity demand, 2009 saw interest in hydropower development in the Mekong Basin remaining strong. The governments of Cambodia, Lao PDR and Thailand are now actively considering building dams on the mainstream Mekong, as well as in tributaries. Private sector interest in tributary

developments in Viet Nam also remains high. In all, at least 12 dams or schemes are planned for the mainstream in the LMB. Meanwhile, 2009 saw impoundment of water begin on the Xiaowan Dam on the Lancang/Mekong in Yunnan province. This brings the total number of operational dams on the Lancang/Mekong in the upper part of the basin to four. The MRC has been working with China agencies to assess the extent of flow changes expected downstream.

Strategic Environmental Assessment (SEA)

Priorities for the MRC are to assess the regional distribution of the development risks and opportunities of the 12 proposed mainstream dams currently under consideration by riparian governments. Additionally, obtaining a better understanding of the full range of social, environmental and cross-sector development impacts that these projects may have within the Lower Mekong Basin must be prioritised. A final priority is to advise governments of these impacts in the context of the individual projects being advanced for consideration. To support these priorities, in 2009, the MRC launched a 14-month long Strategic Environmental Assessment process

for the proposed mainstream Mekong dams under consideration.

There are many opportunities for various stakeholders to engage with and provide inputs to the SEA through national and regional workshops and other forum. To date, the SEA has engaged with NGOs, civil society and community representatives, the government line-agencies and private sector developers and works closely with the Basin Development Plan's stakeholder consultation process. Scoping meetings were held in each member Country in 2009 and the work of the baseline assessment was undertaken prior to the regional workshop in Phnom Penh planned for 2010. China is cooperating with the MRC to better understand the role that upper basin projects will have on downstream countries.

Regional Planning Support

The Strategic Environmental Assessment for mainstream dams was initiated in 2009 (see box above). This brings together a range of expert opinions and serves as a valuable tool to Member Countries when deciding whether or not to go ahead with hydropower schemes on the mainstream river.

The completion of this assessment in 2010 should put the MRC in a better position to implement the Procedures for Notification, Prior Consultation and Agreement (PNPCA). It comprises a set of rules for Member Countries to follow outlining how to notify each other should they wish to engage in any major infrastructure developments on the Mekong or its tributaries, as outlined in the 1995 Mekong Agreement. In May 2009, these procedures as they relate to hydropower were discussed at a meeting held in Phnom

Penh that brought together hydropower developers, government line agencies and other stakeholders.

Hydropower Sustainability Improvement

The MRC has been collaborating with several key partners in order to trial sustainability assessment tools for hydropower. It is envisaged that when developed, these tools could be used by individual Member Countries to systematically measure the needs, opportunities, threats and progress of proposed schemes. To further support the process and provide guidance to the member Countries and developers, MRC formulated a set of preliminary design guidelines for mainstream hydropower projects, which was received by the Technical Review Group and endorsed by the Joint Committee in July 2009.



Building the Skill Base to Manage the Mekong – the Integrated Capacity Building Programme (ICBP)

One of the ways that the MRC seeks to improve long-term sustainability in water resources management is to boost the pool of skilled professionals in the region. To this end, it works to increase the skill level of its own riparian staff and develop the skills required for the organisation to achieve its mandate as set out in the 1995 Mekong Agreement. The long-term goal is that of ‘riparianisation’ of the organisation by 2012 in order to ensure that it is fully run by people from the Mekong Basin.

The Integrated Capacity Building Programme was firmly established in 2009 with agreements signed with Development Partners to support the programme until 2013 including extension of the Junior Riparian Professional Project (JRPP). The goal of the four-year programme is to bring about a significant increase in the effectiveness of the MRC, National Mekong Committee Secretariats and national agencies in Member Countries by addressing priority capacity building needs, in particular relating to the MRC’s core river basin management functions.

Integrated Water Resources Management Competencies

Training of people who will in-turn train stakeholders in their own countries in the topic of Integrated Water Resources Management was organised for 25 participants throughout 2009 in collaboration with the BDP programme. The focus

of the training was the sub-area planning process of the BDP, as well as other capacity building needs in water resources management. In 2009, IWRM capacity building efforts, implemented in partnership with the Gender and Water Alliance (GWA), included the successful completion of the Gender Mainstreaming Project, Phase II supported by NZAID, and four Training of Trainers (ToT) sessions to support gender mainstreaming in IWRM with the four NMCs. Training materials have been compiled into an operational training manual. In 2010, training will focus on national-level planning and training manuals will be translated into riparian languages..

The Junior Riparian Professional project provides hands-on experience and training to young riparian professionals in the core areas of IWRM. The project started in 2008 and was incorporated into the ICBP programme in 2009. The project aims to have provided training for 40 riparian professionals by 2011. During 2009, eight Junior Riparian Professionals (JRPs) completed their on-the-job assignment with the MRC programmes before returning to full-time positions in their own countries where many have since been promoted. The second batch of eight young professionals completed the eight weeks of training and started their assignments at the MRC whilst an additional eight young professionals commenced English language training.



