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EXECUTIVE SUMMARY

The 2006 Environment Programme Annual technical Meeting (ATM) was held from 16 to 17 January 2007 in Chiang Mai, Thailand. The meeting was attended by 72 participants from member countries, MRCS, donors, academics, research institutes, civil society and NGOs. The meeting was co-chaired by Thai National Mekong Committee and Environment Division, MRCS. The third ATM was presented the results of Environment Programme (EP) under three main themes: *The Mekong Knowledge Base*, *Trans-boundary Cooperation*, and *The Mekong River Health*.

Social vulnerability and dependence on aquatic ecosystems and wetland management were presented in Theme 1—*The Mekong Knowledge Base*. It showed clearly the high levels of dependence on aquatic resources of people living in the Lower Mekong Basin (LMB). Any changes in availability, quality and diversity of these resources may have impacts on their food security, health and nutrition. As far as wetland management is concerned, the wetland survey, classification and mapping have been completed in all the member countries. In addition, valuation of wetland resources has been carried out. The results show that wetlands have high value in terms of both direct and indirect benefits.

In recent years, by member countries have asked the MRC to address some important *Trans-boundary* environmental issues, particularly the management of the wetlands between Siphandone area of Champassak Province Lao PDR and Strung Treng, Cambodia, and impact assessments of developments such as hydropower, industrial and mining projects. In addition, the guiding principles behind wetland management and conservation have also been discussed with member countries to provide further necessary tools and handbooks. Finally, some experiences of environmental flow management in other countries were presented, these included rivers in South Africa and the Murray-Darling Basin of Australia.

With regard to the *Mekong River Health*, presentations were given on water-quality monitoring and assessment, acid water issues in the Mekong Delta, Viet Nam, and ecological health. In general the water-quality of Mekong River is good, except some densely populated area, and localised agriculture and industrial developments. The acid sulphate soil in the Mekong Delta is an obstacle for agriculture development and water supply. The Ecological Health Monitoring Program of MRC initiated in 2002 with aims to assess and monitor in medium to long-term the ecological health of the lower Mekong River and its main tributaries.

Individual member countries shared their experiences of wetland management with the participants of the meeting. Delegates from **Cambodia** gave an account of the Tonle Sap Environmental Project with regard to natural resources management and biodiversity conservation. Their experiences indicated that the protection of biodiversity and livelihoods of the local community have significantly improved. Attendees from **Lao PDR** described the process and activities involved in the preparation for Ramsar Convention Accession. Most of the work has been completed; the only outstanding issues before submission is made to UNESCO for review are agreement on institutional arrangements and the clearance of related documents by concerned line ministries.

Delegates from **Thailand** shared some experiences on wetland conservation and management in their country. Thailand has long experience in the implementation Ramsar Conventions. Further work for action include: education and enhancing awareness, distribution of publications, increaseing awareness of wetland values, wetland studies, surveys and researches. Attendees from **Viet Nam** shared their experience of 15 years experience of Ramsar implementation in Viet Nam. They noted that institutional arrangement and legislation are in place, measures and methods in wetland management have been developed, and wetland research, communication and awareness training have been conducted. The major challenges include: lack of specific law, coordination not harmonised, lack of wetland database, limited awareness of wetland values. Actions to be taken include: enhancing institutional arrangements and the legal system, implementing supporting measures, awareness raising, strengthening international cooperation and building wetland database and website.

At the end, the Thai National Mekong Committee and Environment Division, MRCS gave closing remarks and thanked the participants for the productive discussions and sharing experiences of environmental management in the region.

1. INTRODUCTION

The main aim of the MRC's Environment Programme (EP) is to assist the member countries protect the environment, maintain the ecological balance of the basin and ensure environmental and social sustainability of economic development undertaken within the region. The EP holds Annual Technical Meetings (ATM) to help meet this aim. The first ATM was held on 15–16 November 2004 in Vientiane, Lao PDR and the second on the 2–3 November 2005 in Siem Reap, Cambodia.

Building on these first and second ATM, the third ATM was held on 16– 7 January 2007 in Chiang Mai, Thailand. The meeting was attended by 72 participants from the concerned line agencies of member countries, donors, development partners, academics, NGOs and research institutions. A list of participants is provided in Annex 3.

The focus of the third ATM was on three main themes: *The Mekong Knowledge Base*, *Trans-boundary Cooperation*, and *The Mekong River Health*. The objectives of the meeting are to (i) present key outputs of the Environment Programme in 2006, (ii) promote better understanding of inland water issues of member countries and other development partners in the Mekong region, and (iii) build links with line agencies from member countries and development partners in the Mekong region.

