



River Commission
Cambodia • Lao PDR • Thailand • Viet Nam

Mekong

Annual Report 2010

A dramatic sunset over a river. The sun is low on the horizon, partially obscured by a thick layer of clouds, creating a bright, golden glow. The sky is filled with textured, dark clouds. In the foreground, the water reflects the sun and clouds. Silhouetted figures are visible in a boat on the right side of the frame, and a tall, thin structure is visible in the distance. The overall mood is serene and atmospheric.

The Mekong River Commission

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Vision A world class, financially secure, international river basin organisation serving the Mekong countries to achieve the Basin Vision.

Mission To promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well-being.

Contents



List of Acronyms	i
The Lancang–Mekong Basin	ii
Mekong River Commission Governance Structure	iii
Mekong River Commission Secretariat Operational Structure	v
Message from the Chairperson of the MRC Council	1
The Hua Hin Summit and Declaration	4
Low rainfall, not dams, the cause of low river levels	6
Integrated Mekong development – the Basin Development Plan (BDP)	8
The Environment Programme (EP)	14
Climate Change Adaptation Initiative (CCAI)	19
The Flood Management and Mitigation Programme (FMMP)	22
Mekong Integrated Water Resources Management Project (M-IWRMP)	26
Trade and commerce – the Navigation Programme (NAP)	28
The Agriculture and Irrigation Programme (AIP)	31
Watershed Management Programme (WSMP)	35
Drought Management Project (DMP)	38
The Fisheries Programme	41
The Information and Knowledge Management Programme (IKMP)	45
The Initiative on Sustainable Hydropower (ISH)	48
The Integrated Capacity Building Programme (ICBP)	53
MRC Strategic Plan 2011–2015	56
Dialogue Partners and Development Partners	58
MRC opens second office in Cambodia	60
Procedures for Notification, Prior Consultation and Agreement (PNPCA)	61
Finance and Human Resources	62
List of publications in 2010	64



List of Acronyms

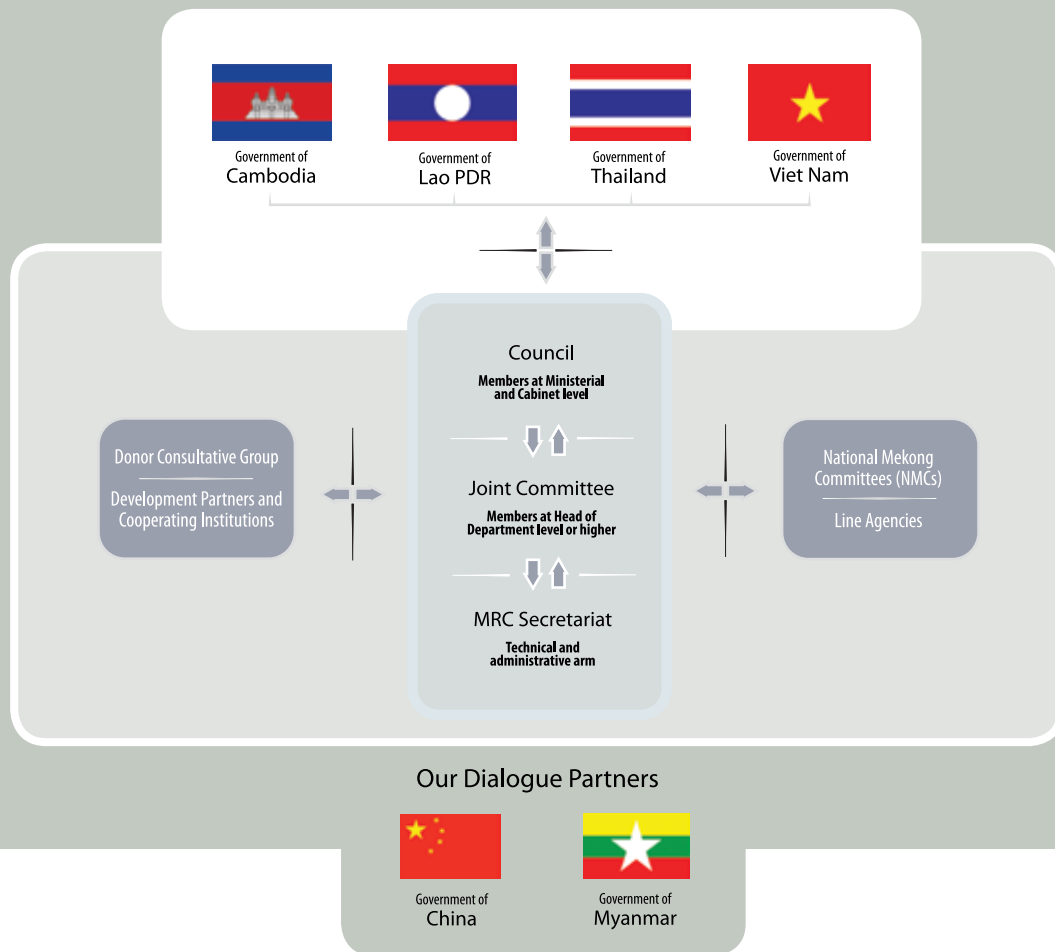


AIP	Agriculture and Irrigation Programme	MRC	Mekong River Commission
BDP	Basin Development Plan Programme	MRC-IS	Mekong River Commission's Information System
CCAI	Climate Change Adaptation Initiative	MRCS	Mekong River Commission Secretariat
CEO	Chief Executive Officer	NAP	Navigation Programme
CF	Core Function	NMC	National Mekong Committee
DMP	Drought Management Programme	NMCS	National Mekong Committee Secretariat
EIA	Environmental Impact Assessment	OEB	Operating Expenses Budget
END	Environment Division	OSP	Office of the MRC Secretariat in Phnom Penh, Cambodia
EP	Environment Programme	OSV	Office of the MRC Secretariat in Vientiane, Lao PDR
FAS	Finance and Administration Section	PDIES	Procedures for Data and Information Exchange and Sharing
FMMP	Flood Management and Mitigation Programme	PMFM	Procedures for the Maintenance of Flows on the Mainstream
FP	Fisheries Programme	PMS	Performance Management System
GMS	Greater Mekong Sub-region	PNPCA	Procedures for Notification, Prior Consultation and Agreement
HDI	Human Development Index	PWQ	Procedures for Water Quality
HRS	Human Resources Section	PWUM	Procedures for Water Use Monitoring
IAI	Initiative for ASEAN Integration	RBC	River Basin Committee
ICBP	Integrated Capacity Building Programme	RBM	River Basin Management
ICCS	International Cooperation and Communication Section	RBO	River Basin Organisation
IKMP	Information and Knowledge Management Programme	SEA	Strategic Environmental Assessment
ISH	Initiative on Sustainable Hydropower	SOB	State of the Basin
IWRM	Integrated Water Resource Management	Tb-EIA	Trans-boundary Environmental Impact Assessment
JC	Joint Committee	TCU	Technical Coordination Unit
LDC	Least Developed Countries	WMTF	Water Management Trust Fund
LMB	Lower Mekong Basin	WSC	Watershed Committee
MDG	United Nations' Millennium Development Goals	WSMP	Watershed Management Project
M-IWRMP	Mekong Integrated Water Resource Management Project		
MOU	Memorandum of Understanding		



The Lancang–Mekong Basin



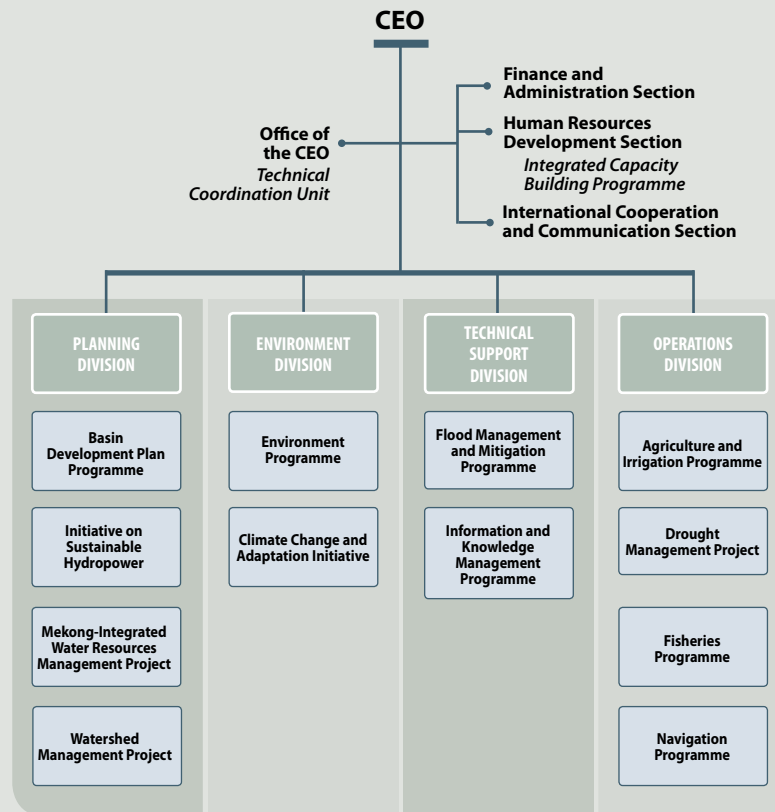


Mekong River Commission Governance Structure





Mekong River Commission Secretariat Operational Structure





Message from the Chairperson of the MRC Council for 2010-2011

As Chair of the MRC Council, I have had the chance to hear many stories of people telling us how much good work the MRC is doing. One, however, stands out. A villager from Viet Nam's Dong Thap Province has constantly and untiringly helped us monitor the water level of Tien River. "We are now able to send this information to others by text messages," he said, adding he was very proud to be a part of MRC's Flood Management and Mitigation Programme activity that helps villagers at several floodplain locations of the Mekong Basin better prepare for floods.

Every year, the MRC works with a range of stakeholders in the region including governmental agencies, civil society, Development Partners and communities to ensure that it adopts transboundary and basin-wide approaches in order to deliver changes.

At the regional level engaging in regional cooperation has continued to be one of the most significant goals of the MRC, and in 2010, we reached a greater achievement on this front by increasing the level of cooperation with the two Dialogue Partners—China and Myanmar. In a side meeting at the first MRC Summit in Hua Hin, Thailand, for the first time China agreed to share its real-time hydro-meteorological data during the dry season with the MRC. This was an emergency case during an extremely dry season and data was given on

a daily basis as well as further extending its technical support and cooperation to the MRC's Initiative on Sustainable Hydropower.

The MRC Summit, held in April, is also a milestone for us. Since the establishment of the Commission in 1995, this is the first time that the prime ministers of Cambodia, Lao PDR, Thailand and Viet Nam met to reaffirm the highest level of political commitment to the mission of the MRC. With additional participation of regional water experts, the Summit produced the Hua Hin Declaration—the commitment of the four countries to tackle emerging regional challenges such as climate change, rapid development and poverty.

