Report on

The Regional Forum on the Mekong River Commission Climate Change and Adaptation Initiative 2-3 February Bangkok, Thailand

Organized by the Mekong River Commission Secretariat

Environment Division, MRC Secretariat
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List of Abbreviations and Acronyms

ADB	Asian Development Bank
AIT	Asian Institute of Technology
ANU-ICAM	Integrated Catchment Assessment and Management Centre, Australian National University
AusAID	Australian Agency for International Development
BCI	GMS Biodiversity Conservation Corridor Initiaitve
BDP	MRC Basin Development Plan Programme
CCAI	MRC Climate Change and Adaptation Initiative
CEO	Chief Executive Officer (of MRC Secretariat)
CEP	GMS Core Environment Programme
COP	Conference of Parties, UNFCCC
CSIRO	Australian Commonwealth Scientific and Research Organisation
Danida	Danish International Development Assistance
DFID	UK Department for International Development
DSF	MRC Decision Support Framework
EIA	Environmental Impact Assessment
EP	MRC Environment Programme
FAO	Food and Agriculture Organisation of the United Nations
GCM	Global Circulation Model
GEF	Global Environment Facility
GHG	Greenhouse Gas
GMS	Greater Mekong Sub-Region
GTZ	German Agency for Technical Cooperation
IDRC	International Development Research Centre
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
LMB	Lower Mekong Basin
MDB	Murray Darling Basin
MDBSY	Murray Darling Basin Sustainable Yields project
MDG	Millennium Development Goals
MRC	Mekong River Commission
MRCS	Mekong River Commission Secretariat

NAPA	National Adaptation Programme of Action to Climate Change
NARBO	Network of Asian River Basin Organisations
NET	National Expert Team on Climate Change and Adaptation in each of the four MRC Member Countries
NGO	Non-Governmental Organisation
NMC	National Mekong Committee
NSCCC	Lao PDR National Steering Committee on Climate Change
P-E	Poverty-Environment
PEI	UNDP-UNEP Poverty Environment Initiative
REDD	UN collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
SEI	Stockholm Environment Institute
SEA	Strategic Environmental Assessment
SEA START RC	Southeast Asia START Regional Centre
SENSA	Swedish Environment Secretariat for Asia
Sida	Swedish International Development Cooperation Agency
TMD	Thai Meteorological Department
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WSMP	MRC-GTZ Watershed Management Project
WWF	World Wildlife Fund
WWF-GMP	World Wildlife Fund Greater Mekong Programme

Foreword

Impacts of climate change on the water resources of the Mekong River, and particularly on the Delta region, is an issue of increasing concern for the Governments and the people of the Mekong River Basin. At its 14th meeting in November 2007, the Mekong River Commission (MRC) Council requested the MRC Secretariat to develop an initiative to support the Member Countries in their efforts to deal with the impacts of climate change in the Mekong River Basin. The initiative should provide knowledge, tools and capacity building to assist the Member Countries to better prepare for the needed actions towards climate change adaptation. The riparian countries of the Mekong Basin realize that not only would climate change have a greater impact on developing than developed countries, but the absence of information on climate change vulnerability within countries and across various classes of societies is also a major cause of concern. By improving the knowledge on the potential impacts, it will be possible to increase the ability to help the people of the region with capacity to confront such impacts.

MRC started implementing the initial phase of the MRC Climate Change and Adaptation Initiative (CCAI) in July 2008 with the aim to formulate a detailed framework document, including budgeted activities with clearly defined milestones and an indicative schedule of implementation for the period 2009-2015. This formulation is undertaken through a dialogue and consultation with stakeholders including government agencies, research organisations and universities of the Member Countries, NGOs, regional organizations and development partners.

The Regional Forum on the MRC CCAI is one of several activities fostering dialogue and consultation with stakeholders concerned with climate change and adaptation activities in the Lower Mekong Basin. The Forum provided an opportunity to introduce the MRC CCAI and to gain feedback from key stakeholders on the approach and framework of the Initiative.

The more than 200 hundred participants attending the Forum demonstrate a genuine concern over the possible climate change impacts for the region as well as a strong interest to collaborate and coordinate efforts. MRC is keen to continue the knowledge sharing, coordination and collaboration in our implementation of the MRC CCAI.

On behalf of the MRC, I would like t thank all those who participated in the Regional Forum for their valuable feed back and comments and look forward to a continued collaboration and engagement to support the countries in the region to tackle the climate change challenges ahead.

Jeremy Bird
Chief Executive Officer
MRC Secretariat

Executive Summary

The Regional Forum on the MRC CCAI 2-3 February 2009 discussed the possible impacts of climate change for the Mekong River Basin and the needs for the countries to prepare themselves by adapting to climate change. During the two days of the Forum 29 presentations from organisations and experts were delivered and discussion sessions facilitated the dialogue between the more than 200 participants.

The Forum recognized the urgent need to support the Mekong River countries in their responses to foreseen impacts of climate change in the Mekong River Basin. The key focus related to climate change in the region is the impacts of climate change and the options for adaptation. The climate change impact and adaptation assessments need to be seen in the context of the rapid economic development in the Mekong River Basin and focus on achieving the Millennium Development Goals (MDGs). It was emphasized that a basin wide integrated approach based on Integrated Water Resources Management (IWRM) and the cooperation as expressed in the MRC 1995 Agreement is necessary.

The key question is: What does the complex range of climate change information mean for stakeholders of the Mekong River Basin: Governments, provincial authorities, communities, the private sector? This can't be answered fully and with certainty with the present knowledge. There is a need to improve the regional knowledge and data bases on climate change and climate change impacts to improve the adaptation efforts at all levels. The need for capacity building and awareness raising on climate change impacts, vulnerability assessment and adaptation were expressed strongly by the MRC Member Countries. Acknowledging the large range of initiatives and activities on climate change impacts and adaptation, the Forum asked MRC to facilitate the regional sharing of climate change data and experiences.

The MRC accepted this and will continue to facilitate the dialogue and coordination of efforts related to climate change in the Mekong River Basin. The MRC CCAI formulation will be finalised by end March in consultation with Member Countries and partners. The MRC will in the mean time implement priority activities to improve the information on climate change impacts and hopefully be able to launch the full CCAI later this year.

1 Introduction

1.1 Background

The global discussion on climate change was, until recently, focusing mainly on the main causes of climate change: the increasing anthropogenic emissions of greenhouse gases and negotiations on the mitigation measures and emission ceilings. Emissions of greenhouse gasses per capita and emission intensity are low in the Lower Mekong Basin (LMB) countries compared with other parts of the world. The impacts of climate change are however predicted to be significant. Climate change is one of the challenges the countries need to address urgently in a combined and coordinated way.

The changes in weather pattern as a result of climate change are expected to increase the natural variability, with less rain in the dry season and more rain in the wet season. This may lead to increasing seasonal water shortages, but also to higher frequency and severity of floods. The rainstorms and floods in 2008 caused death and devastation and incurred high costs. The present knowledge suggests that the impacts will vary across the Mekong River Basin. In the upper Mekong Basin, scientists believe that the rainfall will decrease. In some areas of the LMB, it is expected that the total annual rainfall will be largely unchanged whereas in other areas the rainfall will increase. However, changes in seasonal patterns are predicted for the whole Basin.

This is highly complex, and the complexity increases when trying to predict flow changes and impacts on ecosystems and livelihoods. Changes to climate and river flows will affect the natural ecosystems, such as wetlands, as well as economic activities within agriculture, fisheries and other sectors dependent on water availability and finally the livelihood of people. The possible impacts of climate change are superimposed on a set of other changes happening in the Basin related to the economic growth. These include public-private partnerships of hydropower and mining developments and extensive expansion of agro-industries. These developments will have significant contribution to changes in land and water use.

The ability to assess future climate change and the potential impacts on ecosystems and people is critical to finding innovative ways to adapt to these changes and develop the economies of the region further.

1.2 Towards the MRC Climate Change and Adaptation Initiative

In response to the Member Countries request to provide support to address the challenges of climate change, MRCS in 2008 produced a MRC Climate Change and Adaptation Initiative Concept Note which was submitted to AusAID who agreed to fund the formulation of the initiative and to fund priority activities related to climate change adaptation. The initial phase of the Initiative was launched in July 2008. The Secretariat has been working on the formulation of the MRC CCAI together with the Member Countries since then with the aims to formulate a detailed framework document, including budgeted activities with clearly defined milestones and an indicative schedule of implementation for the period 2009-2015. Project formulation will be undertaken through a dialogue and consultation with stakeholders. At the same time priority activities related to downscaling of climate models and assessment of impacts on the hydrology and flow in the Mekong River using the MRC Decision Support Framework (DSF) have been undertaken in collaboration with relevant research organizations.

A large number of organizations are working on increasing the knowledge on climate change impacts and adaptation and provide support to the countries in the LMB region to address these issues. The MRC CCAI will be designed to build on existing and on-going activities, seek collaboration, coordination and synergies and avoid repetition. Dialogue with Member Countries

was pursued by establishing National Expert Teams (NETs) to support the process and to make sure that the MRC Initiative builds on existing activities and knowledge, explore synergies and assist coordination of climate change activities related to the Mekong River Basin. The Regional Climate Change Forum was initiated to extend the dialogue to involve regional organisations and development partners.

1.3 The Regional Climate Change Forum

The Regional Climate Change Forum provided an opportunity to introduce the MRC CCAI and to gain feedback from key stakeholders on the approach and framework of the Initiative.