The Integrated Capacity Building Programme

A mid-term review of the project provided positive feedback and recommended that the project continue.

Organisational Development Competencies

In order to support the long-term improvement of organisational capacity within the MRC, during 2009, training efforts focused on ‘Cross Cultural Communication’, ‘Leadership and Management’ and ‘Emotional Intelligence’ for professional staff of the MRC and Member Country Agencies. To address the capacity needs of the MRC Secretariat to enhance media and communication skills, a series of Science Communication workshops for programme staff were designed and implemented in collaboration with Imperial College

London. The objective was to provide expertise, practical skills and practice for riparian staff in a variety of forms of communication, including publications, reports in print media, and in presentations and poster displays given at symposia, conferences, and other meetings.

Capacity Building Integration and Sustainability

The design of a new programme document was completed in May 2009 and a Programme Implementation Plan (PIP) was completed in September. National implementation work plans have been prepared for each of the Member Countries and procedures have been put in place for their implementation.



Dialogue Partners and Development Partners – Report on Achievements in 2009



The MRC is cooperating with upstream Dialogue Partners China and Myanmar, as well as a range of Development Partners who provide financial support and help define the MRC strategy. They inform the decision-making processes of the MRC and are key associates for the efficient and sustainable running of the organisation.

Engagement with Dialogue Partners

The Fourteenth Dialogue Meeting was held in July 2009 in Vientiane, Lao PDR. The meeting was an important vehicle for the MRC to enhance regional cooperation with its dialogue partners, the People's Republic of China and the Union of Myanmar. Substantive presentations were made by the large delegation from China on various aspects of upstream dam development. Discussions focussed on the current areas of cooperation, especially in navigation and hydrological information exchange. Other areas of potential cooperation were explored, and included the Strategic Environmental Assessment, the MRC Climate Change and Adaptation Initiative and participation in the MRC Summit. In a side meeting, China offered to share historic hydrological data prior to 2002, when the data sharing agreement with the MRC was signed.

Engagement with Development Partners

The annual MRC Informal Donor Meeting was held on 18-19 June 2009 in Vientiane, Lao PDR. The agenda covered discussions on the MRC Strategy, current developments in the basin, and other matters related to the functioning of the organisation. The Joint Contact Group of Development Partners and Member Countries established to monitor the implementation of recommendations of the Independent Organisational Review concluded that it had substantially completed its task and handed over monitoring of the remaining actions to regular meetings of the Joint Committee with Development Partners.

The MRC was entering the last year of the current strategic planning period by the end of 2009. The mid-term review will be used to help the next Strategic Plan for 2011-2015. Many Development Partners have expressed hope that the forthcoming Strategic Plan will move forward with improved donor harmonisation and a strengthened outcome-oriented monitoring and evaluation system.

The Joint Donor Contact Group and Council Meeting in November 2009 reported on the final decision regarding the permanent co-hosting arrangement of the Secretariat (see page 17).



Dialogue Partners and Development Partners – Report on Achievements in 2009

It also discussed the IWRM-based Basin Development Strategy and linkages between Basin Development Planning and the Strategic Environmental Assessment of hydropower dams proposed on the mainstream Mekong. Progress was also made in reaching agreements regarding possible alignment opportunities for Development Partners' Support.

The Development Partners acknowledged the importance of the MRC for the sustainable use and further development of the Mekong Basin. They stressed that plans to develop hydropower dams and diversions in the Mekong fall under the sovereign rights of Member Countries and the MRC is the organisation that is best-placed to fully understand the socio-economic and environmental impacts of such developments.



Finance and Administration: Expenditure and Development Partner Funding agreements in 2009

The MRC has conducted prudent financial management and is pursuing efforts to apply stringent budgeting rules and this continued throughout 2009. The Income and Expenditure Summary is provided on page 48. In 2009, accounts were audited with no major issues identified. As expected, contributions from the riparian Governments have increased in accordance with the decision of the MRC Council in October 2000.

The MRC is entering the final phase of its “riparianisation” process. The number of riparian staff rose slightly while the number of international staff almost halved over the year. In 2009, the lead staff all MRC programmes were riparian nationals and plans for the transition to riparian Chief Technical Advisors by 2012 were prepared. The position of Chiefs of the Finance and Accounting and Human Resources Sections were filled by riparians and the recruitment of a riparian Chief for the International Cooperation and Communication Section was at an advanced stage.

In 2010, the operating expenses budget is expected to increase due to the ending of Development Partners support to management positions, some additional costs incurred by the co-hosting of the MRC and a rise in staff due to an increased workload.