Basin-wide planning remained at the heart of the MRC mission. In 2010, we organised our third stakeholder forum in Vientiane where 260 participants discussed issues related to development planning for the Mekong Basin such as the opportunities and risks of mainstream development, intensive irrigation and food security.

In addition, we also produced an important initiative—the Integrated Water and Related Resources Management-Basin Development Strategy, which represents over a decade of collaboration between Member Countries on their shared understanding of the river's opportunities and



H.E. Dr. Pham Khoi Nguyen
*Chairperson of the MRC Council
for 2010-2011*



risks associated with mainstream development planning. Contextualising basin development planning within regional and transboundary perspectives, the Strategy will be put into action in 2011.

Along with the Strategy, we also finalised our Strategic Plan for the 2011-2015 period. This plan will support the implementation of the Strategy as well as providing a platform for our preparation to decentralise core functions of the MRC Secretariat to the national level.

In September 2010, we received the first mainstream Mekong development proposal, which triggered the prior consultation process of the MRC's Procedures for Notification, Prior Consultation and Agreement (PNPCA). This represents Member Countries' dedication to the 1995 Mekong Agreement and reiterates the importance of regional dialogue. Without the consultation process, the Member Countries would not have a formalised platform to come together to discuss the opportunities and risks associated with mainstream development proposals.

The accomplishments of 2010 could not have been possible without the untiring support from our Development Partners comprising country governments, development banks and international organisations. I would like to

express our appreciation for their continuing support in this transitory year as it helped us achieve our endeavours to uphold the Mekong Agreement.

As we look ahead towards next year, 2011 will move the MRC into a new strategic planning period that focuses on improving the organisation's effectiveness and efficiency. With continued regional cooperation and a strong commitment to dialogue between Member Countries, the MRC will be able to overcome the challenges brought forth during this new strategic period, with the intention to achieve greater sustainability and improved water resource management throughout the Lower Mekong Basin.

H.E. Dr. Pham Khoi Nguyen

Minister of Natural Resources and Environment, Viet Nam

Member of the MRC Council for Viet Nam

Chairperson of the MRC Council for 2010-2011



The Hua Hin Summit and Declaration



Engaging more closely with China and Myanmar. Reducing poverty. Tackling climate change. These are commitments prime ministers of the four MRC Member Countries made during their meeting at the first MRC Summit.

These commitments are part of the Hua Hin Declaration, the fruit of this historic meeting of national and regional leaders and water resources management experts. The Declaration also included a commitment to heads of the governments to convene every four years to discuss Mekong issues.

At the first MRC Summit in April 2010, which marked the MRC's 15th Anniversary and served to reaffirm political commitment at the highest level, the national leaders of Cambodia, Lao PDR, Thailand and Viet Nam not only discussed a range of challenges and opportunities but also set priority goals for the MRC over the next few years.

The leaders commonly emphasised the need for a concerted regional effort to respond to unpredictable changes in climate patterns to avoid environmental risks and to protect the immense value of the Basin's natural ecosystems. They also stressed the importance of the MRC's contribution to environmental protection, sustainable



development and continuing cooperation with its Dialogue and Development Partners.

Cambodian Prime Minister H.E. Mr. Hun Sen specifically urged the MRC to come up with activities that focus on tangible benefits in order to reduce poverty in the region. Lao Prime Minister H.E. Mr. Bouasone Bouphavanh drew attention to increased tourism in the region and the need to protect and preserve the health of the Mekong Basin. Thai Prime Minister H.E. Abhisit Vejjajiva stressed the importance of engaging the private sector and civil society to jointly manage the river basin. Vietnamese Prime Minister H.E. Mr. Nguyen Tan Dung raised a concern that the region's fast and dynamic development is putting pressure on the Mekong Basin's natural resources and there is therefore a need to develop an integrated basin-wide response.

In addressing the concerns, the prime ministers agreed with nine priority actions including responses to climate change, intensified flood and drought management, encouragement of river navigation and trade, improvement of basin water quality and a call to evaluate the opportunities and challenges of proposed hydropower schemes.

Seeking expansion of regional cooperation, the four countries specifically called on upstream riparian states, the

People's Republic of China and the Union of Myanmar, to join the MRC. The two countries are currently MRC Dialogue Partners. In a side meeting at the summit, China shared hydro-meteorological data of the dry season with the downstream countries for the first time. The four nations also made a commitment to strengthen cooperation with its development partners.

In addition, the Summit brought about enhanced cooperation between the Secretariats of the Association of Southeast Asian Nations (ASEAN) and the MRC in the development and management of the Mekong water and related resources. The two inter-governmental bodies will, for instance, assist Cambodia, Lao PDR, Viet Nam and Myanmar with basin-wide water resources development planning. The new partnership also aims to help ASEAN countries better manage and mitigate flood risks as well as map out resilience measures to adapt to changing weather conditions.

Recognising that economic development is progressing in the region, an agreement was made for the MRC Member Countries to be fully self-financed by 2030 and for the MRC Secretariat to increasingly decentralise its core functions to the countries.

Ahead of the Summit, a two-day conference on Transboundary Water Resources Management in a Changing World was also organized in Hua Hin by the MRC to provide a forum for more than 200 international water experts from non-governmental organizations, River Basin Organisations and state agencies for discussions on transboundary water and related resources management and development, enabling participants to share both international and domestic experiences in addressing future challenges on the issue. The conference then submitted a statement to the Summit, stressing the importance and urgency of joint action in climate change, water quality improvement and poverty reduction.

At the conclusion of the Hua Hin gathering, the leaders agreed that an MRC Summit be organised every four years. The next Summit will be hosted by Viet Nam.

For more information about the Summit and the Hua Hin Declaration please go to the dedicated Summit website at www.mrcsummit2010.org.



Low rainfall, not dams, the cause of low river levels



Both farmers and fishers had difficulty accessing water sources which were often polluted. Low water levels also severely disrupted river transport and tourism for many weeks, further affecting livelihoods of people who depend upon the river.

Against some speculation about the potential impact of upstream dams, MRC analysis showed that the low water levels in the Mekong and its tributaries are the result of extreme natural conditions. Very low rainfall in the dry season, following a particularly early end to the wet season in 2009, registered the lowest recorded levels in 50 years.

The 2009 flood on the mainstream had been very much below average both in terms of peak and volume. The monsoon also ended early, bringing about a six-week premature departure of the rainy season. This had major implications for flows from October onwards, and by February 2010 severe drought conditions were being experienced, particularly in the northern parts of the Basin.

The reduced Mekong levels at the end of the wet season were typically at one-in-ten year lows. With very low rainfall afterwards, water levels at most mainstream measuring

In 2010, the Mekong region encountered its worst drought in five decades. The dry spell hit much of northern Thailand and Lao PDR, southwest China, and some parts of Viet Nam. Water levels were unusually low throughout the Mekong Basin, on the mainstream and its tributaries.

stations in Lao PDR and Thailand dropped below those for the 1992–1993 season, previously the most extreme dry period on record. The conditions became more severe moving downstream from Chiang Saen to Vientiane.

Flow in tributaries in northern Lao PDR such as the Nam Ou, north of Luang Prabang, which feeds into the flow in the mainstream, were the lowest since record keeping began 50 years ago.

Recognising the basin-wide dry conditions, the People's Republic of China agreed to share information on its river flows and dam operations. In a meeting with the MRC at the Hua Hin Summit, the upper Mekong country provided further hydro-meteorological data to the MRC concerning the operation of its dams on the river during the 2010 dry season.

Significantly, this is the first time that China has shared this dry season data with its downstream neighbours and it was followed by a MRC visit to the dams in Yunnan in June, 2010. The move represents a significant increase in the level of cooperation between the upper and lower basin countries. It has also triggered discussions on setting a threshold water level.



Integrated Mekong development – the Basin Development Plan (BDP)



Basin development planning provides basin-wide perspectives and creates a transboundary management framework to ensure that nationally planned developments are well coordinated. This is to make sure developments are sustainable and create mutual benefits to the riparian countries and their people.

Unarguably, accelerating the development of water and related resources will make a significant contribution to the socio-economic development of the region. But at the same time, potential negative impacts on the basin environment must be addressed.

The MRC is formulating its Basin Development Plan at a time of significant change, where rapid, large-scale development of the river is already taking place and hydropower dams constructed on the Lancang in the Upper Mekong Basin and on some tributaries in the lower part of the river have already started to influence the Mekong's flow regime.

Basin-Wide Scenario Assessment

Both riparian countries and project developers require an integrated basin perspective on national water resources

development plans and their cumulative impacts. The opportunities and impacts are studied through the assessment of four basin-wide development scenarios.

The scenarios represent different combinations of nationally planned sector development, with a focus on water supply, irrigation, hydropower and flood protection. They were assessed against a number of economic, environmental and social criteria. Hydrological changes caused by each scenario have been assessed with MRC's suite of simulation models, taking into account the developments and plans in the Upper Mekong Basin.

Four scenarios:

- **Baseline situation** – establishing reference conditions against which future developments can be compared
- **Definite future situation (DFS)** – assessing the cumulative impacts of developments that are going to occur by 2015
- **Foreseeable future situation (FFS)** – assessing the impacts of water resources development plans up to 2030
- **Long-term future situation (LFS)** – looking at two possible levels of development for the longer term (next 50 years) and how these may impact on near-term decisions.

Results from the scenario assessment are presented in a MRC/BDP report and provide invaluable input into the formation of the Basin Development Plan Strategy.

The dams on the Lancang as well as the existing and proposed dams on LMB tributaries will greatly alter the mainstream river by reducing its flows in the wet season and increasing them in the dry period. A major finding is that the projected redistribution of seasonal flows will provide sufficient water in the dry season to meet all planned consumptive water demands of the LMB countries as evaluated in the FFS, without contravening the baseline situation.

Economic benefits from the DFS are expected from hydropower development, reduction of flood damage, less salinity intrusion and increased reservoir fisheries. However, the irreversible flow changes would cause substantial impacts, including a reduction in wetlands, reduced water reversal into Cambodia's Tonle Sap and decreases in sediment flows. With less sedimentation, there will be potential negative impacts on valuable wetlands and agricultural productivity, including a forecast 7% decrease in fishery production. The livelihoods of almost a million vulnerable people would be at risk.

For the 50-year scenario (the LFS) the assessment highlights the need to proceed with expanded water resources development at a pace that allows knowledge to stay ahead of major infrastructure.

3S Transboundary Meeting

The Sekong, Sesan and Srepok (3S) river basins are the largest tributaries and watersheds of the Mekong River Basin, supporting 193,000 people in Cambodia, 222,000 in Lao PDR and more than three million in Viet Nam, many of them from ethnic minorities and the most impoverished groups.

Land use and the socio-economic situation in the three river basins have changed greatly over the past 30 years. How can a future vision for the region meet the challenges of this rapid development, especially in the hydropower, mining and agricultural sectors?

Cooperation can occur through the introduction of mechanisms such as transboundary notification, monitoring, information sharing, conflict resolution and negotiation and capacity building.