This report provides a short summary of the outcomes of the ATM. The detailed information on the PowerPoint Presentations are presented under each Theme and session of this report. If you would like to have more copies of CD, please send your request to the Environment Division, Mekong River Commission Secretariat at guttman@mrcmekong.org.

2. OPENING SESSION

On behalf of Thai National Mekong Committee (TNMC), Mr. Anussorn Bunyaratapan, Director General International Cooperation, welcomed all the participants to the meeting. (Annex 2.) Mr Hans Guttman, OIC Director, Environment Division, representative for MRCS, then welcomed the delegates and opened the meeting (Annex 2).

Javed Mir, Senior Natural Resources Specialist from the Asian Development Bank (ADB), also gave remarks on the ADB framework in the Greater Mekong Sub-region (GMS) and provided brief presentation on ADB Core Environment Programme in the GMS covering (i) the GMS Institutional Arrangement and the Summit, (ii) the GMS Core Environment Programme, and (iii) Sustainable Financing Mechanism and Emerging Business Opportunities.

The GMS institutional arrangements are based on the GMS Summit, GMS Ministerial Meeting, GMS Senior Officials Meeting which facilitated by ADB Secretariat and the national coordinator in each GMS country and under these, the GMS Working Groups (on agriculture, environment, human resources development, tourism, investment, and trade facilitation) and forums (GMS business, telecommunications, transport and energy sector), were established for planning and implementation.

There are five components under the **CEP which include: SEA of GMS** economic corridors and priority sectors, biodiversity conservation initiative, environmental performance assessment, capacity building for environmental management, and sustainable financing. The implementation is divided into three phases. Phase 1 (2006 – 2006) focuses on piloting and programme investment planning, phase 2 (2009 – 2011) up-scaling and implementation, phase 3 (2012 – 2015) consolidation and impact assessment.

[PowerPoint presentation\ADB Core Environment Programme in the GMS.ppt \(1\)](#)

3. THEME 1: MEKONG KNOWLEDGE BASE

Dr. Charlotte Macalistar provided a brief introduction to this theme, which highlighted some of the key activities and linkages of the MRC's wetland management. These include: tools for understanding and managing wetlands, trans-boundary wetland management, reliance on aquatic resources and vulnerability, valuation of wetland resources, and wetland guiding principles.

3.1 Session 1: Social Vulnerability and Dependence on Aquatic Ecosystems

The objective of vulnerability assessment is to provide information on the dependence of certain social groups on water and related resources, and their vulnerability to changes in these resources. The study found that the poorest people have the highest levels of dependence on aquatic resources. Fish is the main source protein in the diet of the inhabitants of the LMB, providing between 50 to 75% of the total protein requirement. The changes in availability, quality and diversity of aquatic resources may have impacts on food security, health and nutrition of these people. Existing data does not link to human vulnerability to changes in aquatic resources. In this connection, it was proposed that field studies are needed to combine secondary data and primary data to identify who is vulnerability to changes in aquatic resources, the number of people who are vulnerable, where they are, when and why they are vulnerable, and what coping strategies they employ.

The objective of social impact monitoring (SIM) is to provide regular information on the status and trends of social conditions in the basin. The findings indicated that SIM does not suggest negative changes linked to changes in aquatic resources. However, significant negative change may occur at particular districts and sites. Hence, further investigation on social impacts is required at district and site level, particularly the linkages between social conditions and aquatic resources.

[PowerPoint presentation\Session1\Human Vulnerability and Dependence on Aquatic Resources.ppt \(2\)](#)

3.2 Session 2: Wetland Management

The EP aims to provide information on wetland habitat, ecosystem characteristics, resources use and value, and promote principles of sustainable use of wetlands. Wetland pilot sites such as Songkhram Basin (Thailand), Strung Treng (Cambodia), Attapeu and

Siphandone (Lao PDR) and Tram Chim/Lan Sen, (Viet Nam) were selected for field survey. The wetlands were grouped into 53 classes with detailed maps. The overall accuracy of all survey habitats is 93.8 %, 87.8%, 77.2%, 78.9%, and 88.9% in Strung Treng (Cambodia), Attapeu (Lao PDR), Songkram (Thailand), and Tram Chim and Lang Sen (Viet Nam) respectively.

Apart from the wetland management, the wetland valuation was conducted through the literature review, data summary and analysis in the four member countries. About 136 reports were reviewed and over 700 values of different wetland types were compiled. The findings indicate that the total values of marine intertidal wetlands are over US\$4,000/ha/year, while estuarine intertidal wetlands are over US\$1,000/ha/year.