The primary objectives of the Regional Climate Change Forum were to:

1) provide an opportunity to assess the MRC CCAI and gain feedback from key stakeholders on the approach and framework of the Initiative that will lead to its refinement;

2) review information on past, current and future activities in the Member Countries and discuss needs and gaps in climate change and adaptation knowledge and activities in different sectors, scales and levels in the LMB;

3) gather information on past, current and future activities and identify needs and gaps in climate change and adaptation knowledge from development partners and organisations;

4) promote initiation of dialogues on climate change and adaptation in the LMB among the MRC Member Countries and development partners and organisations;

5) establish a platform for discussing some of the key climate change and adaptation issues in the LMB that will synthesise information and knowledge on climate change and adaptation for the benefit of the Member Countries.

The Forum was held 2-3 February 2009 in Bangkok in accordance with the programme attached in Appendix 1.

The total number of participants was about 240. Stakeholders from all relevant groups were represented: delegations from the four LMB riparian governments, representing both the water, environment and climate issues, representatives from the MRC dialogue partners, international and national NGO's, development banks and donors, universities and research institutions, international and riparian consultants and MRC representatives from the four National Mekong Committees (NMCs) and MRCS. The list of participants is provided in Appendix 2.

The Forum was structured into 4 sessions with in total 29 presentations by national and international experts with strong focus on the regional perspectives. Discussion and working sessions concluded every session to facilitate the dialogue and response to the MRC CCAI. The Forum Brief explaining the rationale and context of the event is included in Appendix 3 and the 'Guiding Questions for Discussions' is included in Appendix 4.

Facilitators of the Forum were Dr. Aaron Wolf, Department of Geosciences, Oregon State University, the United States of America, and Mr. Suparerk Janprasart, Basin Development Plan, Planning Division, MRCS.

1.4 The Regional Climate Change Forum Report

This Forum Report provides a brief background for the event, including the status of preparations for the MRC CCAI. It provides a summary of highlights of the presentations made, as well as the main points raised in the discussions at the end of each session. The concluding chapter provides a brief summary of the conclusions and recommendations emerging from the Forum. All speeches and presentations made at the forum are on the MRC website (*www.mrcmekong.org*).

2 Forum presentations and discussions

2.1 Opening Session: Climate Change and Adaptation Challenges

The opening session included a welcome address by Mr. Jeremy Bird, CEO of the MRC Secretariat, and an opening address by Dr. Siripong Hungspreug the Alternate Member of the MRC Joint Committee for Thailand, followed by keynote addresses by International Experts on topics highly relevant to the LMB setting the scene for the Climate Change Forum sessions.

Mr Jeremy Bird welcomed all participants to the Regional Forum on the MRC CCAI. Mr Bird highlighted the importance for the region to act now to meet the challenges posed by climate change. The ability to assess future climate change and the potential impacts on ecosystems and people is critical for the countries in the region to be able to find innovative ways to adapt to these changes and develop the economies of the region further. This requires an integrated approach, where the best of the combined knowledge and experience is used is used to downscale global climate models, not only to describe the specific characteristics of the region, but also to provide site specific data that can help planners to understand how climate change will affect their environment.

Climate change is a cross-cutting issue that affects many aspects of the basin including the hydrological regime, the environment, fisheries, agriculture, hydropower generation and the social well-being of people living in the basin. MRC is already addressing many of these issues and will build the climate change initiative on the existing knowledge. With its regional mandate and crosscutting work, MRC is well placed to assist its Member Countries in developing tools and policy frameworks for assessing the impacts and for developing adaptation strategies to climate change. From our consultations with the MRC Member Countries, it is clear that all countries already include climate change in their national policies, and that some are already implementing strategies and activities on climate change. Existing knowledge and capacities within the member countries are key building blocks for the MRC CCAI.

MRC aims to foster a close dialogue and consultation with stakeholders concerned with climate change and adaptation in the Mekong River Basin and it is hoped that the Regional Climate Change Forum will provide a venue for sharing of information and learning from each other on how we can cooperate to jointly assess the impacts of climate change and identify ways to adapt to these changes.

Dr Siripong Hungspreug, Director General, Department of Water Resources, Ministry of Natural Resources and Environment gave an opening address: ‘Responses to Future Climate Change Impacts in the Mekong River Basin-the MRC Climate Change and Adaptation Iinitative’. Dr Siripong recognised that the impacts of climate change on the water resources of the Mekong River, and particularly on the Delta region, is an issue of increasing concern for the Governments and the people of the Mekong River Basin. The Council of the Mekong River Commission has asked for development of a CCAI for the Mekong, which would provide knowledge, tools and capacity building to assist the Member Countries to better prepare for the needed actions towards climate change adaptation. The riparian countries of the Mekong Basin realize that not only

would climate change have a greater impact on developing than developed countries, but the absence of information on climate change vulnerabilities within countries and across various classes of societies is also a major cause of concern. By improving the knowledge on the potential effects of climate change, the ability to help the people of the region with the capacity to confront such effects will increase. Strategies for poverty alleviation through sustainable development must rely on a sound understanding of the impacts of climate change on aquatic resources and people's livelihoods. The projected weather pattern changes in the Mekong region are expected to increase the natural variability, with less rain in the dry season and more rain in the wet season. This may lead to increasing seasonal water shortages, but also to higher frequency and severity of floods. Future changes to climate and river flows will affect the natural ecosystems, such as wetlands, as well as economic activities within agriculture, fisheries and other sectors dependent on water availability.

As a response to these concerns, MRC initiated, in June last year, work to formulate the MRC CCAI targeting two overall objectives. The first is to develop scientific data, basin-specific analytical tools and processes necessary for projection of future climate impacts on the hydrological regime, ecosystems and people in the Mekong River basin and to identify adaptation strategies to these changes. The major challenges for this technical work are to generate new information, building on existing information and competences in the region, and to make sure that this new information responds to the needs of different stakeholders and also reaches these stakeholders. The second objective will be to establish and strengthen the institutional framework for climate change planning in the region, and improve the knowledge and capacity of the MRC, the NMCs and line agencies in the Member Countries to assess and mitigate future climate change impacts on ecosystems and people of the Basin.

In this context, Dr. Siripong expressed his hope that the Forum will generate solid feedback on needs and gaps in climate change and adaptation knowledge in the region, and help refining the Initiative

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The presentation by Mr Brian Dawson, Climate Change and Energy Advisor from AusAID, Australia in his presentation: 'Climate and Water – The Challenges Ahead' outlined the key challenges that water sector planners and managers will face in designing water and energy supply projects, and in managing watersheds, in the context of a changing climate. Mainstreaming climate change into decision making is essential. Global policies on climate change must be integrated in national and local plans and programmes. Uncertainty and lack of knowledge will continue to be a major hurdle for decision makers. In this context the role of MRC in supporting the Member Countries with relevant information will be critical to decisions makers in the region. MRC must help the countries to understand the possible implications of climate change to livelihoods and ongoing development. Adaptation strategies must be based on a sound understanding of how different systems may change.

Climate change is accelerating and has global implications. Five key areas at high risk include water, agriculture, health, energy and biodiversity. Climate and water issues are emerging as a priority. Climate change is projected to result in significant changes in the timing and distribution of precipitation across different regions. There is a broad awareness of likely global impacts on water; some areas will become wetter, some drier and the seasonal variability will increase. However basin level understanding is much less developed. Recent experience in basin level modeling has provided valuable information to decision makers but much more needs to be done to accommodate climate change considerations into the basin level management and development planning. Priority areas include climate-hydrological modeling; vulnerability assessments and awareness raising; prioritising adaptation responses; and climate proofing infrastructure investments.

The Mekong region faces many challenges and it will take time to build understanding, awareness and effective responses. The MRC CCAI will hopefully provide an important mechanism to help

the Member Countries to improve the understanding of possible impacts of climate change in the Mekong Basin, where adaptation strategies for long-term water and food security should be issues of high priority.

The second keynote presenter, professor Torkil Jonch Clausen, Senior Advisor Global Water Partnership, DHI, Denmark, in his speech: 'Future Water Management - Meeting the Challenges of Adaptation towards Climate Change' highlighted that the discussions on climate change so far has focused to a large extent on mitigation of climate change. The MRC CCAI should focus on adaptation to climate change for improved land and water management. Southeast Asia is a 'hot spot' region for climate change impacts. The region already experience serious water challenges to sustain population and economic growth, which is further exacerbated by climate change. Global warming will "hit through land and water" changes. For example, wet areas will get wetter and dry areas will get drier. In the Mekong Delta sea level rise combined with increased river flow may cause increased flooding. While sea level rise combined with decreased river flow may cause increased salinization. There is a need to downscale global climate models to get a better and more detailed understanding of possible future impacts due to climate change. There is also a need to understand how climate change will interact with other drivers of change in the region such as infrastructure development and urbanization.

Energy is the focus for mitigation, while land and water must become the focus for adaptation. There are a multitude of different adaptation strategies which can help the region to adapt to climate change. For example, hard solutions focus on infrastructure adaptations while soft solutions focus on institutional adaptations. All these strategies need to be adopted by a multitude of actors at different scales. The multi dimensional challenge of climate change requires an IWRM approach, with a sound mix of hard and soft adaptation strategies. IWRM encourages basin wide, cross-sectoral management.

The MRC CCAI should build on existing MRC IWRM strategies and apply an IWRM approach to adaptation. MRC and riparian countries should also contribute to getting adaptation higher on the international agenda. As a concrete suggestion MRC could join the "Dialogue on Adaptation to Climate Change for Land and Water Management, which will meet at the 5th World Water Forum in Istanbul in March 2009. This Dialogue aims to increase the resilience to climate change in developing countries through adaptation with focus on land and water management

2.2 Session 1 – Climate Change and Adaptation Activities in the Member Countries of the Lower Mekong Basin

In the session 1 national experts of the Member Countries presented an overview of key past, current and future climate change and adaptation activities and strategies in the Member Countries of the LMB. While the national experts together outlined the overall context of climate change and adaptation in the LMB, an invited international expert presented an overview of state-of-the-art science and technology related to climate change impacts and adaptation relevant for the LMB. The session consisted of presentations that provided important information for the discussions on needs and gaps in the LMB with respect to climate change and adaptation knowledge and activities.