About 150 people representing local and central government agencies, developers, research institutions and NGOs tried to find solutions. In June 2010, they gathered in Buon Me Thuot City, Viet Nam for a regional transboundary river basin meeting to reflect on visions for the future, to analyse current development trends and to identify strategies for improved collaboration among the three countries.

Topics discussed included steps to strengthen transboundary coordination and collaboration, including the preparation of a road map for information sharing, participation and dialogue, assessment and decision-making.

Cooperation can occur through the introduction of mechanisms such as transboundary notification, monitoring, information sharing, conflict resolution and negotiation and capacity building.





The meeting identified that country-driven development priorities are a critical concern and the following issues need to be prioritised: water quantity, water quality, flows, sediment and erosion, catchments and land use change, biodiversity and natural resources (fisheries), people and livelihoods, and large-scale infrastructure (hydropower, irrigation and mining).

The road map was approved at a joint meeting between the Asian Development Bank and the MRC. This means a detailed version with activities and sequencing must be developed for the next five and 10 years.

The meeting is among several planned regional gatherings aimed at promoting stronger cooperation among the countries and stakeholders who share the 3S basins.

7L Sub area forum

The planning process for the second Basin Development Plan (BDP2) is implemented from sub-basin through to regional levels. To improve decision making in the basin, MRC is proactively setting up mechanisms for diverse stakeholders to collaborate, discuss and debate the current situation of water resources, management and development opportunities in the LMB.

Sub-area activities are one of the most permanent ways planned to promote stakeholder participation and a decentralised planning process. These include local forums that engage a wide range of stakeholders to identify and discuss key issues and opportunities for the better management of water and related resources.

The first forum was held in a part of the Sekong River Basin, known as the '7L sub-area', and identified issues

such as a lack of coordination among water management agencies and stakeholders in the upper and lower parts of the Sekong Basin. Participants raised concern about the need for a cumulative impact assessment for current and proposed projects. In addition, they called for greater transparency so that impact assessment reports are shared among all stakeholders for comments and feedback before decisions are made.

Priority issues to be included in the planning process are land-use change, risk assessment for climate change and natural disasters such as flood and drought.

3rd Stakeholder Forum

Held in Vientiane in July 2010, the third stakeholder forum on the Mekong Basin Development Plan brought together more than 260 regional stakeholders to discuss matters such as the opportunities and risks posed by mainstream hydropower dams and benefits for sustainable agricultural development. The event also provided an understanding of the growing role of existing and emerging river basin organisations in the basin.

Following the first and second ones in 2008 and 2009, the third forum, Decoding the Development Scenarios and Strategy for Basin Development was among regional multi-stakeholder gatherings aiming to provide inputs for planning and decision making on water and related resources development.

It provided a platform for participants to discuss the results of the basin-wide development scenario assessment and the draft Integrated Watershed Resource Management-based Basin Development Strategy.

The strategy defines the acceptable level of water resources development in the LMB over the next 20 years and in the longer term. It also specifies ways for the riparian countries to work together, to transform the strategy into actions such as regional and national planning, decision-making and governance processes.

The participants also exchanged dialogue on specific aspects of what the basin-wide development assessments mean for critical issues, namely expansion of irrigation, opportunities and risks of mainstream hydropower dams and development and management options for the Mekong Delta.

Outcomes from this forum will provide inputs to the discussion of the MRC governance bodies, the Joint Committee and the Council, the Council's agreement on the "development opportunity space" and the approval of the strategy in early 2011 for implementation at the basin, national and sub-basin levels.

Draft Integrated Water Resources Management (IWRM) strategy

The arrival of the IWRM-based Basin Development Strategy represents the first time that MRC Member Countries have developed a shared understanding of the opportunities and risks of national plans for water resources development in the LMB. It also gives rise to an agreement on strategic priorities to optimise development opportunities and minimise uncertainties and risks associated with them. The strategy provides initial directions for sustainable basin development and management that are subject to review and update every five years.



The LMB has potential for more intensive tributary hydropower development, especially in Lao PDR and Cambodia. But utilising this opportunity requires a greater focus on sustainability aspects while ensuring that any potential transboundary impacts are identified and mitigated.

The strategy defines water-related opportunities, such as fisheries, navigation, flood management, tourism, environment and ecosystem management. It also recognises other prospects that go beyond the water sector, e.g. alternative power generation options as possibilities for moving towards sustainable basin development.

The strategy sets out priorities for basin development, such as knowledge acquisition to address uncertainty and minimise risks of identified development opportunities; and a need to look at the pros and cons of ongoing developments. Priorities for management are also defined, including needs for baseline indicators and clear basin objectives and strategies.

A list of best practice guidelines for basin-wide water resources management and other regional aspects has also been identified.

Action plans at both regional and national levels will be prepared in the first six months of 2011. LMB countries will be able to create and support a wide range of networks or working groups to collaborate on ways to effectively implement the strategy.

A monitoring and reporting system will be set up to provide planners, decision-makers and stakeholders with the information necessary to regularly evaluate the effectiveness of strategy application, its impacts on the basin's resources and necessary adjustments.

A draft strategy was finalised at the end of 2010 for submission to the MRC Council for approval. The final version is available on the MRC website.



The Environment Programme (EP)



2010 presented new challenges to the Mekong River's environment such as proposals for mainstream development, severe droughts and changing socio-economic needs among its Member Countries. The Environment Programme's role in 2010 was to respond to these changing needs by further developing environmental management mechanisms, social and environmental knowledge as well as advancing procedures and guidelines on the river's water quality. EP's activities in 2010 aimed to balance economic development with transboundary environmental protection.

In 2010, the Environment Programme (EP) successfully finished the end of a 5-year phase. As the programme enters its next phase in 2011, its objectives focus on facilitating and implementing procedures and guidelines that support environmental management cooperation.

State of the Basin Report

This second State of the Basin report, which was launched at the First MRC Summit in April 2010, depicts the latest state of people's livelihoods, the environment and economic realities in the Lower Mekong Basin. Since its first edition in 2003, this report proved to be a practical guideline for governments, resource managers and other stakeholders in the region. It highlights the most current and most relevant status and

trends of the year's key indicators, and looks ahead to draw attention to the challenges for the basin countries.

An understanding of the status of water resources provides a broader perspective on the potential vulnerability of the basin's inhabitants and informs the governments of the MRC Member Countries of poverty alleviation objectives.

With a compilation of existing knowledge and a snapshot in time, the report outlines important challenges that will require further cooperation in monitoring, research and management over the next few years. These include:

- **Protection of water quality.**
In general, the quality is 'good or acceptable' in the LMB, but is declining in areas of high human habitation or intensive agriculture;
- **Pressure on wetlands and forests.**
This threatens biodiversity, water quality, flood protection, fisheries and livelihoods.
- **Reduction in fish capture.**
Fishers are reporting declining catches and a decrease in average fish size.



- **Increase in development and population.**
The trend heightens the need for more effective flood forecasting and preparedness systems.
- **Growth in intensive agriculture.**
Increased demand for water resources is expected while water quality and biodiversity are likely to be endangered through increased use of pesticides.
- **Impacts of climate change.**
People will be more vulnerable to poverty and food insecurity in the basin due to predicted changes in weather conditions such as extreme drought and floods.

Procedures for water quality and technical guidelines

The Procedures for Water Quality (PWQ) is a new tool to safeguard the Mekong River's water quality against emerging threats and to prepare agencies and local people for emergency response.

Developed by the MRC and its Member Countries in consultation with stakeholders, the PWQ, the first transboundary agreement of its kind in the region, aims to maintain water quality in the basin at a good and acceptable

level—for domestic purposes and primary human contact and for the protection of the Mekong's freshwater aquatic life. It outlines action plans on water quality criteria for measurement, monitoring and assessment. For example, oxygen concentration will be measured according to agreed standards to promote compliance with the minimum values. Other types of aquatic health, flora and fauna are protected under the agreement.

In addition, the PWQ includes a framework for emergency response to help related agencies and local people deal with pollution incidents in a coordinating and cooperative manner. Whereas the river is yet to experience major transboundary pollution incidents, such as spills from industrial plants, the PWQ prepares the Mekong basin for dealing with potential harm. With specific instructions, Member Countries will be able to respond in a timely and effectively manner to emergencies and immediately inform each other of the incidents.

Transboundary EIA framework

In the past, hydropower and irrigation developments on transboundary tributaries and all port developments were not covered by existing cooperation mechanisms of MRC Member Countries. That being said, the Transboundary Environmental Impact Assessment (TbEIA) is intended to change that.

This initiative is particularly vital since the Mekong River and the resources it provides are not limited to national borders. Development activities such as hydropower schemes, navigation improvements, port developments and river works, flood management and protection, and irrigation



People will be more vulnerable to poverty and food insecurity in the basin due to predicted changes in weather conditions such as extreme drought and floods.



Any changes, such as a decrease in fish, will bring about far-reaching socio-economic impacts, which will run into hundreds of millions of dollars.

schemes have the potential to affect the water quantity, quality, river flow, river morphology, ecology, livelihoods and economies of all riparian countries. The effects may impact beyond national boundaries.

Recognising this, the MRC Joint Committee decided to formulate a common framework of TbEIA to bring about guidelines that build on and complement the national EIA systems.

The TbEIA outlines the mode of cooperation between Member Countries to prevent, minimise and manage transboundary impacts. It details a relevant work plan for countries to implement the TbEIA, from project feasibility study, design and implementation to monitoring during operation.

Social Impact Monitoring and Vulnerability Assessment in the Mekong corridor

Local people as well as the average consumer will bear the brunt of changes in the abundance of water resources, notably fish, within the Mekong corridor, a recent study indicates.

The social impact monitoring and vulnerability assessment (SIMVA) pilot study explores the links between the use of key water resources and people's livelihoods. The study gathered information on sources of income, food and other livelihood aspects in order to assess people's vulnerability to resource changes.

The study's findings clearly indicate that, in the region, people heavily depend on water and related resources for food and income.

Any changes, such as a decrease in fish, will bring about far-reaching socio-economic impacts, which will run into hundreds of millions of dollars. The effects will be especially evident in places with relatively high levels of poverty and malnutrition. Millions of consumers dependent on reasonably priced fish would also be affected.

Additionally, the consequences of climate change will be distributed unequally among affected populations, the study says. This is due to differences in the number of vulnerable people in different areas, the percentage of the population engaged in water related resources activities, and the degree to which consumption and income are derived from water resources. This finding will need to be taken into account for planning and decision-making.

Costs of these impacts can be quantified using the indicators and data collected, together with estimates of change made by biophysical experts. These costs can provide a more complete basis for planners to assess the risks and benefits of proposed developments on the Mekong.

The pilot study has laid a strong foundation for a long-term social monitoring system that will now be implemented by EP along the entire Mekong River.

Environment and climate symposium

As highlighted at the First MRC Summit and its Hua Hin Declaration, adjusting to the challenges posed by development and climate change is a regional priority for the Mekong countries, which face unique threats of environmental degradation and climate change impact.





In fact, the Mekong region is one of the most vulnerable in the world to the long-term impact of climate change. This is due to a predicted intensity of floods and droughts, sea level rise, the high proportion of people living on low incomes and regionally low institutional capacity to adapt to these issues.