It was also found that wetland classes with the largest variety of values include perennial river channels, perennial reservoirs (>8ha), flooded swamps with woody shrubs (<5ha), marine intertidal zones with vegetation or coral, and estuarine intertidal zones with vegetation or coral. The lessons learned show that (i) wetlands have a wide range of values which could lead to misrepresentation, (ii) much wetland valuation work as been done in the region, (iii) there are a wide range of methods, units, time periods and types of valuation conducted making comparisons difficult, (iv) many studies used partial methods which could not measure non-use values, (v) there is a lack of detailed wetland valuation reports, and the importance of wetland products and services to the poor remain little understood.

Further work needs to be done include the continuation of literature, economic valuation case studies (specific wetland classes) and mapping of valuation results.

PowerPoint presentations

[PowerPoint presentation\Session2\the environment programme & building a knowledge base on aquatic ecosystems in the LMB.ppt \(3\)](#)

[PowerPoint presentation\Session2\wetland and their values, an overview of the people and aquatic ecosystems – wetland valuation and inventory activity.ppt \(4\)](#)

4. THEME 2: TRANS-BOUNDARY COOPERATION

Hans Guttman gave a brief introduction to the theme and stated that member countries have shown an increase in trans-boundary cooperation in recent years when the NMCs have requested MRCS to address sensitive trans-boundary issues. During 2006 EP activities in this area (such as management of trans-boundary wetlands, trans-boundary environmental impact diagnostic study, wetland guiding principles, and environmental flow management) have been contributing to trans-boundary cooperation between the member countries.

4.1 Session 3: Enhancing Cooperation in Trans-boundary Environmental Management

Management of Trans-boundary Wetlands: The Laotian and Cambodian governments have recognized that the area of Strung Treng and Siphandone has several potentially

important trans-boundary issues and requested MRC to explore and identify those issues within its remit.

A process of identifying trans-boundary problems in the border area between Siphandone in Champasak province, Lao PDR and Strung Treng province, Cambodia, provided information for further discussion. The **two provinces** have determined and agreed to take further actions on fishery, tourism, the dolphin-pool management, local development, will be supported by the LNMC, CNMC and MRCS. A set of concrete recommendations for further actions were agreed and these have been forwarded to MRC's partners such as the Wetland Alliance and WWF.

Environmental Trans-boundary Diagnostic Study: This study focuses on the environmental impacts of development of Sesan, Srepok, and Sekong rivers—called 3S. Perceived impacts identified include changes to habitats and people's livelihoods, water quality degradation resulting from gold mining and exploitative industry, population growth and tourism, and upstream development activities (dams). The continued work includes agreement on the priority issues to investigate and designing/implementing the study.

Regional Wetland Management for Biodiversity—Guiding Principles for the Wise Use of Wetlands: This activity is under the Mekong Wetland Biodiversity programme. To conduct the activity, MRC has consulted with member countries on the key issues and needs for 'wetland guiding principles'. The findings show that all member countries have expressed strong need for guidelines, technical tools and handbooks defined by the Ramsar Convention for wetland conservation, management and wise use. Member countries agreed that there is a need to make rapid assessment of the availability of technical tools and handbooks, and then identify and decide which tools and handbooks need translating further, training and distribution.

4.2 Session 4: Mekong Method of Environmental Flow Assessment

Participants gave presentations about their experiences developing and implementing environmental flow assessment in river basins in other countries. These, which included South African Rivers and Murray-Darling Basin in Australia, were compared to the Mekong. The comparison highlighted the need for **integrated flow management and context** where the environmental flow is undertaken. A presentation was also given on the 'Mekong Method'—a flow assessment tailored specifically for the LMB.

PowerPoint presentations

[PowerPoint presentation\Session3\transboundary wetland management Strung Treng \(Cambodia\) and Siphandone \(Lao PDR\) area.ppt \(5\)](#)

[PowerPoint presentation\Session3\environmental diagnostic study.ppt \(6\)](#)

[PowerPoint presentation\Session3\wetland guiding principles.ppt \(7\)](#)

[PowerPoint presentation\Session3\environmental flow.ppt \(8\)](#)

[PowerPoint presentation\Session3\drawing a global experience management of the Mekong method for integrated flow assessments.ppt \(9\)](#)

5. THEME 3: MEKONG RIVER HEALTH

5.1 Session 5: Water Quality Monitoring and Assessment

Lower Mekong Basin Water Quality Assessment (data 1985 – 2004): The MRC water quality programme (WQMN) has been operating in the Lower Mekong Basin since 1985 in Thailand, Viet Nam and Lao PDR, and from 1993 in Cambodia. The monitoring programme uses some 100 sites in all four countries and focuses mainly on physico-chemical parameters. Each of the four countries has participated in sampling collection and analysis in designated national laboratories under a sampling and analytical regime that is the MRC coordinates. In 2001, the MRC began a major programme of upgrading the monitoring programme with emphasis on revision of the monitoring network, on data quality, and database consolidation and verification. The MRC completed the implementation of the revised network in 2004.