Professor Anthony Jakeman from The Australian National University made introductory remarks on the need for an integrated approach in catchment assessments in order to understand the various aspects of impacts of climate change, and to come up with strategies to adapt to future changes. The assessment should be based on a framework that would lead to the understanding of the exposure and sensitivity of systems to climate change and to determine vulnerability through sets of indicators. The assessment would then lead to adaptation to future changes which would be based on the concept of risk management. However, there is always uncertainty in assessing climate change and questions may not be fully answered. Therefore, the assessment process needs to compromise across scales and objectives. Furthermore, people's preferences also change over

space and time, therefore, engaging stakeholders into the process via participatory methods is required. Another important issue regarding the integrated assessment of the catchments is insight on the interaction and feedback of systems across scales and also the sensitivity of the system to decisions, in order to be able to formulate proper adaptation strategies on climate change. The presentation pointed out that a project which aims at assessment of climate change for larger catchments should be designed with flexibility and take into account relationships between institutions, researchers and stakeholders.

Mr Ouk Navann, Officer of the Cambodian Climate Change Office, presented a summary of available information on climate change in Cambodia. Cambodia is highly vulnerable to climate change as the livelihoods of the majority of people depend on the climate, with limited resources to deal with climate change issues. Cambodia's efforts to address this were initiated under the frame of the international conventions, especially UNFCCC and initiatives in collaboration with UNDP. The climate change issue has been institutionalized by setting up a Cambodian Climate Change Office in the year 2003 with a mandate to follow the issues on climate change within four aspects: GHG inventory, GHG mitigation, vulnerability & adaptation and UNFCCC agreement implementation. Assessment on climate change has been part of the National Communication, where impacts of climate change on various sectors have been assessed. A National Adaptation Programme of Actions (NAPA) has been prepared with UNDP support, where gaps on climate change concerns and some priority adaptation projects have been identified. A country review on climate change issues, which is part of MRC CCAI, is being prepared and will address the following issues: climate change impacts and vulnerability in Cambodia, institutional framework to address climate change and adaptation in Cambodia, trans-boundary issues and capacity to address climate change adaptation in Cambodia.

Mr Douangchanh Lopaying, Prime Minister's Office, Environment Protection Fund, Lao PDR provided a presentation on the climate change issue in Lao and concerns on the impact of flood and drought on key sectors: agriculture, forestry and natural resources, aquatic resources, water and water resources and public health. Some examples of initiatives on climate change mitigation and adaptation as well as policies and programs on climate change were pointed out, of which one key action was the setting up of a National Steering Committee on Climate Change (NSCC) in September 2008. The preparation of the Second National Communication to UNFCCC will be carried out by the NSCC. The outcome would be mainstreaming and prioritizing of climate change related issues in Lao PDR and to assist in the incorporation of climate change issues in the general planning and development strategy formulation processes in the country identified by the Government of the Lao PDR and presented in the National Socio-Economic Development Plan. The concerns on lack of local expertise on climate change and other issues i.e., food and livelihood, forestry and land-use, health, hydrology and energy and city infrastructure were pointed out.

Dr Kampanad Bhaktikul, Mahidol University, Thailand gave an introduction on the variability of the temperature in Thailand and showed trends of change over the past 50 years. He then addressed the state of knowledge on climate change, impacts, vulnerable systems and sectors of the Mekong sub-basins in Thailand. Outcomes from various studies on climate change from a number of research institutes were presented e.g. future climate projection by the south East Asia START Regional Centre (SEA START RC), impact of climate change on evapotranspiration by Mahidol University, impact of climate change on agriculture and vulnerability and adaptation of rain-fed farmer by Khon Kaen University and SEA START RC. The presentation also covered policy and institutional frameworks to address climate change issues, which mainly focused on the National Board on Climate Change Policy and the Thailand Greenhouse Management Organization and the role of the National Research Council of Thailand who funded a number of research projects that may contribute to climate change adaptation initiatives. Linkages of climate change and climate variability issues in the Mekong sub-basins with national strategy, policy and actions was mentioned which addressed the following issues:

- building multidisciplinary expert teams;

- defining goals and criteria of climate change and climate issues within the Mekong sub-basins;
- reviewing policies and identify synergies;
- synthesizing available vulnerability assessments;
- conducting participatory rapid integrated assessment of vulnerability;
- identifying hazards, risk and coping by collecting available data and information;
- identifying climatic hazards, characterizing risk, coping capacity, and characterizing vulnerability within the Mekong-sub-basin in Thailand;
- selecting highly vulnerable sectors in the LMB sub-basin;
- identifying urgent adaptation option; selecting priority adaptation needs using participatory approach;
- ranking projects and activities within the Mekong sub-basin;
- developing project profiles and showing integration into the National Policy Framework.

Concerns on trans-boundary issues were mentioned in the context of adaptation actions in upstream countries. The conclusion focused on the gaps and needs of the country on the climate change issues.

Mr. Le Nguyen Tuong, Vietnam Institute of Meteorology, Hydrology, and Environment, Viet Nam presented key climate change concerns in Vietnam with focus on the extreme weather that would occur more frequently, e.g. the typhoon trajectory moves southward and the typhoon season shifts to later months of the year; rainfall increases in the rainy season; more heavy rainfalls are causing severe floods which occur more frequently in the Central and Southern Vietnam; rainfall decreases in the dry season; drought happens every year in most regions of the country. The presentation also raised concern on the impacts of climate change on: Agriculture; Water; Forestry; Fisheries; Energy; Transport; Tourism; Livelihood and health; Ecosystems (Coastal Zones and Wetlands). Key policy and institutional frameworks to address climate change in Vietnam were mentioned, which addressed the structure of various agencies under the Ministry of Natural Resource and Environment who would be the focal points on climate change issues. National Target Programs on Climate Change, which were approved by the Prime Minister's Office in December 2008 will be the primary framework to mobilize climate change adaptation of Vietnam over the next 5 years.

Dr Carmel Pollino, Integrated Catchment Assessment and Management Centre, the Australian National University, presented an: 'Overview of the state-of-the-art science and technology related to climate change impacts and adaptation relevant to the LMB'. Based on case studies, Dr Pollino illustrated the scope for, and challenges in, constructing climate change assessment frameworks, models and decision support tools. Climate change poses a risk to human health, ecosystems, social and cultural systems, and economic systems, but it can also provide new opportunities. Policies aimed at adaptation to climate change should be focused on reducing the risks and taking advantage of the opportunities. Formulating such strategies requires innovative and interdisciplinary solutions that are relevant to and engage community interests. Such solutions also need to be robust in facing the uncertainties, and adaptive to incorporate changing perspectives and new knowledge.

Models are playing an increasingly important role in formulating strategies for climate adaptation. Models are widely used to characterise system processes and their interactions, such as climate, land use and hydrology drivers, and link these changes to water balance, the environment, social and economic systems. In doing so, it is critical that the feedbacks, interactions and uncertainties between processes are characterised within and between models. To communicate this knowledge in a form that is interactive, readily accessible and generates new insights, models can be embedded within a decision support system. To accommodate new knowledge, these decision support systems need to be adaptive.

As a conclusion to session 1, Dr Kien Tran Mai, Climate Change Programme Officer, Environment Division, MRCS gave an introduction to the MRC CCAI. It is an overall MRC regional initiative to address the challenges of climate change variability in the LMB and adaptation to impacts. It will benefit each of the four Member Countries, and be linked with and support their national climate change strategies and activities. The CCAI is integrated across and implemented through the whole MRC. It has a long time frame of at least 15 years. The initial phase started in July 2008 and aims to formulate a regional framework and detailed project document with consensus from Member Countries, with a clearly defined work-plan and milestones. This will be done in close consultation with the Member Countries and explore partnership with regional organizations. The initial phase is expected to generate the following outputs:

1. National overview reports on climate change and adaptation related activities
2. A regional synthesis report including a description of activities of regional organizations in the region
3. A comprehensive and adopted CCAI framework document including work-plan

Discussion Session 1

The discussion under session 1 focused on issues related to resilience of systems, adaptation and the need for an integrated approach. The discussion was initiated by a request from the audience to define resilience and how enhanced resilience can be measured. Often resilience is defined as the ability of systems (ecosystem and social systems) to recover from external disturbances. From a climate change perspective this could mean putting methods in place to enable people to accommodate climate change or mainstream adaptation into development policy to establish "climate proofed societies". Such methods should take into account how the resilience of different systems is affected by the different adaptation measures. Strategies that enhance the resilience of natural systems should be preferred. Still this needs to be balanced against ongoing development in the region. A conservation approach alone is not the answer. Resilience must be identified within realistic and agreed development scenarios. There is a need to find a sustainable balance between different development options. For example there is a ongoing urbanisation in the region and this will influence the resilience of people and "urbanized ecosystems". In this context some participants indicated the need to also address climate change impacts on cities and strategies for cities to adapt to climate change. However considering the characteristics of the LMB with Phnom Penh and Vientiane as the only larger cities, this was not recommended as a key issue for the MRC CCAI.

The discussion also emphasized on the integrated characteristics of climate change. The CCAI must build on close cooperation between different sectors such as water, forestry, agriculture, energy etc. To some extent this is built in at local levels where there is a more cross sectoral interchange. Also the existing working groups on climate change in the Member Countries consist of representatives from all sectors that report back to their line agencies, facilitating integration across sectors.