The Mekong Environment and Climate Symposium in Ho Chi Minh City, Viet Nam, in April 2010 facilitated knowledge sharing and information exchange to strengthen efforts to protect and adapt to the Mekong's changing environment and climate.

Issues discussed at the two-day symposium covered the current status, knowledge, relevant activities and actions related to the Mekong environment and climate change. The outputs of the symposium will help MRC target its future support programmes.

Wetlands awareness raising

More than 40 wetlands specialists gathered at a workshop co-organised by the MRC and the IUCN in January 2010 to share the lessons they learned on Mekong wetland management. Together they also discussed the need to further promote policy changes.

Among the successful examples are co-management approaches in which local communities and government agencies negotiate an agreement that specifies their rights,

roles, and responsibilities. These demonstrate a milestone in terms of moving communities and local government towards the more sustainable use of wetlands.

The event also raised the need to work at the decision-making level. Given the considerable human impact on wetlands, specialists concluded that the MRC and its partners should raise awareness of key policy messages to decision makers in the Member Countries.

The Ramsar site designation, a process of formally choosing particular wetland areas for conservation and sustainable utilisation under a treaty adopted in 1971 in the town of Ramsar in Iran, is among the key issues governments need to pay special attention to. Although a number of new Ramsar sites within the Mekong Basin have been proposed, more are needed to best protect wetlands. The workshop agreed that there is an opportunity for the MRC to take a leading role as a regional platform for supporting Ramsar site designation, and building capacity for effective implementation.

So far, the LMB countries have embraced Ramsar to varying degrees. There are currently 11 Ramsar sites in Thailand, three in Cambodia and two in Viet Nam with others being considered in Lao PDR.

Climate Change Adaptation Initiative (CCAI)

Climate change is an unavoidable threat that society will have to adapt to over coming decades. For Mekong countries, the task is particularly daunting.

Although most communities have some ability to respond to changes and extreme climatic events, the predicted impacts of climate change will exceed this capacity in almost all cases. For this reason, the Climate Change Adaptation Initiative (CCAI), which started in 2010, is being implemented to help people in the Mekong region adapt to climate change building on local, pre-existing tools and methods.

Review of climate change adaptation methods and tools

Initially, the CCAI reviewed pre-existing adaptation methods and tools throughout the region. Then, it provided an introduction to planning adaptation to climate change and drew out key issues relevant to lower Mekong countries.

The CCAI's review found that government agencies, NGOs and community-based organisations are developing adaptation approaches such as the use of complex models to assess climate change impacts and the provision of guidelines on the steps to take for designing and implementing adaptation measures.

The review indicated that while availability of methods and tools are not a concern, there is little guidance on how to select the most appropriate approaches for a given location. Moreover, there are gaps in most existing mechanisms, meaning there are requirements for training, skilful facilitators, significant data collection and/or the use of large resources. There is no single approach which is sufficient to successfully support adaptation planning. Expert judgment is still one of the most important elements for success, and this cannot be replaced by any of the available methods or tools.

Climate change modelling

While climate change will affect the Mekong's flow regime, the impact of proposed mainstream hydropower and irrigation developments also needs to be considered.

The MRC carried out a study to assess the impact of climate change and the developments on Mekong flow regimes and to provide recommendations for adaptation strategies in the region. Outcomes of the study are a technical report and a management information booklet.

The study provides predictions of temperature increases for the Mekong Basin, which reflected others on the same topic.





Projections of precipitation, on the other hand, varied between studies and depended on which climatic models and scenarios were used, the length of time considered and data quality.

Local demonstration sites

Among the CCAI's main target groups are the people of the Lower Mekong Basin, especially the poorest and most vulnerable communities living along the river banks and floodplains. The Initiative aims to bring about the climate change adaptation planning process by focusing on tangible outputs drawn from lessons learned from trial activities selected by Member Countries.

To support the national teams that carry out the activities at the demonstration sites, regional training was provided for 50 participants. The participants included representatives from the demonstration sites and MRC Junior Riparian Professionals. During the training, participants gained hands-on experience by conducting assessments on climate change impact, and gathered local knowledge on pre-existing adaptation techniques. The training was highlighted with a field trip to a community adaptation initiative on coastal erosion and flood adaptation.

At the end of the workshop participants developed a regional network that will assist them with the coordination of future activities.



The Flood Management and Mitigation Programme (FMMP)



The Flood Management and Mitigation Programme (FMMP) phase 1 was effectively completed in 2010. The programme has produced a wide-range of products to help Member Countries better manage the differing nature of flood risks throughout the Lower Mekong Basin. Significant progress has been made in reducing exposure to flood risks through measures such as improved planning, preparedness, forecasting and warning, emergency management and response, rehabilitation and better land use. However, flood risk has also increased due to rapid economic development, population growth, infrastructure development and land use changes. Thus, the formulation of a follow-up of the first phase of FMMP is considered a logical and necessary step.

Plans are underway for future development and operations of the Regional Flood Management and Mitigation Centre (RFMMC) after 2010 with the aim of enhancing and improving the centre's management systems and forecasting capabilities during the programme's next phase.

New forecasting system

In 2010, flood forecasting capabilities in the Lower Mekong Basin were strengthened, thanks to the development of new

systems and tools, as well as the improvements in data collection and information sharing.

Among the newly-developed forecasting tools and systems was a flash flood guidance system, which was tested for the first time. The system will be made operational in 2011 and further fine-tuned over the next few years.

During the flood season, real-time and near real-time rainfall and water level data were available on a daily basis for all stations including those in China which help improve forecasting accuracy in the reaches of the river in northern Lao PDR and Thailand.

To improve and expand the basin's hydrological network, more than 30 new rainfall stations have been added. With the assistance of simple and effective technology, more than 140 water level and rainfall stations have been upgraded and fully-connected, using mobile phone-based Short Messaging Service (SMS) for data transfer to the MRC's RFMMC. This system has improved the region's quality of data collection, transfer and has improved coordination with national flood monitoring.

Integrated Flood Risk Management

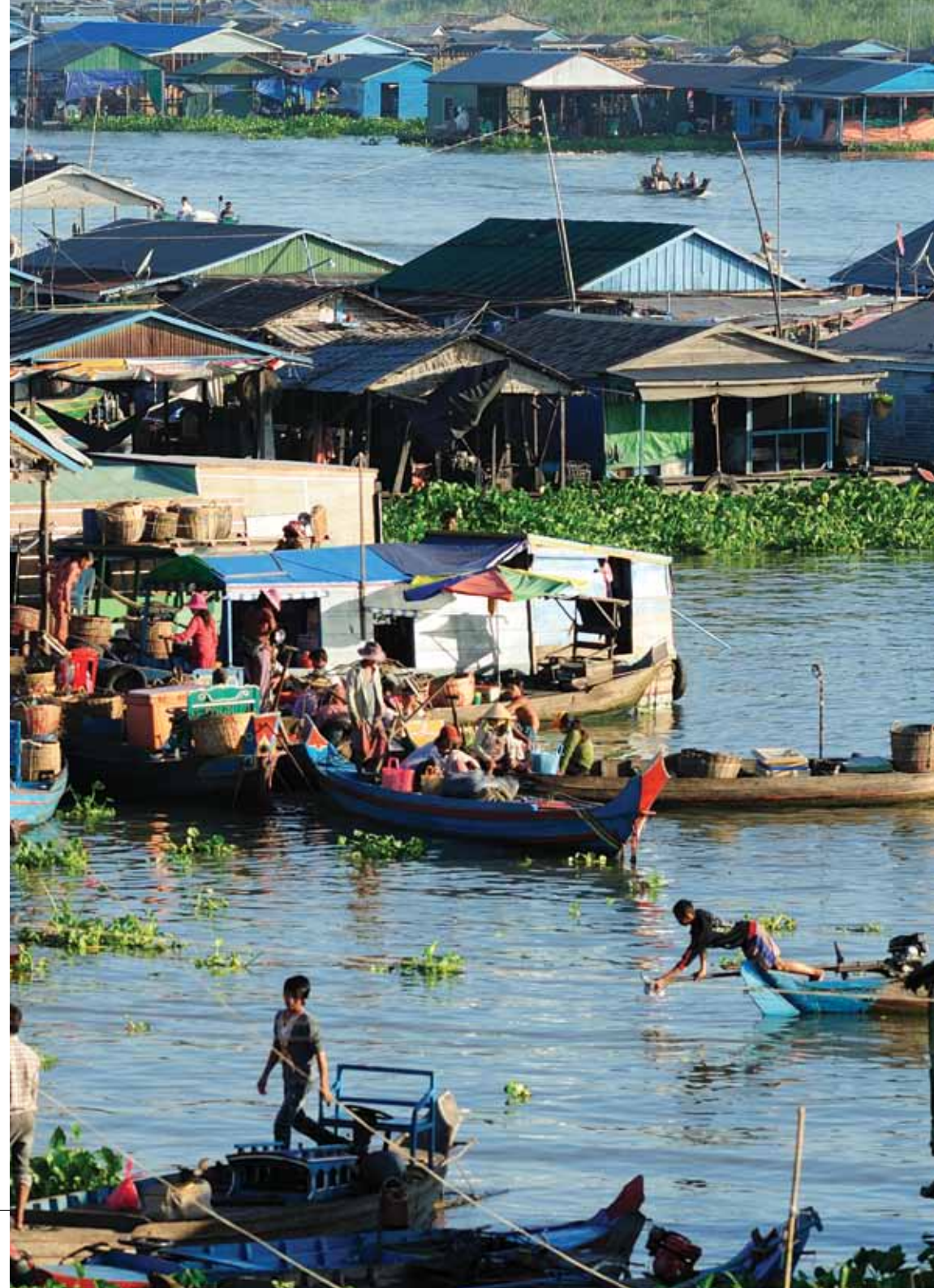
Much information has been developed to raise awareness and understanding of floods and flooding in the Lower Mekong Basin. For example, the concept of integrated flood risk management has been introduced to national line agencies, thereby offering Member Countries an internationally developed approach and methodology to assess flood damage related to the probability of extreme water levels. This gives line agencies an important tool to develop options for decision-makers on flood protection investments for an acceptable level of flood risk.

Trans-boundary flood issues

Due to their complex nature, transboundary floods require enhanced coordination that promote intergovernmental and inter-agency cooperation.

The MRC's Mediation of Transboundary Flood Issues project has developed a framework that provides a systematic, step-by-step process for solutions to differences and disputes at local, national and regional levels, which can range from identification of the incident to the resolution of it by the MRC Joint Committee or Council.

In 2010, the project prepared for the implementation of a 2011 pilot study, which will seek solutions to transboundary flood issues.





Flood Preparedness Management Strengthening

Much information has been made available to raise awareness and promote a better understanding on the benefits of floods. The integrated flood risk management approach and methodology has been introduced to Member Countries, NMCs and line agencies.