MRC undertook a comprehensive diagnostic study of contaminants of the Mekong system in 2003 and 2004. MRC holds this data in a separate database. In 2005, the Regional Technical Advisory Group for water quality (RTAG) requested MRC undertake a full assessment of water-quality to address the main management issues in the basin, and to make this assessment available to the public and to policy makers. Partial assessments, using sub-sets of data from the database, were carried out for specific purposes. None of these have been published and, with the exception of the background work that was carried out for the contaminants diagnostic study, none are easily accessible. The request required MRC to provide pertinent information related to water quality management of the basin.

Mr. Khoi presented the Lower Mekong River Basin Water Quality Assessment Report. While, it provides a full assessment of water quality, the following issues were presented:

- Pressures: municipalities, industries, aquaculture, agriculture
- Trans boundary issues
- Water Quality Index
- Some water-quality problems; eutrophication, acidification and salinity, and trans-boundary issues

The key conclusion is that in general, the water quality is still good; transport of pollutants across boundaries is not yet a problem, although discharged waste from densely populated areas, and probably some from agriculture, affected some areas. The

pressure on water quality is likely to increase from increased aquaculture and probably from industry at a limited number of locations.

Acid water issues in the Mekong Delta, Viet Nam: Mr. Hien gave a presentation on issues arising from acidic water in the Mekong Delta, Viet Nam. He outlined the acidic-water issues of the Mekong Delta, particularly the impact of acidic water on the environment, the main toxic composition of acidic water, and the characteristics of acidic water in Mekong Delta. The report found that the acid sulphate soil in the Mekong Delta, in Viet Nam is an obstacle for agriculture development and strongly affects water quality in the Mekong Delta. Acidic water has no use—domestic, irrigation or aquaculture—due to the toxic components such as high levels hydrogen (H⁺), aluminium (Al) and iron (Fe). Acidic water has high concentrations of nitrogen and organic matter and low concentrations of phosphorous. There appeared to be no impact of acidic water on either the Mekong or Bassac rivers. The conclusions of the report emphasised that Mekong Delta is a very specific area. Among factors affecting water quality, natural conditions such as ASS or salinity intrusion, are very significant and need to be considered carefully when assessing water-quality in the Mekong Delta.

5.2 Session 6: Biological Monitoring

Biological indices are used worldwide to assess and monitor the ecological health of rivers and other freshwater bodies. The EP is in the process of developing a biomonitoring methodology that is applicable to the LMB.

The Ecological Health Monitoring programme, which the EP initiated in 2002, with aims to assess and monitor the medium to long-term ecological health of the lower Mekong River and its main tributaries. The monitoring programme will be implemented in 2007. Presentations presented during 2006 ATM include:

- Complementary aspect of biological monitoring assets to water quality monitoring using chemical and physical properties;
- Advantages and disadvantages of the four bio-assemblage monitoring groups;
- Specific and unique Mekong river, and its utilization and management;
- Development of an appropriate and practicable analysis method to the Mekong condition; and
- Preliminary results of the biological assessment work during 2004 to 2006;

Details sampling protocol of the four monitoring groups and results of 2006 were given in a poster session.

PowerPoint presentations

[PowerPoint presentation\Session5\Lower Mekong Basin Water Quality Assessment \(data 1985 – 2995\).ppt \(10\)](#)

[PowerPoint presentation\Session5\Acid water issues in the Mekong Delta, Viet Nam.ppt \(11\)](#)

[PowerPoint presentation\Session6\introduction to the symposium.ppt \(12\)](#)

[PowerPoint presentation\Session6\evaluating the ecological health in the LMB.ppt \(13\)](#)

[PowerPoint presentation\Session6\biological assemblage selections for monitoring.ppt \(14\)](#)

[PowerPoint presentation\Session6\indicators of impact for ecological health monitoring.ppt \(15\)](#)

[PowerPoint presentation\Session6\conclusion and future plans.ppt \(16\)](#)

6. EXPERIENCES OF WETLAND MANAGEMENT OF COUNTRIES MEMBER IN LMB

Cambodia: Dr. Bonheur shared some experiences on the Tonle Sap Environmental Project with regard to natural resources management and biodiversity conservation. The total project cost is about US\$19.53 million and comprised three components: (i) natural resources management planning, (ii) community-based natural resource management, and (iii) capacity building for biodiversity conservation.