There is a need for better integration between national research organizations and government institutions. How can national experts be closer linked to governments, assuring that government needs are addressed in research agendas and that research results are made available to decision makers and integrated in national and regional policies? In Thailand much work on climate change has been based on national expertise linking to ongoing work in MRC. Also Vietnam has strong capacities and is currently developing a national program on climate change that will link to government policies. Cambodia and Laos have to a larger extent relied on international expertise on climate change related issues, and lack national expertise on these issues. Capacity building is therefore on high priority as is mechanisms to link science to policy and downscale global and regional climate change adaptation strategies to the national and local context.

2.3 Session 2 – Climate Change and Adaptation Initiatives by Development Partners and Organisations for the Lower Mekong Basin

To complement session one, session two provided an opportunity for development partners and organisations to describe their past, current and future climate change and adaptation activities relevant for the LMB, and to present their views on the most important climate change and adaptation issues. In addition, this session encouraged the development partners and organisations to identify their comparative strengths and efforts in addressing climate change in the LMB, and to align their activities on climate change and adaptation to mutually support the countries of the region.

Dr Hasan Moinuddin, Climate Change Task Coordinator, Biodiversity Conservation Corridors Initiative, GMS Environment Operations Center, ADB made a presentation on: 'The Anticipated Impacts of Climate Change in the GMS and Challenges to Adaptation'. The presentation discussed the role of the GMS countries as emitters of greenhouse gases and impacts of climate change on the GMS countries e.g. change in maximum and minimum temperature and impacts on rice yields; effects of sea level rise on infrastructure; impacts on the energy sector and tourism; and impacts on life and property. The presentation pointed out the challenges on technical issues which focus on the existing and future infrastructure and risks on life and property of the people of the GMS, which might be threatened by the impact of climate change, as well as gaps in policies and institutions to address these issues in the region. In conclusion, the presentation addressed the planned activities under the Core Environment Program (CEP) and Biodiversity Conservation Corridors Initiative (BCI), which cover research into adaptation of rice yield varieties in dry (upland) and wet rice (lowland) areas within BCI pilot sites; carbon neutral transport corridors: greening and carbon sequestration; reduction of emissions in the transport sector (freight) along economic corridors through policy frameworks and incentives; promotion of 'Reducing Emissions from Deforestation and Forest Degradation in Developing Countries' (REDD) proposals through Carbon Funding Facilities and integration of BCI pilot sites into national benchmarking and capacity building for REDD; assessment of selected infrastructure adaptation/relocation costs; building climate change impacts into infrastructure development planning (projects in pipeline); and disaster preparedness capacity development at community level in BCI sites.

Dr Mac Kirby, Stream Leader, CSIRO, Australia, made a presentation on 'Climate Change Uncertainty and Impacts in the Mekong Basin', sharing some of their experiences from earlier work both in Australia and in the Mekong region. CSIRO recently completed a short-term integrated assessment of water resource availability in response to climate change in the Mekong basin in a project funded by AusAID. The preliminary study was intended to identify critical regions and issues, and to provide a basis for future in depth analyses targeted at developing solutions and potential adaptation strategies. They used statistical techniques to compare the capacity of the 24 IPCC Global Circulation Models (GCM) to simulate the historic climate of the Mekong. Of this 11 models were selected, which best represented historic precipitation and temperature data, and used to make projections of future climate for the A1B scenario (a mid-range scenario in terms of development impacts on greenhouse gas emissions). The use of 11 models allowed quantifying the uncertainty in climate projections and climate change impacts.

The results indicate a likely increase in basin mean temperature of 0.79 ^{o}C, with greater increases for the colder catchments in the north of the basin. Annual precipitation is also projected to increase by ~ 0.2 m (13.5%), resulting mainly from an increase in wet season (May to October) precipitation in all catchments. Dry season rainfall is likely to increase in northern catchments, and to decrease in catchments in the south of the basin (including central and southern Laos, eastern Thailand, Cambodia and Vietnam). Despite likely increases in water withdrawals for irrigation, domestic and industrial purposes under future (2030) compared with historic climate conditions, increases in projected runoff across the basin will maintain or improve annual water availability in all catchments. However, catchments in north-east Thailand will still experience

moderate or medium-high levels of water stress, and high stress levels in the dry season. It is likely that increased flooding will affect all parts of the basin under the projected climate for 2030. The frequency of 'extreme wet' flood events at Kratie is likely to increase from an annual probability of 5% under historic conditions to a 76% probability under the future climate.

The productivity of capture fisheries, a key source of food for the population, is likely to be affected by the changing hydrology of the basin. For example, the timing of the onset of flood in the Tonle Sap is likely to be impacted, with water levels rising earlier in the year, and the extent and duration of flooding likely to increase. Indicative results on agricultural productivity suggest a 3.6% increase in productivity of the basin under the most likely projected climate for 2030. No adverse effects of increased flooding or waterlogging on productivity were assessed, why this is likely to be overestimated. However, it was concluded that food scarcity is likely to increase in parts of the basin as a result of population growth. Food production in excess of demand is likely to be reduced across the basin. Thus separate to the negative impact of population growth on food scarcity, there will likely be further negative economic impacts on the population.

Dr Andrew Noble, Regional Director, IWMI Southeast and Central Asia, Lao PDR and Dr Blake Ratner, Regional Director, World Fish, Cambodia made a joint presentation on 'Pro-poor Alternatives for Climate Change Adaptation in the LMB', providing a rationale for seeking pro-poor alternatives for climate change adaptation, and highlighting research experiences of IWMI and the WorldFish Center to contribute to such an agenda.

Climate change is a biophysical driver affecting water, agriculture, fisheries, and livelihoods in the Mekong region and it is a policy driver, influencing investment priorities of governments and development assistance agencies. There are serious risks for poor people dependent on the resource base: not only are they most directly vulnerable to the biophysical changes, but policy responses and adaptation measures may disadvantage them even further. Indeed, misguided policy responses and adaptation measures (e.g., an indiscriminate drive towards large-scale dams) pose a more immediate and severe risk for the region's rural poor than climate change alone. Yet, good alternatives exist that can be shaped into a pro-poor agenda for climate change adaptation, which not only addresses the climate risk but also strengthens the resilience of food production systems and rural livelihoods in the region. Doing so, however, means challenging the most important assumptions that drive decision-making around energy, water, and food in the region. A pro-poor agenda for adaptation comprises a range of policy measures, institutional reforms, local capacity-building efforts, and technical priorities for land and water resources management. Implementing that agenda necessarily entails actions by government agencies from national to local levels and across sectors; it entails shifts in the priorities of official development agencies and private investors alike; and, it entails a heightened awareness and informed engagement by civil society.

Dr Suppakorn, Researcher, SEA START RC, Thailand outlined in his presentation: 'Area-based Assessment on Climate Change Impact and Adaptation' how climate change would affect systems and sectors in certain areas in different manners, according to the nature of impacts and sensitivity of these systems and sectors to such impacts. However, the systems and sectors also have interaction among themselves along with the socio-economic activity in the society. The way that each sector may respond to the impact of climate change may alter the interaction among sectors thus affecting the adaptive capacity of other sectors and/or influence responses of other sectors to climate change. Therefore, an assessment on climate change impact and adaptation should take a holistic view over a geographical area in order to capture the dynamics of societies within the local context.

A case study was conducted at Krabi Province in 2008 to assess the impact of climate change on various aspects, e.g. coastal erosion, water resources, ecosystem integrity, natural hazard and also to assess how different sectors may be affected and adapt to future change. The assessment result reveals that impact of climate change may cause a chain effect on the various sectors, e.g.

agriculture, fishery, forest ecosystem, tourist industry, etc. The reduction in rainy days may extend tourist seasons and attract more tourists, thus create higher demand for water supply. However, the higher demand for bio-fuel also drive the expansion of palm oil plantation and this could create a conflict on water resources among sectors in the future, as climate change may induce less precipitation. Moreover, coastal communities would also suffer from saltwater contamination of fresh water, due to sea level rise. Some of those who may need to rely on shoreline ecosystems e.g. clam harvesting, which need certain amounts of freshwater from the upstream, would also be affected by the higher demand of freshwater upstream.

Dr Lisa Schipper, Research Fellow, Stockholm Environment Institute (SEI), Asia Centre, Thailand presented SEIs work in relation to climate change: 'SEI's Climate Change Adaptation Initiatives and Potential Linkages with the MRC CCAI', with a specific focus on vulnerability assessment and adaptation. Climate change is a focus area of SEI which cross-cuts all programmes, centres and regions. It currently includes studies on energy, climate change policy, justice and equity, and adaptation. Adaptation is a priority at the Asia Centre in Bangkok, and links to work on development, vulnerability and risk. Ongoing activities with possible links to the MRC CCAI include:

- Assessment of Adaptation Strategies: i) Assessing adaptation strategies to climate induced water stress and hazards in the Greater Himalayan Region; ii) Research on feasibility of developing adaptation targets; iii) Climate-proofing of development assistance
- Building capacity for research and communication: i) Technical support to ACCCA (Advancing Capacity to Climate Change Adaptation) and Too Much/Too Little Water projects; ii) Assessing feasibility and mechanisms to build capacity
- Exploring adaptation and disaster risk reduction links

Ms Alana George, UNDP Regional Centre in Bangkok, Thailand presented: 'Mainstreaming Climate Change Adaptation: Tentative Findings from the UNDP UNEP Poverty Environment Initiative'. The UNDP-UNEP Poverty Environment Initiative (PEI) aims to build capacity for mainstreaming Poverty-Environment (P-E) linkages into national development planning processes. Institutional and financial frameworks and capacity are critical to poverty reduction through pro-poor development. The PEI focuses on mainstreaming environment in the country sectors including economic and planning sectors. Climate change is perceived as one element of the environmental issues covered. It focuses on pro-poor growth (health, livelihoods and reduced vulnerability). UN provides technical and financial assistance in partnership with national institutions. PEI A-P is currently being implemented in Bangladesh, Bhutan, Cambodia, Laos, Nepal, Pakistan, Timor Leste and Vietnam. Challenges for P-E mainstreaming include: i) Handling environment as an externality; ii) lack of awareness of P-E linkages; iii) difficulty in measuring the real value of environmental services; iv) limited investment for sound environmental management; v) existing data gaps on important environmental indices.