Human resources

The Human Resources Section works to ensure the development of skills, competencies and organisational culture necessary to support the



implementation of the MRC Strategic Plan. Concerns raised in the Independent Organisational Review over the ability for the MRC to attract and retain high quality professional staff are being addressed through a HR consultancy, which will assess the competitiveness of the organisation against other employers and related conditions of employment.

MRC Workforce:

There were 157 staff members working for the Secretariat as of 31 December 2009. The figures below provide an overview of the staffing situation per category.

	Staff Category	Number	Percentage
1	International Staff	9	5.7%
2	Riparian Professional Staff	55	35.0%
3	General Support Staff	74	47.1%
4	Seconded International Expert	1	0.6%
5	Junior Riparian Professional	15	9.6%
6	Associate Modeller	3	1.9%
	Total	157	100%

Income and Expenditure in 2009

	2009 USD	2008 USD
Income		
Development Partners	21,538,387	15,664,854
Riparian governments	1,444,608	956,042
	22,982,995	16,620,896
Revenue		
Interest	25,051	36,014
Miscellaneous	2,717	5,352
	27,768	41,366
Total Income	23,010,763	16,662,262
Expenditure		
Project expenditure		
Personnel services	10,976,156	9,124,960
Sub-contracts	3,613,310	1,454,338
Training	2,803,674	1,771,523
Equipment	1,357,991	706,918
Miscellaneous expenses	540,749	660,555
Water Utilisation Programme ("WUP")	0	525,457
Total project expenditure	19,291,880	14,243,751
Administrative expenditure		
Staff salary and fees	964,604	834,758
Common staff costs	551,747	546,945
Travel	25,557	23,226
Contractual services	99,405	96,772
General operating expenses	199,482	181,253
Supplies	31,794	26,732
Furniture and equipment	79,297	90,115
MRC meeting expenses	293,503	201,775
Support to National Mekong Committees	61,733	50,470
WUP management support	0	-2,521
Repayment of relocation project loan	60,000	100,000
	2,367,122	2,149,525
Total Expenditure	21,659,002	16,393,276
Foreign exchange gain/(loss)	90,315	-45,075
Movement in Fund Balances	1,442,076	223,910
Fund Balance as at 1 January	16,069,643	15,845,733
Fund Balance as at 31 December	17,511,719	16,069,643

Resources and Funding agreed in 2009

Development Partner	Agreement/support	Amount (USD equivalent)
Australia	Agreement between the Government of Australia and the MRC on the Australian support to the Mekong Integrated Water Resources Management Project	5,494,500
	Agreement between the Government of Australia and the MRC on the Australian support to the MRC Integrated Capacity Building Programme	4,709,600
	Agreement between the Government of Australia and the MRC on the Australian support to the Climate Change and Adaptation Initiative	2,538,000
Belgium	Agreement between the Government of Belgium and the MRC on Belgium support to the MRC Navigation Programme and the MRC Initiative for Sustainable Hydropower	8,392,000
France	Agreement between the Agence Française de Développement and the MRC for support to MRC Environment Programme	600,000
Germany	GTZ contribution to Seventh Annual Mekong Flood Forum in 2009	10,000
	Agreement between the Federal Republic of Germany and the MRC for Implementation of a Development Project in the Lower Mekong Basin of the Lao PDR	7,131,000
	GTZ Support to the MRC for establishing a result-based monitoring and evaluation system	80,000
	Agreement between the MRC and the Government of the Federal Republic of Germany on Sustainable Watershed Management in the LMB, Phase III	4,213,500
New Zealand	Agreement between the New Zealand Agency for International Development (NZAID) and the Mekong River Commission on the NZAID support to the MRC Integrated Capacity Building Programme	667,000
USA	Agreement between UCAR and MRC on support to Asia Flood Guidance System under FMMP	74,900
	Total	33,910,500

List of Publications in 2009

Note: These are available at www.mrcmekong.org/free_download/research.htm

Fisheries

- Modelling the cumulative barrier and passage effects of mainstream hydropower dams on migratory fish populations in the Lower Mekong Basin, MRC Technical Paper No. 25, December 2009

Climate Change

- Adaptation to climate change in the countries of the Lower Mekong Basin: Regional Synthesis Report, MRC Technical Paper No. 24, September 2009
- Adaptation to climate change in the countries of the Lower Mekong Basin, MRC Management Information, Booklet Series No.1, September 2009

Environmental Health

- Report on the 2007 bio-monitoring survey of the lower Mekong River and selected tributaries, MRC Technical Paper No. 23, July 2009
- Report on the 2006 bio-monitoring survey of the lower Mekong River and selected tributaries, MRC Technical Paper No. 22, July 2009

Hydrology

- The Flow of the Mekong, MRC Management Information booklet series No. 2, November 2009
- The Modelling the flow of the Mekong, MRC Management Information booklet series No. 3, November 2009

MRC Report Card

- The Mekong River Report Card on Aquatic Ecological Health 2008, November 2009



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