The key results and achievements of the project include the policy and strategy formulated for the Tonle Sap Biosphere Reserve (TSBR), the Tonle Sap environmental database, the development of a dedicated website, and the publication of a 'Tonle Sap Bulletin'. In addition, capacity building was conducted for government staff and local communities, 168 community fisheries have been empowered in TSBR, knowledge and awareness of biodiversity conservation was communicated to the wider population, and livelihoods of local communities have been improved. About 15 sites of special importance to water birds were protected, in which breeding success reached 90% in 2004 and 100% in 2005.

Lao PDR: Mr. Khamphet Roger shared experience on the process and activities of the preparation for Ramsar Convention Accession. The achievements included the establishment of a multi-sectoral Ramsar Technical Working Group co-chaired by Science Technology and Environment Agency (STEA), the Department of Livestock and Fisheries (DLF), and Living Aquatic Resources Research Centre (LARReC). The Ramsar site (Siphandone) information sheet and site mapping were completed in January 2006. A study tour to two Ramsar sites (Xuan Thuy and Namdinh) management in Viet Nam was organised for Lao delegations in November 2006. The next step will be the clearance of related documents within local authorities and line ministries, before its is submitted to UNESCO for review.

Thailand: Nirawan shared some experience on wetland conservation and management in Thailand. Thailand has long experience in implementing Ramsar Convention sites. So far, ten wetlands are designated as Ramsar sites. Ramsar implementation had two phases: Phase 1 (1993 – 1998)—ratifying the Ramsar Convention, formulating policies and plans, conducting wetland inventory, and formulating wetland management plan for specific site, and Phase 2 (1998 – 2002)—compiling national list of wetlands, making decisions (The Cabinet) on the list of wetlands and coordinating relevant agencies and Ramsar Convention Secretariat.

The priority measures for 2003 – 2007 wetland work plan have been focusing on wetland management, conservation, rehabilitation and protection. Further work for actions include: education and enhancing awareness, celebration of the world wetland day, distribution of publications, enhancing awareness of wetland values, wetland studies, surveys and researches, studies and researches for wetland planning, monitoring and use.

Viet Nam: **Mr. Dung** shared experience on 15 years of Ramsar implementation in Vietnam. He said that two wetlands were designated as Ramsar sites: Xuan Thuy national park in 1989 and Bau Sau wetland in 2005. Achievements of wetland management in Viet Nam include establishing institutional arrangement, formulating legislation, enacting measures and methods for wetland management, wetland research, and conducting communication and awareness training. The major challenges facing wetland management in Viet Nam are the lack specific laws on wetland issues, lack of harmonised coordination, no wetland database, and limited raising the awareness of wetland values. Actions needed include enhancing institutional arrangements and legal systems, implementing supporting measures, awareness raising, strengthening international cooperation, and building a wetlands database and website.

PowerPoint presentations

[PowerPoint presentation\Session2\Tonle Sap environmental management project, Cambodia.ppt \(17\)](#)

[PowerPoint presentation\Session2\Lao experience of preparation for Ramsar Accession.ppt \(18\)](#)

[PowerPoint presentation\Session2\Ramsar Convention overview of wetland management in Thailand \(19\)](#)

[PowerPoint presentation\Session2\15 years experiences of Ramsar Convention implementation in Vietnam.ppt \(20\)](#)

7. COMMENTS AND CONCLUSIONS

Participants suggested that for the next Environment Programme ATM, **the Environment Division** should provide an overview of activities of the Environment Programme over the previous year followed by presentations detailing the results of the EP activities. They also proposed the next ATM includes technical papers on environmental management from regional and member countries at the coming ATM.

Hans Guttman gave a short summary of the meeting and highlighted that trans-boundary cooperation has been increased among member countries in recent years. Member countries have requested MRC to involve more in trans-boundary management. He mentioned that Environment Division will take into account all comments of participants for improving the Environment Programme and its activities. Finally, he thanked all participants for attending the meeting and for fruitful discussions and exchange experiences in environmental management in the region.

8. CLOSING REMARKS

Mr. Anussorn Bunyaratapan, Director, Office of International Cooperation, Department of Water Resources closed the meeting by thanking the participants for their interest and participation in the Annual Technical Meeting 2006 (See Annex 2). Hans Guttman also provided closing remarks on the 2006 ATM (See Annex 2).