In Cambodia PEI is in the preparatory phase. Here activities include integrating climate into the national plans, sectoral strategies and the decentralization processes, linking climate change with disaster risk reduction, up-scaling pilots based on Global Environment Facility- Small Grants Programme and linking up with donor coordination mechanisms. Also in Lao, PDR PEI is in a preparatory phase. Activities include building capacity of PEI champions and implementing partners and including environment into the 7th National Strategy for Economic Development and Planning.

Some lessons learnt so far reveals that the Ministry of Finance and Ministry of Planning are critical partners as are the local governments, which are too often ignored. There is a danger of too much focus on engineering solutions with less emphasis on institutions, policy and economic incentives. The technical "climate" jargon undermines generation of climate adaptation

experience Considerable donor funds are available but the programming capacity is limited and moreover donors need to mainstream climate in their own work

Dr Geoffrey Blate, Climate Change Coordinator, World wildlife Fund (WWF) Greater Mekong, Thailand presented the climate change initiative of the WWF's Greater Mekong Programme (GMP): 'Understanding Climate Change Vulnerability to Inform Conservation and Development Agendas in the Greater Mekong Region'. The GMP covers the lower Mekong River Basin (LMB) countries of Lao, Thailand, Cambodia, and Vietnam. Given its rich and unique diversity of nature, culture, and heritage, the Greater Mekong is a critical global conservation priority. Much of the region is considered to be highly vulnerable to climate change, which will not only directly affect the region's biodiversity, but also will amplify existing conservation threats e.g. infrastructure developments and complicate conservation challenges. WWF sees a compelling need to better understand climate change vulnerability in the LMB so that adaptation strategies can be developed. Any adaptation that is implemented should ensure that the biodiversity and ecosystem services upon which the LMB's social and economic systems depend remain resilient to climate change impacts.

The WWF GMP has launched a climate change initiative, which aims to ensure that biodiversity conservation efforts in the region are robust and mindful of likely climate change impacts. The initiative will engage key stakeholders in a consultative dialog to assess the direct impacts of climate change on biodiversity as well as key sectors, identify interventions, and, in collaboration with decision-makers and stakeholders in the region, develop recommendations to facilitate adaptation to climate change impacts. To date, WWF has established 20 similar efforts around the globe and has developed expertise in conducting vulnerability assessments as consultative processes. Earlier this year, the GMP conducted pilot studies to assess climate change vulnerability in coastal Thailand and the Mekong Delta. Lessons learned are that all sectors are vulnerable to climate change (people, economy, and natural areas) and current management initiatives are insufficient to meet the possible impacts of climate change. These studies underscored the importance of mainstreaming climate change considerations into development and poverty alleviation strategies. Regional cooperation will be necessary to ensure that both development and conservation efforts are resilient to climate change because the Mekong River crosses national boundaries. Thus, although testing adaptation strategies at the local scale often makes the most sense, adaptations should be developed with the potential consequences of the broader LMB in mind. For example, inundation of the Delta from sea level rise may accelerate if dams are built upstream because of sediment loss. WWF's climate change initiative aims to highlight these interrelated issues.

Dr Luong Quang Huy, Climate Change Programme Manager, IUCN, Viet Nam gave a presentation: 'Changing the Climate Forecast: IUCN Approaches in the Mekong Region' on past, present and future climate change and adaptation activities of IUCN that are relevant to the LMB. This included examples of IUCN work in the Mekong countries, and also Global and Regional work with implications for the Mekong countries. Climate change activities of IUCN Asia aim to**:**

- Identify climate change impacts on sectors and regions;
- Identify vulnerability to climate impacts of sectors and regions;
- Identify the role of natural resources in mitigating climate impacts and GHG emissions;
- Address the role of local communities in coping with and adapting to climate change impacts;
- Explore adaptation and mitigation options and approaches based on natural resources; and
- Mainstream climate change issues in socio-economic development strategies.

IUCN Asia has actively since 1992 been involved in technical support for regional governments, providing scientific and technological support on climate change issues and use of natural resources. They have also helped countries to develop action plans to cope with and adapt to climate change and are currently helping Vietnam to develop their national programme on climate change. IUCN has also provided support to negotiation processes and other climate-related issues for governments of India, Bangladesh, Sri Lanka, Pakistan, China, Malaysia, Indonesia,

Philippines, Singapore, Brunei, Thailand, Lao PDR, Cambodia, and Vietnam. Through their work with governments IUCN summarized some challenges for future work on climate change:

Perceptions: As Climate change is a common global tragedy, the attitude can be–why bother?

Resource allocation: There is often a compromise between socio-economic development and climate change adaptation and mitigation. Governments also need help to strike a good balance between mitigation and adaptation strategies.

Policy: There is a need for appropriate and fair policies for various sectors and regions in adapting to climate change impacts (climate proofing).

Science: There is a general lack of data, information, studies and evidence of magnitude, frequency and geographical locations of specific impacts. In this context MRC could provide an important platform for data sharing.

National Plan / Programmes often lack of specific regulations and guidelines in relation to climate change.

Partnership and cooperation: Many programmes, activities and organisations involved in developing adaptive and mitigation strategies, may lead to confusions, and.even conflicts. Here MRC could provide an important coordination role at the regional level.

The Wetlands Alliance is an alliance of development partners committed to a process of regional collaboration to strengthen local level capacity for sustainable poverty-focused wetlands management. Based on their many years of experience working in the Mekong region, the Wetlands Alliance partners believe that one of the most effective means of addressing poverty is through locally led management of wetlands and aquatic resources. Mr. Hans Guttman explained this in relation to climate change in a talk on: 'Adapting to Climate Change Impacts - Options at the Local Level'. Whilst people in rural communities may not be aware of the global consequences of climate change they are acutely aware of changes in their immediate environment. While they are willing to take steps to prevent or mitigate negative impacts on their resource base and livelihoods, they seldom have the required knowledge or skills. Globally there may be a number of potential actions identified to adapt to the new circumstances, but access to this knowledge by the people most likely to be affected is limited by institutional, language and awareness constraints. The Wetlands Alliance is in a position to help overcome these constraints and support rural communities in adapting to changes due to climate change.

The Wetlands Alliance does not have a separate initiative for climate change, but addresses climate change impacts as part of adaptation to environmental changes in general. At the local level change to the environment caused by large (water resources) infrastructure development or climate change requires the same response; adaptation to the change, minimizing negative impacts and risks, and taking advantage of opportunities. As such addressing impacts of climate change is mainstreamed in the Wetlands Alliance's work. The MRC CCAI provides a number of areas for cooperation with the Wetlands Alliance. Overall this engagement would entail input from the local level in the formulation of the detailed work plan (which will help in engaging local level and identify intermediate outputs of relevance). This is important as it is not really realistic to expect a high level of uptake after 3-5 years of work without engagement with the users. The Wetlands Alliance partners could provide inputs into the development of the MRC CCAI especially in relation to the issues on: awareness raising, engagement of the local level (including "pilots") and feed back to policy and capacity development. The outputs of impact assessment activities would be of interest to local partners in the Wetlands Alliance (specifically in Southern Laos, Northeast Thailand and Stung Treng/Kratie in Cambodia) if the outputs are specific enough the Wetlands Alliance may assist in "translating" these to be used at the local level. As there are already a number of watersheds mentioned in the MRC CCAI (Songkhram River, Xebangfai River and Nam Thon watershed) the Alliance would be able to provide opportunities to work in additional ones such as Sekong River, Mekong mainstream in Champassak, Stung Treng and Kratie. In summary, the Wetlands Alliance can provide a useful vehicle for MRC and other regional initiatives to reach down to the local level users in a structured and demand driven process which not only will result in adaptation at the local level,

but also feedback to higher level on policies and mechanisms that work at the local level and which should be promoted at a larger scale.

Dr Edsel Sajor, Research Leader, Asian Institute of Technology (AIT) and M-POWER, Thailand presented a study on 'Climate Change Adaptation in the Mekong Region: Research Initiatives and Gaps'. The Study was conducted from November 2007 to September 2008 under the funding of IDRC and DFID, by the Institute of Social and Environmental Transition and AIT. The study, which is based on a literature review, addresses how and why people adapt to climate changes the way they do, and which adaptation strategies are most feasible for them, considered both "planned" responses or adaptation and "autonomous" adaptive responses. Identified gaps in knowledge and action included a need to:

- Increase the understanding of labour mobility, remittances and out-migration as adaptation strategies in the region.
- Increase the understanding of how formal and informal security mechanisms help in strengthening people's resilience to climate change stressors
- Better understand how livelihood security of small-scale fishers and farmers may be threatened by climate change combined with other social and environmental stressors and explore mechanisms that could strengthen their adaptive capacities, including research on agriculture and fisheries production system;
- Identification of potential direct and indirect impacts of climate change on human health on different gender and social groups, and barriers to successful health-related planned and autonomous adaptation strategies to these impacts
- Identify institutional mechanisms that may facilitate more effective linkages horizontally between different departments and vertically between local, meso, and national levels.
- Explore how intermediate level governance may facilitate infrastructure, institutions, and services that can enhance adaptation.
- Understand the constraints, opportunities, conditions and forces for developing effective governance mechanisms for trans-boundary management of resources in the context of climatic variability.
- Developing learning strategies that create communities of knowledge, such as among local universities, local/meso-level government units, the private sector and civil society that can facilitate communicating and translating climate information.