In Cambodia, stakeholders attended a workshop to promote and share experiences on disaster risk reduction (DRR) preparedness and ways to integrate it into local planning. As a result, participants shared the most appropriate experiences, tools, models and suggestions.

In Viet Nam, a school flood safety programme in the Mekong Delta has been shared with representatives from the Ministry of Education and Training and the Provincial Department of Education. The programme shed light on how to prepare for floods in some of Viet Nam's most vulnerable provinces. A guideline on flood and storm control planning for Cuu Long Delta provinces has been finalised and disseminated to 13 provinces for comments and feedback. The Department of Dyke Management, Flood and Storm Control will advise provinces on how to use the guideline for flood and storm control planning.

In Lao PDR, projects include developing a curriculum on strengthening disaster capacity; establishing an environmental follow-up system and assessing environmental

impact and alert in emergency cases. In Xayaburi district, flood gates, dykes and community roads have been upgraded under a programme supported by the World Bank.

A training manual has been completed for each of the Member Countries and implementation of the manual was initiated in March 2010.

Land management

Land management is an effective prevention tool for flood control. With access to reliable information on improved land management techniques, communities can develop better strategies to cope with floods, while government agencies can better plan development activities such as urbanisation and road construction. In addition, with improved land management, the public is provided with reliable information on safe havens and flood routes.

Flood probability maps have been produced for Cambodia and for some pilot districts in Viet Nam. The methodology used in Cambodia, designed to deal with regular annual flooding of several months duration, could be applied in Viet Nam to produce a similar range of maps of flood statistics. In the future, the influence of flood management measures, including accelerated drainage by pumping, needs to be identified by the Project so that maps of quasi-natural conditions can be produced.

A coordinated approach for the MRC—Mekong Integrated Water Resources Management Project

Started in 2010, the Mekong Integrated Water Resources Management Project (M-IWRMP) is an initiative that provides a coordinated approach to implement regional, transboundary and national activities within the sphere of integrated water resources management and draws on cross-sector experiences of the MRC framework of cooperation to build capacity with national agencies. It is also helping to complete the framework of MRC renewed procedures for more effective implementation and supports the transformation of some of MRCS's core functions to a more decentralised mode of operation.

The Project is initially set to go until 2014 to assure continual efforts to develop regional water resources planning mechanisms and management tools.

Since its start up, the M-IWRMP has proactively engaged with Member Countries through the joint basin planning and implementation of activities on water utilization procedures and technical guidelines. It has also sought to facilitate dialogue among Member Countries on urgent transboundary issues.

Member Countries have demonstrated their commitment to the Project namely through the ongoing implementation

of the Procedures for Notification and Prior Consultation and Agreement (PNPCA) on mainstream development and the signing of the Procedures for Water Quality.

Streamlining development activities

The IWRM project improves basin-wide water utilisation through multi-sector and integrated project design; application of improved procedures, tools and processes; strengthened collaboration between the resource management and sector agencies.

Since its inception, the Project has promoted transboundary cooperation including joint fisheries management between Cambodia and Lao PDR; cooperation on water resources management between Cambodia and Viet Nam in both the Se San and Srepok Sub-Basins as well as in the Mekong Delta; and joint activities between Lao PDR and Thailand on transboundary fisheries management.

To improve the availability of reliable scientific knowledge on the basin, the initiative has supported the MRC programmes by sharing and exchanging hydro-meteorological data. In Lao PDR and Thailand, a transboundary focus is on the improvement of wetland and floodplain management.

Strengthening policies and governance

In addition to capacity building, the Project contributes towards strengthened policies and institutional arrangements in Member Countries. For example, the M-IWRMP will invest in a hydro-meteorological network in Cambodia, and with the support of the World Bank, will develop water resources management policies and institutional arrangements in Lao PDR, Thailand and Viet Nam.

The Project provides regional frameworks for water resources planning. This framework is comprised of updated and improved use of basin-wide data, models and tools and the finalisation and implementation of water utilisation procedures and technical guidelines.



An improved navigation experience – the Navigation Programme (NAP)



Safe and efficient waterborne transport

Traveling and navigating along waterways in the Upper and Lower Mekong Basins has become more efficient and safe, thanks to the installation of channel markers and landing facilities on the Mekong River and its tributaries. The efforts mainly aim to prevent environmental damage and minimise accidents. In doing so, the Navigation Programme applies aids to navigation, environmental risk analysis, capacity building and contingency planning.

Improved navigation is seen in waterways such as the Mekong River's Houei Sai-Luang Prabang route in Lao PDR. The route is popular for both locals and tourists who travel between Thailand and Luang Prabang. However, the 300 km stretch of water is full of rocky outcrops that are extremely hazardous to navigation. Only very skilled pilots can negotiate the swift currents combined with the sharp bends of the channel meandering between the rocks.

To help reduce the risks, the Programme has carried out a condition survey, which includes channel design and a comprehensive study on potential solutions to the physical barriers. The team started with informing local authorities and communities about the survey and related activities. As well

as the condition survey, the team also produced a conceptual channel design report and detailed aids to navigation design on the pre-selected dangerous areas. In September, the installation of jetties and landing facilities were completed.

Navigation aids have also been installed on other waterways including the Tonle Sap River between Phnom Penh and Chnouk Trou, and the Vam Nao and Bassac Rivers in Viet Nam.

Storage of dangerous goods

A risk analysis of the storage, handling and carriage of dangerous goods along the Mekong River began in November 2010 and will be completed in 2011. This highlights the need to minimise the risk of accidents in ports, on vessels and on waterways, so that the ecological health of the river, which is the basis for food security and livelihoods, is not compromised by shipping activities, operations and developments.

Trade and Commerce

Cambodia and Viet Nam have formally embraced "freedom of navigation" by opening up cross-border trade on the Mekong River. With the facilitation of the Navigation Programme,



the two countries have signed the Treaty on Waterway Transportation since 2009, allowing access to the river system by local and foreign vessels. This agreement recognises the potential of cross-border container traffic between major terminals such as Phnom Penh, Can Tho, Cai Mep and Ho Chi Minh City, which are important links to overseas trading partners.

Since the treaty was signed, the Programme has continued to be involved by developing a 'road map' for the implementation of the legal framework and the establishment of the Mekong Bilateral Navigation Facilitation Committee. For the sustainability of coordinating cross-border waterborne transportation, such a committee is vital to protect the safety of crew and cargo, safeguard the environment and promote regional trade.

A new agreement between Lao PDR and Thailand for cross-border navigation downstream of Luang Prabang

to the Khone Falls should result in increased tourism. The Programme has successfully started a legal study to provide a comprehensive recommendation for establishing a legal framework for cross-border navigation on this stretch of the river.

Links with the Upper Basin

MRC and the People's Republic of China have reached a new agreement on navigation. In 2010, China committed and reaffirmed the need for further improvement in navigation on the Lancang-Mekong River. China also expressed a desire to work with the MRC in the study of Standard Specifications for Planning, Design, Construction, Operation and Management of Navigation Locks on the Proposed Mekong Mainstream Dams.



The Agriculture and Irrigation Programme (AIP)

Agriculture is the single most important economic activity in the Lower Mekong Basin however it is also one of the largest consumers of water. Rice is the staple of people's diets and also the most common source of income for rural residents in the region. Yields have been rising in all countries since the 1990s due to improvements in technology and a larger proportion of land under irrigation.

Implementation of sustainable and efficient water use

The 'Sustainable and Efficient Water Use in Irrigated Agriculture in the LMB' project, which was implemented in 2010, is due to be completed in June 2011.

The project focuses on appropriate and efficient water management practices in irrigation schemes based on outputs of relevant work within and outside MRC. It aims to propose a standard management plan for optimised water distribution.

In general, irrigation schemes in the LMB are becoming smaller or productivity is falling due to the deterioration of facilities. The project therefore aims to build the capacity of line agencies through field activities and planning. At a

regional workshop in October 2010, country teams reported progress in the field survey at pilot sites for the 2009–2010 dry season, including findings about water demand and delivery, operation and maintenance practices, and production records. Following analysis of field survey results, the country teams will propose measures to improve water use efficiency at pilot sites in the near future.

Guide for efficient irrigation water use in the LMB

The 'Improvement of Irrigation Efficiency on Paddy Fields in the LMB' project has produced a guide for efficient irrigation water use, covering institutional, managerial and technical aspects. The guide is also expected to enhance multi-functionality of paddy agriculture and irrigation. It provides information for staff engaged in daily operation of irrigation schemes and also for officials in charge of planning and design. The guide covers issues such as strategies to reduce water loss, estimation of water requirements, organisation of water management and system design.

It also looks at water management of tertiary canals and equity among water users. The use of water maps or flow charts is described as a way of avoiding conflict at the local

level between communities that share water resources. The Guidance for Efficient Irrigation Water Use in the Lower Mekong River Basin is available from the MRC website.

Paddy fields support many uses

Paddy fields in the Mekong Basin serve numerous roles – they support productive fisheries, provide flood mitigation as well as producing the main staple crop as a source of income for millions of the basin’s inhabitants.

The Programme initiated a project to demonstrate the multi-functionality of paddy fields over the Mekong River Basin. The project analysed the multifunctional roles of paddy fields in the Mekong delta in Viet Nam and in northeast Thailand.

In the Mekong Delta, the findings showed that paddy fields have a role to play in flood mitigation by storing water, which reduces the threat of severe floods. They also nurture aquatic ecosystems by creating refuges for fish and fish food.

In Thailand, paddy fields serve as water reservoirs around city areas and reduce the risk of flooding. As rice farming is the most important source of income, irrigated paddy fields could help stabilise rural livelihoods and retain people in the agricultural sector, thereby reducing livelihood insecurity.

The results imply that the socioeconomic contribution, especially the off-farm and non-farm opportunities, created

by paddy cultivation is significant. The project’s report also provides some policy advice to maintain and encourage the multi-functional roles of paddy fields.

MRC’s role in agriculture

Agricultural water management has particular relevance to the MRC for a number of reasons, including:

- As the largest water user in the basin, **the agricultural sector** should be involved in the Integrated Water Resources Management (IWRM)-based basin development planning process, nationally and regionally;
- **Improvement of agricultural water management** would be a key factor in securing food supplies for increased future demand, as well as reducing poverty in rural areas by enhancing farmers’ livelihoods; and
- **Upgrading irrigation systems** to address deterioration, improving efficiency of use, expanding irrigation area and preparing for future severe conditions due to climate change, are challenges common to all Member Countries

Member Countries have expressed their intention to see MRC more actively engaged in agriculture. It was felt that MRC should strengthen its experience in agriculture, in order to better inform and interpret development scenarios, and to provide a continuous and active link with national agricultural planning processes.





Watershed Management Project (WSMP)

A number of watersheds in the Mekong Basin face threats that include rapid economic development, population growth, increased urbanisation, extensive hydropower and mining development, land-use changes, deforestation, tourism and climate change. The cumulative impact on these critical watersheds could affect the overall health of the Mekong mainstream or the entire basin that over 60 million people depend on for food security and livelihoods.

Since 2002, the MRC-GIZ Watershed Management Project (WSMP) has worked to improve the institutional framework, planning and coordination for the sustainable management of watershed resources at the local, national and regional levels in Lower Mekong Basin countries.

The Project focuses its work in the least developed areas throughout the basin, namely in target locations in Cambodia, Lao PDR and Viet Nam.

In 2010, MRC has provided support to Lao PDR through a pilot project on sustainable management of watersheds to plan and implement an investment fund in the Nam Ton Watershed, aiming to ensure its secured functions and improved livelihoods of local people. MRC will use these experiences to upscale and share with Member Countries.

Key achievements of the Watershed Management Project (WSMP) for 2010 have been:

Coordination mechanisms for watershed management

The national regulations for the management of river basins in Cambodia, Lao PDR and Viet Nam pave the way for the establishment of coordination mechanisms for sub-river basins. There is also potential to use these regulatory provisions for watersheds, which, in some areas are synonymous with sub-river basins. At this stage, local watershed committees or working groups in pilot areas of the WSMP have been officially recognised only by provincial authorities. In Cambodia, the WSMP supported the important first step to elaborate a code of conduct on watershed management, which includes regulations for the establishment of coordination mechanisms at national and local levels. In Lao PDR, the first sub-river basin coordination body for one of the WSMP replication sites has been examined by the river basin committee. Its establishment is expected in the near future.

Financing watershed management

More than 60 district and national-level representatives from Cambodia, Lao PDR and Viet Nam participated in a regional roundtable on the financing of watershed management in August 2010. They discussed the opportunities to integrate watershed management into government planning systems to ensure its inclusion in future state budgeting. They also discussed potential external funding sources and how to consider these in financing systems for watersheds.

Training and capacity building

Representatives from training and capacity building institutions in Cambodia, Lao PDR and Viet Nam participated in the elaboration of a training manual for watershed management. More than 15 people from the three countries tested draft modules of the manual, providing feedback, suggestions and recommendations on content, training material, methodology and mode of delivery. Following this testing, the manual for watershed management practitioners has been published. The main documents from the manual, the Watershed Management Resource Kit, have been translated. The kit will be made available on the internet-based Wikipedia platform.

Documentation and replication of WSM experiences

Documentation of WSM experiences are available in local languages for the WSMP pilot areas in Cambodia and Viet Nam. The documentation provides a sound base for replication of the approach in other watersheds. Government institutions in Cambodia, Lao PDR and Viet Nam have expressed interest in applying the integrated watershed management (IWSM) approach in other areas. In Lao PDR, cooperation agreements for replication of the IWSM approach have been concluded and implemented with WREA for Nam Song sub-river basin and with Helvetas for the Nam Kha watershed. In Viet Nam, WSMP provided support in three areas and in Cambodia dialogue with government line agencies on Watershed Management began in October 2010.



Drought Management Project (DMP)



Like floods, droughts impose large economic and social costs on the people of the Lower Mekong Basin (LMB). In 2009 and 2010 Yunnan province in southern China, northern Thailand and Lao PDR were affected by severe drought conditions. The extreme dry periods were a reminder of the importance of the issue to the people and the environment in the Basin. Lessons learned from these droughts demonstrated the relevance of a better understanding of the impacts of climate change throughout the region, as there will likely be an increase in the severity of droughts in the coming decades.

MRC's initial start-up activities in drought management (February 2010 – February 2011) committed all Member Countries and MRC Programmes to identify the organisation's future role in supplementing national initiatives.

The Project's main objective is to analyse and develop a framework for drought risk, impact and vulnerability assessment and mapping of critical drought-prone areas in the LMB. The framework will serve as a basis for the identification and elaboration of preparedness measures, such as early warning systems, and mitigation strategies.

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Levels of vulnerability will be defined through an analysis of the economic, environmental, and social factors.

For the first time in the region during the dry season in 2010, daily data collections and river monitoring of water levels, rainfall and discharge data for two stations in China were shared with MRC

Member Countries, improving information dissemination on the drought situation to LMB countries, region-wide.

Given the public's interest in the Mekong's low flow conditions, the river monitoring web page was updated daily on the MRC website. Information on the web was provided by Member Countries from March 2010, onwards. In Cambodia and Lao PDR, the monitoring network has been upgraded to improve rainfall network coverage.

The formulation of priority drought management outputs for 2011-2015 include:

- **Drought Vulnerability Assessment:** To establish drought impacts on the environment, socio-economics and people's livelihoods. Through this assessment, vulnerabilities will be addressed through awareness raising activities;

- **Formulation of Regional Drought Management Strategy:** DMP plans to formulate a regional strategy for drought management and mitigation to support MRC Member Countries reduce the negative impact of droughts. The strategy plans to include road-maps for improved drought management; and
- **Capacity Building:** Capacity building activities are planned to support drought data and information sharing. Institutional capacity development support to relevant national government agencies will be provided to support drought vulnerability mitigation and management activities.

These outputs will be part of a broader Drought Management Programme for 2011-2015 that is currently being formulated for submission to the Joint Committee for approval in mid-July 2011.





Managing fisheries in the Lower Mekong Basin – the Fisheries Programme

Fisheries in the Lower Mekong Basin (LMB) are immense, with an annual production that is now approaching four million tonnes. More than half of the fisheries are comprised of wild river fish and other aquatic animals that are consumed in the basin. The remainder comes from aquaculture, which has grown spectacularly over the past decade, mainly in the delta in Viet Nam. About one million tonnes is exported, mostly *Pangasius* catfish and high-value shrimp, which for many is a primary source of income in the Basin. Much of the aquaculture is commercial and depends on the wild fishery as a source of adult brood-stock or wild fry, and feed (trash fish). Basin-wide, capture fisheries are the main source of animal protein and several key nutrients, notably calcium and vitamin A.

The regular flooding along the Mekong and its tributaries, as well as inundation of rain-fed rice fields and numerous small water outlets support the productivity of the natural fisheries system. The most productive parts of the system are the large floodplains in Cambodia and along some tributary rivers. During the flood season, many species migrate long distances between spawning and feeding grounds. Fisheries conservation depends upon measures such as maintaining the flood pulse, protecting dry-season refuges and keeping migration routes open.

During 2010, the Programme continued to strongly support the MRC's key planning activities, including the Basin Development Plan scenario assessment, the Strategic Environmental Assessment of mainstream dams, and the Procedures for Notification, Prior Consultation and Agreement (PNPCA) process for the recently proposed mainstream hydropower scheme at Xayaburi in upper Lao PDR (see sidebar, page 43). The programme completed its second 5-year phase (2006–2010) and successfully secured continued support from its key donor, Denmark, for another five years.

The MRC continues to be the main source of fisheries information for the basin, and in 2010 a number of publications were finalised. Reviews of fisheries and fish diversity were presented in the publication, *The Mekong – Biophysical Environment of a Tropical River Basin*. Additionally, three issues of the fisheries newsletter *Catch and Culture* were published, fisheries sections were written for the MRC State of the Basin Report 2010 and other MRC documents, and a technical paper on dams as barriers to fish migration was published.





Routine activities of the programme continued as briefly discussed below.

Fisheries ecology, valuation and mitigation

The Programme monitors key indicators of the status and trends of fisheries, including catches at key locations and the production of wild fish fry. It also commissioned many studies on topics such as the identification of key habitats in relation to dam proposals. During 2010, major workshops were held to finalise and integrate databases from several key monitoring programmes, which show that, in general, the capture fisheries are still large, diverse and productive. Recent declines in the production of fish fry in the Mekong in Cambodia; however, are likely to affect catches downstream and into the Viet Nam Delta. This data has provided a basis to support efforts to control excessive and illegal fishing of brood-stock in the Mekong River in upper Cambodia. Monitoring data will also be used to judge the impact of proposed dam constructions, which are likely to be increasingly evident.

Fisheries management and governance

The fisheries' management programme aims to maintain the productivity of natural systems and to ensure the sustainable use of resources, with the specific aim of alleviating poverty. It also promotes national and regional level planning, policy development and management.

The programme supports national fisheries agencies to work with local communities through co-management arrangements and the implementation of suitable measures such as control of gear types, fishing seasons and choosing site locations.

During 2010, the programme organised study tours for fisheries community members, established a centre for site activities, and was involved in trans-boundary fisheries management activities between Lao PDR and Thailand and between Cambodia and Viet Nam. It also supported awareness-raising meetings on fisheries laws and regulations, collected various data on the effectiveness of management, and implemented a range of fisheries management training activities.



Aquaculture of indigenous Mekong fish species

Many of the fish that are cultured in the Mekong Basin are exotic species, such as tilapia and Chinese and Indian carp. Consumers generally prefer Mekong native species including Pangasiid catfish and shrimp. There is considerable scope to increase the use of native species in culture and for stocking of water-bodies, as there are about 850 fish species recorded from the basin as well as many other kinds of aquatic animals. Use of indigenous species also reduces the likelihood of spread of exotic fish to natural water-bodies and reduces the risk of importing new diseases. During 2010, the programme completed a synopsis of aquaculture information on 17 Mekong species, compiled from work over the last ten years. This will be an important reference for aquaculture and will help guide future research.

Fisheries and the Xayaburi Dam

In September 2010 the MRC received the submission of the proposed mainstream Xayaburi Hydroelectric Power Project from the Government of Lao PDR. This was the first dam proposed on the Mekong mainstream south of China and the first to be subject to the prior consultation process of the MRC's Procedures for Notification, Prior Consultation and Agreement (PNPCA) (see page 61). The dam would have various negative impacts on fisheries by blocking migration of fish and other animals and modifying the environment in its vicinity. Mitigating or compensating for these negative effects as far as possible is a key objective of a technical review of the proposed project, which is led by the Fisheries Programme. A team of independent international and riparian fisheries scientists has provided assessment and advice on fisheries issues and, in particular, whether it is possible to optimise fish passage upstream and downstream past such dams. The assessment is supported by MRC data, which include fisher catches that show composition and seasonality of migrations, and studies of larvae and fry drift which show the location and relative importance of spawning habitats in upper Lao PDR.



The Information and Knowledge Management Programme (IKMP)

In order to make sound environmental, social and economic decisions about the basin, Mekong governments need data that is timely, accurate and comprehensive. One of the MRC's roles is to build the region's knowledge base and ensure that accurate and up-to-date information is integrated into the planning and development process of the basin's water resources.

The MRC's Information and Knowledge Management Programme (IKMP) provides data services, such as mapping and GIS, to support the activities of its own programmes and those of Member Countries. As well as providing this information and analysis, the MRC also works with riparian agencies and governments to develop the capacities of national staff. In 2010, IKMP's data services provided near to real-time information to better assist Mekong communities with information on river water levels necessary for assessing navigation accessibility and warnings on the Mekong's water levels. The need for this type of information was seen in 2010 when communities in Chiang Saen, Thailand and in northern Lao PDR, experienced a severe reduction of river water levels due to the regional drought. IKMP analysed the low water levels and disseminated the information through the MRC website that later proved useful for national river monitoring stations, local authorities, CSOs and NGOs throughout the region.