Dr Naoki Minamiguchi and Mr Thierry Facon, FAO Regional Office for Asia and the Pacific, Thailand made a joint presentation on: 'FAO Activities on Climate Change Adaptation in the Agricultural Sector in the LMB'. Mr Facon, FAO Senior Water Management Officer gave an overall introduction on the situation in Southeast Asia and current activities by the FAO Regional Office for Asia and the Pacific. The presentation reviewed some major implications of climate change for agriculture and food security in Asia; analyzed options and approaches to be taken with a focus on water as one of the major cross-cutting issues; summarized experiences and lessons learnt from ongoing activities relevant to climate change; and discussed proposals for follow-up actions and for strengthening cooperation with MRC in climate change mitigation and adaptation in the agricultural sector. Changes in temperature and precipitation, as well as more frequent extreme weather patters due to climate change, would affect land availability, water and biodiversity, and hence result in agricultural production shortfalls with negative impacts on access to food. The worst hit is at those who are already vulnerable and food insecure, for example, small-scale crop and animal producers, the landless and artisanal fishermen and foresters. FAO has been working with member governments, development partners, international and regional organizations and institutes, NGOs and civil society in climate change adaptation and mitigation in the agricultural sector. Relevant initiatives have been launched including organizational structure adjustment, formulation of new strategic frameworks, consultation and discussion on policy recommendations, and formulation and implementation of a number of global, regional and local programmes and projects.

Dr Naoki Minamiguchi, FAO Vulnerability Analysis Coordinator, presented a forthcoming EC-funded project which could provide areas for partnership with MRC. The FAO/EC Food Security Programme aims to provide timely information and analysis for impending food and agricultural crises and address effective policies, strategies and interventions for hunger and vulnerability reduction. The project will assist Cambodia, Lao PDR and Myanmar to establish national and regional mechanisms to monitor, analyse and report on agricultural disaster risks caused by climate-related natural hazards, especially floods, storms and drought, and to conduct climate change risk analyses. Potential collaboration with the MRC CCAI could include:

- Undertake climate change analysis by evaluating historical and current climate variability and trends,
- Analyse potential impacts of a changed climate on agriculture, food security, and livelihoods by assessing current risks from an analysis of impact of recent extremes, institutional responses, and coping strategies,
- Identify and prioritize actions to manage risks from a changing climate in agriculture, food security and livelihoods
- Develop climate-related agricultural disaster risk mitigation and preparedness

Discussion Session 2

The discussions under session two focused on adaptation strategies and the need for awareness raising and capacity building in relation to climate change. MRC has an important role in the context of regional capacity building, experience sharing and information exchange on climate change and adaptation, helping the countries to learn from each other. To be able to respond and adapt to climate change different stakeholders need to know more about the possible impacts from a changing climate. As a basis for decision makers different models, both quantitative and qualitative, may provide an important tool. However it was emphasised by the participants that the models used must be validated. There must be a clear understanding of the uncertainty and reliability of different models and the underlying assumptions. For quantitative models validation can be based on data, while more qualitative models it may be necessary to rely on expert judgments.

Many adaptation strategies are autonomously developed by communities and it is very important that information about climate change is brought out to local institutions and people in the region. In this context regional organisations can complement and support governments in the MRC Member Countries, by making information on climate change more available to people and local institutions through different initiatives. Global and regional information on climate change and its possible impacts need to be downscaled and made relevant to local needs. A major challenge is how to include small scale farmers in the discussion on climate change and adaptation. Local people must be a part of the climate change and adaptation initiative. People in the region have hundreds of years of experience on how to deal with disaster and adapt to change. This provides an important platform to learn from and for information sharing. The CCAI should facilitate that successful adaptation strategies at the local scale can be upscaled and provide options for adaptation by different stakeholder in the region. Initially the CCAI could aim for the “low hanging fruits” and bring decision makers and information users together to find a mechanism to transfer existing adaptation strategies into national policies and programmes. In this context the CCAI should also find ways on how to measure “adaptive capacity” and how this may improve. Existing indicators on vulnerability could probably be a starting point. AIT is currently setting up a research program on adaptation which also could provide valuable information on this.

Also infrastructure investment was discussed as one important adaptation strategy, especially in the light of the current global financial crisis. Infrastructure investment may provide rural employment opportunities, provide renewable energy options etc. However it is important that infrastructure investments are “climate proofed”. Many development banks are aware of this and can hopefully help the countries in the region with advice on “right” investments with an inbuilt

"climate design". In this context it is important to include the private sector. They are the main driver of change, and it must be made clear that environmental (climate) friendly methods may actually make economic sense. Governments also need to be cautious not to seek solutions that undermine opportunities and livelihoods of local communities. The ultimate goal must be improved food security through improved land and water management. In this context it was proposed that the CCAI should perhaps address the issue of using agricultural crops for biofuel. Large areas in, for example, the Mekong Delta, may be lost due to sea level rise with a loss of agricultural production. Issues such as food for fuel and consumers behaviour etc. would come on top of this, and there is a need to rethink issues on food security in the light of climate change.

2.4 Session 3 – Lessons Learnt from Case Studies on Climate Change and Adaptation in Different River Basins

In the session 3 riparian and international experts presented case studies from river basins relevant to the LMB context and highlighted lessons learnt from these case studies. Topics included climate change modelling and scenario building; current and future risks; vulnerability to climate impacts and adaptation; national adaptation strategies; and regional initiatives to tackle climate change impacts in river basins. The session aimed to benefit from previous relevant case studies enhancing the understanding of relevant climate change and adaptation issues for the LMB and to provide inputs to the discussions on shaping the MRC CCAI.

Mr. Boonlert Archevaranuprok, Meteorologist, Thai Meteorological Department, Thailand, made a presentation on: 'Regional Climate Change Projection for South East Asia from the PRECIS model'. The Thai Meteorological Department (TMD) has started to investigate the climate change in Thailand by analyzing the trend of change in the past by using observed data over the past 50 years from key weather stations. They found a trend of increasing average maximum and minimum temperature; number of rainy days as well as rainfall in the rainy season decreasing, but rainfall in the dry season increasing; the number of hot days in a year increasing while number of cool days decreasing. Furthermore, TMD also put an effort to do climate projections for Southeast Asia for 21st century by downscaling GCM data, ECHAM4 A2, using the PRECIS regional climate model. The result is high resolution climate projection data at approximately 50km for the period of 1960-2100, which can be used for climate change impact studies. The downscaled future climate projection shows that the region tends to be warmer and precipitation tends to increase, even though the trend is not obvious. However, it was pointed out that the use of the PRECIS results should be selective as the maximum temperature tends to be over estimated and precipitation tends to be underestimated. For robustness, more scenarios are required for comparison. In conclusion, the next generation of climate models with high resolution for global calculations would provide better results in projecting future climate for the region.

Mr Nguyen Xuan Hien, Deputy Director of the Southern Institute for Water Resource Planning and Management, Viet Nam presented possible 'Impacts of Sea Level Rise on Water Level and Salinity Intrusion in the Mekong Delta'. It is widely recognized that global climate change will result in an increase of sea level within this century, which will have the greatest impact on low-lying coastal areas such as the Mekong Delta in Vietnam. The Mekong Delta region of Vietnam is a major area of rice and agricultural production and home to approximately one fifth of the countries population. It is of great social, environmental and economic importance to national development, consequently the vulnerability of this region is of major concern at both the national and provincial levels. The presentation assessed the impacts of sea level rise on water and salinity levels in the Mekong Delta of Vietnam based on 2 scenarios: 50 cm and 100 cm rise in sea level. The assessment was conducted using hydraulic and salinity intrusion models simulating both the dry and wet season conditions. The study quantified the scale of salinity and flooding problems in a warming climate and suggested some adaptation initiatives in order to respond to climate change, securing continued and sustainable development in the region.

Dr Kittipong Jirayoot, Consultant, Environment Division, MRCS presented an 'MRC on-going Baseline Study to Support the MRC CCAI' This study is part of MRC-CSIRO project on 'Climate Change Vulnerability in the Mekong River Basin' conducted with support from AusAID. It analyzes the impact of climate change on the hydrological regime in the Mekong River and the impacts and adaptation related to food security. Activities under this study include analyzing future climate projection for the Mekong River region and the use of future climate data to analyze impacts of climate change on basin-wide hydrology using the MRC DSF. It also looks upon adaptation strategies in water, land use and production systems with a focus on food security; and use the DSF to analyse the impacts of adaptation strategies. The future climate projection used in this study is downscaling of the ECHAM4 A2 GCM scenarios using the PRECIS regional climate model provided by SEA START RC. The future projection shows increasing trends of precipitation and temperature throughout the Mekong River region. The future climate data was used as input into the MRC DSF to analyze the impact of climate change on hydrology and coupled with other changes caused by planned developments in the basin. The preliminary results show that the flow of the Mekong River at Kratie tends to decrease during the dry season and increase during the wet season under influence of climate change. Considering a basin development scenario including the developments under construction together with climate change, the flow in dry season tends to increase and the peak flow during the wet season may shift and decrease. It means that the development may offset some of the changes possibly imposed by climate change.

Dr Timo Menniken, Advisor, MRC Watershed Management Project (WSMP), presented key insights from the WSMP climate study: 'Climate Change Adaptation on the River Basin and the Watershed Level. Experiences with the Issue of Scales from the Watershed Management Project of the Mekong River Commission', compiled to provide decision-makers and resource persons with an overview of the findings. The presentation started with some methodological considerations on downscaling, before looking at predicted climate change impacts at global, regional and watershed levels. Dr Menniken then discussed vulnerability in the Mekong basin and pilot watersheds, with an outlook on adaptive capacities and adaptation needs. As an outline of possible next steps, Dr Menniken provided some ideas on information management and capacity building in climate change adaptation, indicating potential activities for the WSMP.