River monitoring network

IKMP's 17 river monitoring stations throughout the Lower Mekong Basin, and two in China, were able to provide data every fifteen minutes to national data centres and to the MRC data terminal throughout 2010. In 2011, this data will become even more readily available as IKMP will upgrade its hydrological data acquisition standards. Daily data submitted from the two stations in China provided valuable input to the MRC's flood forecasting centre.

In 2010, a number of activities, such as training for operational staff, have been implemented to strengthen line agencies' capacities in sediment monitoring. As well as the supply of new equipment for sediment measurement, two small laboratories for sediment analysis are slated to be set up in Cambodia and Lao PDR. Relevant staff from line agencies in Member Countries will be trained to use the equipment, to provide basic and advanced technical skills and fill what has been a gap in the Mekong knowledge base.

Data management of hydro-met network

A system of data management has been set up by IKMP for quality assurance, storage and analysis of historical and near real-time water flow and climate data. Two national database



experts were recruited from Cambodia and Lao PDR to assist National Mekong Committees to develop a national database for the hydro-meteorological system, while the MRCS has provided technical assistance to Member Countries.

For near-real time data, the IKMP team has developed a system for checking the reliability of incoming information.

Modelling assessment support for the development of BDP scenarios

During the Mekong's 2010 low flow period, the modelling team provided analysis of the situation including presentations and simulations of the Upper Basin to the Government of Lao PDR. The team has begun working with the Climate Change and Adaptation Initiative planning for future modelling and actively participating in modelling work for a Viet Nam demonstration site for climate change adaptation. The team continues to liaise with China on modelling of the Upper Basin.

For near-real time data, the IKMP team has developed a system for checking the reliability of incoming information.

The MRC "virtual Mekong" toolbox

The IKMP team has been working with specialists from around the region to develop a virtual toolbox of efficiently linked data, models and results that will be available for

Member Countries in 2011 to:

- Assess socio-economic and environmental impacts;
- Predict floods and droughts; and
- Test, design and manage alternative regimes of proposed developments.

A preliminary version of the MRC toolbox was presented and distributed in June 2010. The completion of the toolbox and its release came at the end of 2010, and in 2011, the toolbox will be available for public use online.



The Initiative on Sustainable Hydropower (ISH)



The accelerating pace of hydropower development in the Mekong is a major challenge for the region. As well as making decisions about possible new hydropower schemes and their design features, the challenge is to develop cooperation between countries to manage existing hydropower assets in a sustainable manner. These considerations also need to be linked to wider strategies for sustainable development of the regional power sector.

The ISH has continued to promote the theme of sustainable hydropower to MRC stakeholders, the wider Greater Mekong Sub-region and the international community.

Regional management systems for the ISH are in place, for example an advisory committee, a technical advisory group and a national coordinator network. Several activities with high strategic relevance to help MRC and Member Countries respond to the accelerated interest in hydropower, especially the 12 proposed hydropower schemes on the LMB mainstream, were undertaken in 2010.

Strategic Environmental Assessment

The MRC released the commissioned report of the Strategic Environmental Assessment (SEA) for hydropower

development projects proposed on the mainstream Mekong River. The SEA, which was coordinated by the ISH, weighs the opportunities created by the proposed projects against their potential risks.

The 16-month study critically assessed the impact of mainstream hydropower projects on the river's entire environment and provided recommendations on how Member Countries could proceed, if they decide to pursue the proposed developments.

Its studies and knowledge gained from them will feed into the prior consultation process for proposed mainstream hydropower projects that is required under the 1995 Mekong Agreement before a decision is made on how to proceed with proposed mainstream development.

The SEA outlines the extent to which hydropower development may have an irreversible impact on natural processes, fisheries, aquatic and terrestrial biodiversity and livelihoods and indicates the extent to which these can be avoided, mitigated or minimised by adequate planning. The report also describes the potential benefits associated with about 13,500 MW of renewable hydropower development that would contribute to national economic growth, finance



socio-economic and poverty reduction programmes and offset carbon emissions from fossil fuel projects.

Cooperation with China

The ISH has been an important vehicle for MRC cooperation with China on hydropower sustainability issues. In 2009, a cooperation programme was agreed on by the two partners, followed by technical visits by the MRC modelling team and site visits by MRC to the Lancang-Mekong dams in China in 2010. China's representatives also participated in the SEA multi-stakeholder workshops. This participation, together with the supporting analysis, helped China gain a better perspective of Lower Mekong Basin (LMB) issues and concerns.

The visit by representatives of Member Countries and the MRCS in June 2010 to the recently built Xiaowan and Jing Hong dams provided an opportunity to view the construction and operational status of the two projects and the whole Lancang-Mekong cascade. The delegation gained a better understanding of how the projects will operate in a coordinated manner once the full cascade is completed, as well as the expected changes in flow regime that are predicted to occur downstream.

Greater cooperation between the MRC and China is also needed to help prepare people in the LMB for any future changes in flow regime that will result from upstream dams, including increased water levels in the dry season once projects are fully operational, and changes in sediment concentrations.

The Latin America experience

A critical challenge for the MRC is to reach a common view on an Integrated Water Resources Management (IWRM) strategy that will enable socio-economic development in the region, without compromising current uses of the river and the viability of important ecosystems. Part of the challenge is to identify and agree on the balance between development and protection of water and related resources.

The South American and Mekong regions face many similar opportunities and risks in advancing cooperation on the sustainable management and development of water and related resources - from decisions about hydropower to navigation, fish passage, water quality, sediment and delta management issues.



A delegation of Member Country representatives and MRCS staff visited the La Plata River Basin in South America to learn from their experience to help report on Mekong thinking about sustainability and hydropower projects.

The La Plata basin is a 3 million km² catchment which is shared by Brazil, Argentina, Paraguay, Bolivia, and Uruguay. The five countries have pursued cooperation in shared use of water resources since the 1970s. Developing the hydroelectric potential of the La Plata is credited with bringing the states of the region together, usually bilaterally for the purpose of particular hydropower projects. However, it has also brought about environmental and social concerns that can only be resolved by regional cooperation and national actions to distribute benefits and costs equitably within countries.

The mission enabled the delegates to learn about approaches taken for transboundary and multi-purpose utilisation, measures adopted for environmental and social sustainability and catchment management and how these changed over time with an emphasis on ensuring affected people and local communities can become the beneficiaries of such projects.

Rapid sustainability assessment tool

In the year 2010, a new tool for pilot-testing was launched. It will help countries make informed decisions about new hydropower developments in a basin-wide context.

The rapid basin-wide hydropower sustainability assessment tool (RSAT) was designed to target the most important basin-wide sustainability issues and assist with dialogue and planning between key players. It consists of a series of 11 topics and 53 criteria against which hydropower sustainability is assessed, and emphasises key themes that are necessary for a basin-wide approach to sustainable hydropower development.

Unlike other existing tools which are designed to assess individual hydropower projects, RSAT is targeted specifically to the sub-basin or basin context. The main aims of the assessment tool are:

- **To provide a common basis for dialogue and collaboration on sustainable hydropower between key players;**



- **To highlight and prioritise areas of sustainability risk and opportunity in a particular basin or sub-basin for further more detailed study; and**
- **To identify capacity building needs in the basin.**

The assessment tool is very flexible and can be used in a number of ways, for example, the assessment of transboundary arrangements or monitoring of hydropower sustainability performance. In 2010, the assessment tool underwent preliminary field trials in tributary basins in Mekong countries, coordinated by the MRC.

In the longer term, this project hopes to complete sustainability assessments for existing, planned and proposed hydropower projects in the main tributary basins in the LMB.

RSAT is the result of several years of work and stakeholder engagement by the Environmental Considerations for Sustainable Hydropower Development (ECSHD), a partnership between the Asian Development Bank, the MRC and the World Wide Fund for Nature. It can be downloaded from <http://www.mrcmekong.org/ish/sustainability-assesment-tool.htm>.



The Integrated Capacity Building Programme (ICBP) - building skills across the region

Integrated Water Resources Management (IWRM) capacity building occurs across all MRC programmes and Member Countries. Results are both incremental and, at times, intangible. ICBP's role on an individual level, aims to develop personal knowledge, skills, attitudes and behaviours required for systematic measures in IWRM. Through its training and capacity building activities, the Programme hopes to establish a well-founded performance assessment system, which is needed to evaluate increased efficiency and effectiveness of IWRM throughout the basin.

Integrated Water Resources Management Competencies

A series of training courses, workshops, excursions and exchange visits for the four Member Countries were facilitated in 2010. In addition, an IWRM training manual, which was translated into the four riparian languages, was developed. Sixteen Junior Riparian Professionals (JRPs) graduated and returned to their respective agencies to work in the water resource management sectors, and another group will be trained on subjects such as gender mainstreaming, communication, facilitation, IWRM, project cycle management and strategic planning in 2011.

'Riparianisation'

As part of the long-term goal of 'riparianising' the MRC, ICBP organised an analysis of the gaps in competencies within different MRC programmes. This resulted in the development of a knowledge and transfer road map for each related MRC programme. The Environment Programme and ICBP will pilot the process of knowledge and skills transfer from the last quarter of 2010 to early 2011.

Improvement of the organisation's support systems

Leadership, management, communication, facilitation, presentation and interviewing skills have been provided to senior managers and programme staff at both MRCS and in the Member Countries. This contributes to the strengthening of collective decision-making processes as well as effective management and communication by leaders, managers and professional staff. The programme has also provided advice and technical inputs to capacity building activities within MRCS and the Member Countries.

Gender mainstreaming through IWRM

Gender mainstreaming, one of the pillars of IWRM, has been a special focus, with 29 rounds of training and workshops that took place in Member Countries. Technical advice on gender issues was provided to the Climate Change Adaptation Initiative for application in its training. Inputs on gender mainstreaming were also provided in other areas such as the Strategic Plan 2011–2015 and the Basin Development Strategy. Gender toolkits were reviewed and updated in 2010 and will be finalised in 2011.

Formulation and implementation of the MRC Strategic Plan 2011–2015

In early 2010, ICBP provided technical and financial capacity building assistance to the National Mekong Committees for the facilitation of the first round of national consultations

on the MRC Strategic Plan 2011-2015. With the assistance of ICBP, the national consultations were highly participatory and paved the foundation for the MRC Strategic Plan 2011-2015 formulation process.

Establishment of a performance management system

ICBP provided resources for the preparatory steps of a performance management system analysis and followed up with a series of awareness raising events for Member Countries. The Programme also provided financial support for the establishment of the system.



MRC Strategic Plan 2011–2015



The final draft of the MRC Strategic Plan 2011–2015 was presented for endorsement of the MRC Joint Committee and Council in January 2011.

Reflecting the Hua Hin commitment to continued implementation of the 1995 Mekong Agreement and on the priority areas of action, this Strategic Plan revolves around a comprehensive implementation of Integrated Water Resources Management (IWRM) principles at regional and national levels, with a strong emphasis on improved alignment of MRC operations with the organisation's mandated core functions.

The plan was formulated based on the following principles which will guide the MRC's activities over the next five years.

- **Continuing the comprehensive implementation of IWRM**
- **Pro-poor development**
- **Environmental protection**
- **Dealing with climate change effects**
- **Country ownership towards financial sustainability of the MRC by 2030**

- **“ASEAN Integration” agenda to prioritise support for countries more in need of assistance than others**
- **“Whole of basin” approach – strengthened cooperation with upstream Mekong countries**
- **Enhancing stakeholder participation and gender mainstreaming**
- **Transparency and openness**
- **Aid effectiveness and donor harmonisation**
- **Strategic partnerships with other regional initiatives and other international river basin organisations**

The vision for the Basin and the MRC’s mission remain unchanged as reaffirmed by the Hua Hin Declaration.

The plan’s long-term goal is that Member Countries manage water and related resources in an effective, equitable and sustainable manner. This is supported by a 5-year goal that the Countries implement basin-wide IWRM approaches in national frameworks and development programmes.

The Strategic Plan 2011–2015 embodies an outcome-oriented focus with each of the strategic goals accompanied by a set of outcomes, implementation targets and indicators

for performance management and evaluation. Key priorities for action to achieve the strategic goals are also outlined, with details for implementation to be further defined and finalised in consultation with the Member Countries in the first two months of 2011.

This Strategic Plan emphasises the MRC’s continued gradual transition towards implementation of core functions over a period of 10–15 years, outlining a phased approach towards future decentralised modalities of implementation. A transition roadmap, to be formulated in 2011, will lay out the necessary steps to implement the decentralisation plan.

In response to suggestions by Development Partners and Member Countries, the Strategic Plan identifies risks and risk management measures for its successful implementation. The risks relate to the mainstream dam proposals in the LMB, donor funding and Member Country contributions, the riparianisation of the MRCS, and Member Country implementation of selected core functions at the national level in terms of responsibility, capacity and financial plan.

Strengthening partnerships with Dialogue Partners and Development Partners

Involving different stakeholders has proven to be important for the MRC. In 2010, the organisation strengthened its years-long cooperation with Dialogue Partners; China and Myanmar, and its Development Partners; country governments, development banks and international organisations, in technical, financial and planning areas.

Further involving China and Myanmar

In 2010, the MRC significantly increased the level of regional cooperation with the two Dialogue Partners through the regular annual Dialogue Meeting, the visit of MRCS Delegation to Chinese Ministries in Beijing in June and November 2010, and follow-up meetings with representatives of the two countries.

Technical collaboration with the two countries has been made in areas such as navigation and hydrological information exchanges. Since 2010, China has shared its real-time hydro-meteorological data with the MRC on a daily basis during the wet season as well as further extending its technical support and cooperation to the Initiative on Sustainable Hydropower through dialogue meetings and MRC study visits to hydropower sites in the country.

The MRCS mission to China in November 2010, involved several meetings with key Chinese officials, resulted in an increased level of cooperation in flood and drought management and secondment of experienced staff to MRCS. Both China and Myanmar have also been invited to participate in the Junior Riparian Professional Programme (JRP).

Engagement with Development Partners

The MRC has continued to engage more closely with Development Partners, comprising funding country governments, development banks and international organisations, by encouraging their active participation in the development of key MRC strategies and policies and improving communication with them on MRC issues.

During the development of the Strategic Plan 2011-2015 and the Integrated Water Resources Management (IWRM)-based Basin Development Strategy, the MRC shared its draft versions at different stages of the preparation with Development Partners. Meanwhile, a Joint Contact Group, comprising Development Partners and Member Countries representatives, met in October 2010 to discuss the formulation of the new Strategic Plan and the development of a performance management system. This participatory



approach has been instrumental to ensure that the view of the donors is fully reflected in the strategic direction of the organisation for the next five years.

The MRC Secretariat has also started to communicate actively with Development Partners by providing timely information on important MRC issues. This pro-active communication has been well received by Development Partners and has contributed to increased transparency.

At the annual Informal Donor Meeting held in June 2010 in Vientiane, Lao PDR, the Development Partners congratulated the MRC for its first Summit in Hua Hin, Thailand and considered it a good opportunity for the agency to have established a stronger recognisable identity as a river basin organisation for the Mekong. With significant directions committed by the

highest level of the governments from the Member Countries at the Summit in April, there has been greater attention in the MRC from international organisations.

Development Partners continued their cooperation with the MRC through technical support as well as new funding agreements in 2010. The Development Partner's programme support is outlined in this report. In addition, as of December 2010, twelve agreed to provide financial support for the MRC Strategic Plan 2011-2015.

MRC opens second office in Cambodia



Significant benefits are expected to flow to Phnom Penh following the opening of the MRC Secretariat's new office there in August.

The MRCS is now operating from two permanent locations after moving some of its divisions from Vientiane, Lao PDR. This replaces the previous arrangement of moving the Secretariat between Phnom Penh and Vientiane every five years.

As well as the links between MRC programmes and the southern part of the Mekong Basin, Cambodia will benefit from the capacity building benefits that the organisation brings to build up national expertise.

In November 2009, the governments of the four Member Countries decided to decentralise the Secretariat into two

permanent locations. The programmes staying in Vientiane include those that are more related to long-term basin-wide planning, such as the Basin Development Plan Programme, the Mekong Integrated Water Resources Management Project, the Initiative on Sustainable Hydropower, the Environment Programme and the Climate Change Adaptation Initiative.

The programmes that moved to the new Phnom Penh office were the Navigation Programme, Fisheries Programme, the Agriculture and Irrigation Programme and the Information and Knowledge Management Programme. The Flood Management and Mitigation Programme was already based in Phnom Penh.



Procedures for Notification, Prior Consultation and Agreement (PNPCA)

In September 2010, the MRC received an official submission for a proposed mainstream hydropower development project, the Xayaburi dam, from the Government of Lao PDR. This submission, for the first time, triggered the MRC's prior consultation process under the framework of the Procedures for Notification, Prior Consultation and Agreement (PNPCA).

Prior to the Xayaburi proposal, hydropower projects have only been constructed on the Mekong's tributaries, making this the first for the Mekong mainstream.

According to the 1995 Mekong Agreement, proposing governments are required to hold prior consultations with the other MRC Member Countries to discuss the potential trans-boundary impacts of mainstream dam development on neighbouring countries.

The difference between tributary and mainstream development is that proposed tributary projects only require notification to other MRC Member Countries.

Mainstream development, however, which is considered to have potential for greater trans-boundary impacts, requires prior consultation so that Member Countries can rigorously review project proposals with an aim to reach an agreement on whether or not to proceed and, if so, under what conditions.

The consultation should take about six months and can be extended.

The Joint Committee members have delegated representatives from their respective countries to assist with the PNPCA process as part of a working group. The MRC Secretariat has also selected representatives from each core programme to participate in their internal task group on the PNPCA.

Finance and Human Resources: sound and improved

As a river basin organisation, the MRC has continued to manage financial affairs in a sound manner and strives to continually improve its human resources functions. This is to ensure that the organisation pursues efforts to apply responsible budgeting rules, while offering opportunities for professional and personal growth in a collaborative and stimulating workplace.

Finance and Administration

In 2010, accounts were audited with no major issues identified. Income earned this year was higher than budgeted, while the total expenditure was 83% of the budgeted amount. No overspending occurred for any of the budget series.

Income, including contributions from Member Countries, and expenditure increased in 2010. Additional costs mainly incurred by co-hosting the MRC Secretariat in Vientiane and Phnom Penh and the co-financing for the organisation to host the MRC Summit and an international conference in Hua Hin, Thailand.

In 2011, expenditures are expected to increase as the co-hosting of the MRC Secretariat will be fully implemented throughout the year.

Human Resources

The organisation has improved its recruitment process. An orientation programme for new staff and related training activities is provided to ensure employees that working for the MRC is both a challenging and rewarding opportunity.

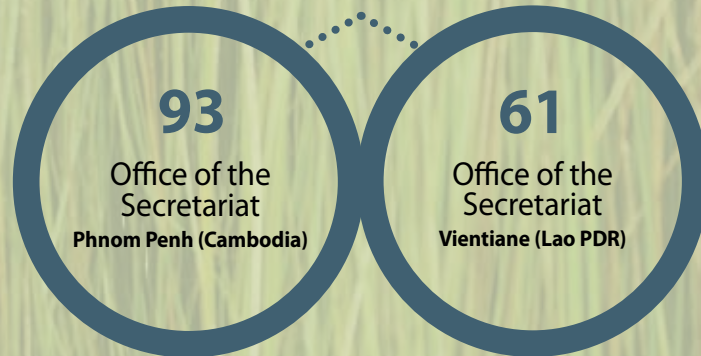
With a merit-based approach to human resources management, the MRC recruits employees based on their capacity and experience and rewards its current staff members based on their performance and contributions. Training and career development are offered to employees to help them realise their potential.

The MRC has been undergoing the final stage of its riparianization process, which is due to be completed by December 2012. The position of Chief of the International Cooperation and Communication Section, which had previously been appointed to international hires, was filled by a riparian national in March 2010.

As of December 2010, there were 154 staff members at the Secretariat.

MRC Workforce

154



General Support Staff **77** Riparian Professional **53** Junior Riparian Professional **15** International Professional **9**

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List of publications in 2010

Please note that these are available at http://www.mrcmekong.org/free_download/research.htm

Climate change

- Impacts of climate change and development on Mekong flow regimes First assessment, MRC Technical Paper No. 29, June 2010

Fisheries

- Catch and Culture, Volume 16, No.1, May 2010
- Catch and Culture, Volume 16, No.2, August 2010
- Catch and Culture, Volume 16, No.3, December 2010

Tourism

- An assessment of environmental impacts of tourism in the Lower Mekong Basin, MRC Technical Paper No. 28, December 2010

Environmental Health

- Report on the 2008 biomonitoring survey of the lower Mekong River and selected tributaries, MRC Technical Paper No. 27, February 2010
- Biomonitoring Methods for the Lower Mekong Basin, April 2010

Agriculture and Irrigation

- Multi-functionality of Paddy Fields over the Lower Mekong Basin, MRC Technical Paper No. 26, February 2010

Impact Assessment

- Social Impact Monitoring and Vulnerability Assessment - Report on a Regional Pilot Study for the Mekong Corridor, MRC Technical Paper No. 30, December 2010

MRC Reports

- State of the Basin Report 2010, March 2010
- Annual Flood Report 2009 Mekong River Commission, September 2010
- Flood Management and Mitigation Programme, July 2010

MRC Report Card

- The Mekong River Report Card on Social Impact Monitoring and Vulnerability Assessment (SIMVA): Approach and Methods, Volume 1, December 2010
- The Mekong River Report Card on Water Quality. Assessment of Potential Human Impacts on Mekong River Water Quality, Volume 2, June 2010

About MRC

- The Organisational Structure of River Basin Organisations: Lessons Learned and Recommendations for the Mekong River Commission, 10 June, 2010
- MRC 15 Years of Cooperation for Sustainable Development 1995-2010, March 2010





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Mekong River Commission

Mekong