The working hypothesis of the WSMP is that the watershed level is particularly suited for adaptation measures. Watersheds drain areas of 1.000 to 10.000 square kilometres. The relationship between natural resources, climatic changes and livelihoods is more evident here than at the river basin level and it is here that strategic decisions have to be translated into action on the ground. At the same time, however, reliable forecasts are particularly difficult to obtain for these smaller units, as downscaling capacities of most modelling approaches are weak. To ensure the implementation of appropriate adaptation measures, an understanding of climate change impacts in both a global and local context is necessary at all levels of decision-making. This must go hand-in-hand with an analysis of vulnerabilities at river basin and watershed level, providing a basis for adaptation activities. Against this background, WSMP carried out a study to identify the climate chance threats, local vulnerabilities and adaptation capacities in two pilot watersheds of the Mekong River Basin (Nam Ton, Lao PDR and Stueng Siem Reap, Cambodia). It used both scientific data derived from literature and climate models, and interviews with local people to get a reliable picture of ongoing and future climatic changes. The study will now serve as a source of information on local conditions as well as providing a basis for further assessments of adaptation needs. This will then be the groundwork for identifying suitable measures for enhancing adaptive capacities in these pilot areas. The integration of WSMP results with the MRC CCAI over the coming years will provide indicative lessons about the issue of adaptation at various scales. Priority issues will be downscaling of global and regional climate change information and making it useable for policy and action at watershed levels, and upscaling of local knowledge and lessons learned about adaptations strategies to national and regional levels.

Ms. Somkhith Boulidam, Deputy of Geography Department, Faculty of Social Science, National University of Laos, Lao PDR presented her study on; 'Adaptation of Rainfed-rice Farmers to Impact of Climate Change in Lower Mekong River a Case Study in Songkhone District, Savanakhet Province, Laos'. The study focused on the assessment of vulnerability of rain-fed rice farmers to climate variability and change and also to identify characteristics of vulnerable groups of rain-fed-rice farmers to climate impact and to explore adaptation options. In the study, the main climate threats were identified as floods and drought, and loss in rice production was used as proxy to assess vulnerability of farmers to climate risk. The study identified different vulnerable groups at the study sites. Adaptation options using indigenous knowledge as well as efforts to increase household income diversity were identified as key adaptation to climate change impacts.

Mr. Nguyen Van Kien, Lecturer, Faculty of Agri-Natural Resources, An Giang University, Viet Nam shared his knowledge on: 'Local Adaptation Towards Increased Risks of Flooding Arising from Climate Change in the Mekong Delta of Vietnam : A Case Study in An Giang Province'. The study points out the flood risk in the Mekong River Delta with focus on economic loss in the An Giang province as well as strategies to manage floods and adaptation options to flooding condition. Economic benefits of on-farm and non-farm adaptation measures to flood were assessed and figures show that the successful adaptation can contribute significantly to rural agricultural economy of the province as well as improve income for rural people. In general, farmers can mitigate the flood damage by using low dikes to protect the second rice crop, and exploit the natural benefits of floods through "learning to live with the floods" rather than control flood conditions. Furthermore, several flood-based farming practices are suitable to the poor such as growing aquatic plants during the flood season and exploiting the opportunities provided by floods. In conclusion, public policy toward climate change adaptations should consider the development of flood-based adaptations. Comprehensive studies on the environmental, economic and social impacts of flood-based farm and non-farm activities on local livelihoods should be conducted in order to develop climate change adaptation policies relevant to local levels.

Mr. Nguyen Ngoc Huy, Laboratory of International Environment and Disaster Management, Kyoto University, Japan presented some considerations on: 'Drought Management for Climate Change Adaptation: Focus on the Mekong Region – A Case Study in Cambodia'. The study, which was conducted in Svay Rieng province, Cambodia, indicated that local communities could identify long-term changes in some of the climatic elements related to the drought profile in their area. Most significant observations made included; decline in rainfall; steep increase in ambient temperatures; and decline in biodiversity. Two kinds of adaptation strategies to drought impacts were identified in the study: autonomous adaptation options and planned adaptation options. The former included storing seed and fodder for the next season, selecting different crops, and diversifying livelihoods. The latter, planned by government and NGOs, included digging wells and providing pumps and better crop seeds. In practice, though, the boundaries between the two types of strategies are blurred. No significant investments in drought-mitigation programmes were found in the study area. Despite the regular occurrence of drought in Svay Rieng drought preparedness and responses from government agencies appear to be weakly developed. Some of the most important deficiencies have been the absence of dependable drought-forecasting mechanisms, the lack of a clear definition of drought, and the lack of a consistent response mechanism. Drought responses have often resulted in short-lived solutions. There is a need to map the existing capacities of communities and undertake a long-term capacity-building programme. There is a need to gather communities, governments and NGOs to jointly make a policy for drought risk reduction. Community involvement is paramount in designing and implementing drought adaptation decisions at the local level.

Dr. Mac Kirby provided an overview of the methodological framework of the Murray-Darling Basin Sustainable Yields (MDBSY) Project and presented: 'Results and Lessons Learnt from the Murray-Darling Basin Sustainable Yields Project'. The purpose of the MDBSY project was to (i) assess current and future water availability across the entire Murray-Darling Basin (MDB) in Australia considering climate change and other risks; and (ii) assess the hydrologic implications

of future changes in water availability to consumptive water users and the environment. The MDBSY project is the most comprehensive and the most integrated hydrologic modelling ever undertaken for the MDB, and is providing governments with a scenario-based hydrologic information to guide MDB-wide water resources planning and management. Led by CSIRO, the project involved over 100 professionals from twelve government and industry organisations as well as many individual consultants, and was conducted over a 15-month period.

The MDBSY project used outputs from 15 global climate models and considered three global warming scenarios to scale historical climate sequences as inputs to daily rainfall-runoff models and to scale groundwater recharge series. These in turn, provided the basis for modifying river and groundwater models to simulate hydrologic conditions under a range of possible 2030 climate situations. In addition to likely climate change impacts, assessments were made of the likely growth in farm dams, commercial forestry plantations and groundwater use – all of which use water and affect stream flow downstream. Key results presented by Dr Kirby represented current development and historical climate and for future development and the 'best estimate' (or median) 2030 climate. A key finding is that the best estimate of the impacts of climate change by 2030 would be a 12% reduction in surface water availability that would cause a 4% reduction in surface water diversions and further reduced flow at the Murray mouth by 24% to become 30% of the natural outflow. The impact on surface water diversions will be much greater in dry years and would fall by more than 10% in most New South Wales regions, around 20% in the Murrumbidgee and Murray regions and from around 40 to over 50% in the Victorian regions. The average level of surface water use (use as a percent of availability) for the whole MDB is about 48%. This is considered to be a very high level of use and includes consideration of the impacts on stream flow of groundwater extraction. With expected future development, and under the median impact of climate change on water availability, the level of surface water use for the entire MDB is expected to rise slightly to about 53% by 2030. The results from the MDBSY project provide a strong hydrological basis on which to begin determination of a new sustainable diversion limit for surface and groundwater for the MDB as required under the Commonwealth Water Act 2007. However, hydrologic information is only one of the important components of a broader assessment which must include the social, economic and environmental consequences of the expected changes in water availability.

Discussion session 3

The discussion under session three focused on how to downscale global and regional information on climate change to local scales and make it useful in the local context and the need to build on and upscale local knowledge on adaptation strategies into national and regional plans and policies. A major issue was also how to respond to ongoing changes and make decisions under uncertainty or based on best available information. There is a need to adapt to climate change now, although all information may not yet be available.

Experience from India explained by one of the participants is that both top down and bottom up approaches are needed to provide relevant information on climate change to different stakeholders. There may be a lot of information available on climate change at the local level and this should be used to complement data from regional climate models to better understand ongoing changes relevant to people and the local context. Adaptation strategies need to be based on the combined data from regional and local levels.

The complexity of existing climate models may exclude potential users at province and district levels to understand these models and access the results produced, constraining the information flow on climate change from regional to local levels. A way to improve the knowledge at the local level could be workshops and other capacity building activities for governmental institutions on how to use the data from these models as tools to understand change and to identify appropriate adaptation measures. Also the results from the models should be simplified and translated into a format making sense to local decision makers. Still the data from models is associated with a

certain amount of uncertainty, and decisions for adaptation measures can only be based on best available information. Available data from models and field studies still provide valid input for decisions and policies on climate change. Despite uncertainties there are overall trends that can be acted upon. Climate change is happening now, and adaptation strategies must be introduced before all data is available and all uncertainties are cleared out. Climate change models actually show that the climate variability is larger than the predicted climate change over the coming years. This means that people are already adapting to climate variability, providing a sound basis for further development of adaptation measures to improve peoples' livelihoods in a changing environment.

In this context it is very important to find mechanisms to build on existing indigenous knowledge at the local levels on how to adapt to climate threat and variability from year to year. Local adaptation strategies must be upscaled and integrated into national plans and policies on climate change adaptation and transferred within the whole basin. Options for actions need to be based on local peoples perceptions and knowledge. Farmers have long experience to adapt to change and community involvement is very important in designing and implementing adaptation strategies at the local level. Successful adaptation strategies can contribute significantly to the rural agricultural economy of provinces as well as improve income for rural people. Still, there may be a need to increase the awareness at local levels about the specific characteristics of climate change and to encourage farmers and local governmental institutions to look for long-term adaptations responses.

Climate change could also have positive effects, which should be taken into account in future planning. For example in the Mekong Delta the expected sea level rise, may decrease the acidity of soils. Increased flooding could decrease the need for irrigation and maybe increase the fish-yield in flooded areas. The challenge is how to maximize the positive impacts while minimizing the negative impacts.

The possible impact of climate change on groundwater is another area that has received limited attention in the discussions so far, and more information on the possible implications on groundwater availability in the Mekong Basin is needed. In this context it was proposed that the experience from the MDB in Australia could be useful, especially the water sharing between different administrative zones. To some extent there are already some common elements in the integrated approach used in the MDB and the LMB. The MRC CCAI work also plans to cover socio-economic aspect of climate change and water issues while the work at MDB focused primarily on bio-physical aspects.

2.5 Session 4 – Approach and Methodology for the MRC Climate Change and Adaptation Initiative

Session four aimed to enhance the understanding of the approach and methodology proposed for the MRC CCAI. The presentations covered issues relating to the integrated climate change impact and adaptation assessment framework, components of the planned activities and the overall work plan for the MRC CCAI. The session provided an opportunity to cover the relevant technical apects, and move the Forum towards discussing and gathering feedback from the participants on the MRC CCAI.

Dr. Vithet Srinetr, Environment Programme Coordinator, Environment Division, MRCS gave a presentation on: 'Components of Planned Activities under the MRC CCAI'. The objectives of the MRC CCAI is to establish and strengthen the institutional framework for climate change planning in the region, and improve the knowledge and capacity of MRC, NMCs and line agencies in the Member Countries to assess and mitigate future climate change impacts on ecosystems and people. As part of this work the CCAI will help develop scientific data, basin-specific analytical tools and processes necessary for projection of future climate impacts on the hydrological regime,

ecosystems and people in the LMB and to identify adaptation strategies to these changes. The CCAI has three desired outputs;

- *Integrated Assessment*; to facilitate a consultation process which links sectors and systems, and Member Countries within the Mekong River Basin
- *Policy Development*; to identify policy options for the Mekong River Basin to reduce climate change impacts; focusing on national and basin development plan and strategy
- *Formulation of adaptation options*; to facilitate formulation of adaptation options on local to national scale for MRC Member Countries

The key characteristics, approach and design of the CCAI were explained in detail by Dr Vithet. In summary, the MRC CCAI is designed as a process of linked and cross-cutting components and activities, designed to facilitate a process of integrated impact assessment, so that linkages between systems and sectors of the Mekong River Basin can be identified and assessed. The CCAI cover of the following elements of the adaptation planning process:

Scoping the adaptation framework

- Involves ensuring that the framework is well designed so that the Mekong Adaptation Strategy can be integrated into the national and regional policy process for sustainable development of Mekong River Basin**.**

Assessing current vulnerability

- Involves an assessment of the present situation, including the current status on people and institutions in respect to vulnerability to climate risks and an assessments of the success of current efforts to adapt to climate risks.

Assessing future climate risks

- Involves developing scenarios on future climate, vulnerability, socio-economic and environmental trends as a basis for assessing future climate risks

Formulating a MRC adaptation strategy

- Involves the creation of a set of flexible adaptation policy options and measures in response to current vulnerability and future climate risks

Continuing the adaptation process

- Building on the existing adaptation activities, support will be given to adaptation implementation, monitoring and evaluation

Engaging stakeholders in the adaptation process

- Involves creating and sustaining an active dialogue among affected people and groups. Stakeholder involvement is crucial for the successful implementation of adaptation strategies

Assessing and enhancing adaptive capacity

- Involves the assessment of existing capacities for adaptation. Provide capacity building to strengthen existing efforts to better cope with climate change, including vulnerability

In order to make the MRC CCAI operational, the components are framed into a number of linked and cross-cutting work packages. The proposed MRC CCAI will be shaped by the Forum comments, recommendations and guidance to ensure that it meets the Member Countries need and involves relevant stakeholders.

Dr. Jeremy Carew-Reid, Director, International Centre for Environmental Management, Australia, made a summary of some of the main issues discussed during the Forum and its possible implications for the way forward, in his presentation on the 'MRC Climate Change and Adaptation Initiative Approach and Key Activities'. Based on the feedback from the participants on the MRC CCAI priority issues include: water resources management; ecosystem enhancement and conservation and; livelihoods and food security. Future work of the MRC CCAI could according to Dr. Carew-Reid include:

Policy frameworks to facilitate and guide adaptation including

- Mekong adaptation strategy and action plan; Guidelines for local adaptation plans; Guidelines for integrating adaption into SEA and EIA; Guidelines for sector specific adaptation plans and design standards; Action plans for transboundary natural systems; Regional climate change scenarios

Tools for adaptation planning

- Risk assessment – climate and hydrological modeling; Socio-economic projection – populations, poverty and sectors; Impact assessment – on sectors, areas, natural systems and communities; Vulnerability assessment – of sectors, areas, natural systems and communities

Adaptation options for priority sectors and areas

- Engineering options (eg dykes and drainage systems); Traditional local strategies ; Social responses (including resettlement and "autonomous" actions); Land use planning (eg zoning and development controls); Economic instruments (eg subsidies and tax incentives); Natural systems management (eg rehabilitation, enhancement); Sector specific adaptation practices (eg agriculture - species, regimes)

Pilots and demonstration

- Linked chain of sites coming together regularly for exchange, learning and demonstration; Work through appropriate adaptation planning steps; Testing impact assessment tools and adaptation options; Focusing on livelihood and food security; Focusing on ecosystem enhancement and restoration; Focusing on integrated water management; Nodes in the Mekong regional climate change monitoring network

Monitoring and reporting on status

- Local level: Monitoring of climate changes and adaptation in network of pilots; National level: Monitoring of progress in national plan implementation; Regional level: Monitoring of progress in Mekong regional plan implementation; Consolidation of monitoring information in regular regional synthesis report

Capacity building and training

2.6 Working Session: Feedback on the MRC Climate Change and Adaptation Initiative

In the final session participants were invited to respond through working groups. The facilitated discussions in the session were guided by the presentations and discussions during the previous sessions, and a set of guiding questions prepared by the MRCS (Appendix 4). Feedback and recommendations were expected to emerge on needs and gaps in the LMB with respect to climate change and adaptation activities; interaction and collaboration between organisations and their networks; and the approach and framework of the MRC CCAI. The ideas and views emerging from the Regional Climate Change Forum will contextualise the detailed work plan for the MRC CCAI. Toward the end of the session SEA START RC representative were invited to discuss a 'Climate Change Roster of Experts' for the region. Before the closing of the Regional Climate Change Forum, the CEO of the MRCS summarised the outcome of the Forum and present the next steps for the MRC CCAI. The Joint Committee Member of the MRC from Lao PDR closed the Regional Climate Change Forum.

Guiding questions for the session

1. Is there any relevant activity which is not presented at the Forum that MRC should know about?

There are many activities going on in each of the countries, and regionally, that are of relevance to the collective effort in support of adaptation and climate change responses. In Vietnam, for example there is a whole range of important projects ranging from mangrove replanting in the Mekong Delta, efforts to build up community responses to environmental hazards (including safety at sea), investments in environmental and coastal management, flood management, as well as projects and programs in various sectors such as fisheries, forestry, agriculture; Similarly, many important activities are being implemented in Cambodia, Lao PDR, Vietnam and Thailand

in key sectors as well as general environmental responses to adapt to changing circumstances (responses to climate change, to resource depletion, degraded environments, etc).

Some institutions/organisations currently involved in work relevant to the MRC CCAI, mentioned at the working session include; the IUCN Mekong water dialogue; Sustainable Cities Forum; the Coca-Cola-WWF partnership; Chiangmai, King Monkut and Ramkhamhaeng, Khon Kaen universities (climate change scenarios development and impact analysis) and the AIT in Thailand; Can Tho and An Giang University in Vietnam (Mekong Delta); University of Western Sidney (Australia); AWI (Asia-Pacific Rim Universities' World Institute) Partnership on Water and Climate Change; Oxfam's Livelihood improvement and capacity building activities; SEI's Research and capacity building project for LDC in Asia funded by Sida/SAREC (Cambodia and Laos); DRAGON-Centre for climate change and GIS Observations; Mangroves for the Future project (UNEP and IUCN); the ADB/NARBO network (Network of Asian River Basin Organisations).

Thus, there are a multitude of ongoing activities related to climate change both at national and regional level. However, the work being done is not always, as such, referring to climate change or climate change adaptation. Still it is highly relevant in the context of climate change adaptation. To recapture the comments made during one of the panels that there is "no need to wait for the models as adaptation responses are needed anyway….."

Subsequently, it is important to recognize activities being done in each of the countries and in the region – and channel some of the "climate change resources" to support these efforts to create a broader adaptation platform including regional and national partners.

2. What gaps are there in climate change and adaptation activities in the Mekong River Basin?
A number of suggestions on possible areas for the CCAI to cover were proposed by the participants. This should be balanced against the general recommendation by some participants that the CCAI already now is at a risk to become unfocused, dispersing into too many areas and trying to cover too much.

Some participants suggested that the CCAI needs to build conceptual models between driver of change, impacts and possible adaptation strategies. There is also a need for integrated land use planning and management. MRC should build on its earlier experiences and work towards transboundary water security and management agreements. It is important to involve as many stakeholders as possible (private sector, local communities, government institutions NGO etc) in the dialogue on climate change and water. MRC should also try to facilitate stronger linkages with representatives from China and Myanmar-both NGOs and governments.

There is still a lack of coordination on activities between regional organisations and governments on climate change. Overall MRC could facilitate a more coordinated collaboration on climate change, both between the MRC Member Countries and between different stakeholders and sectors. This could include improved coordination for development and implementation of climate change projects, sharing of knowledge and information and interaction and exchange of expertise.

In this context it is also important to create stronger linkages between science and policy making. The CCAI should facilitate the communication of high-end technical/scientific information in a simplified and understandable way, focusing on results not methods/models, and dissemination to different stakeholders, including local people, decision and policy makers etc.

There is a clear need for more capacity building on climate change for all stakeholders. Emphasis should be put on "learning by doing". Much experience could be gained from pilot studies and also from other river basins in the region and around the world. The CCAI could for example help to identify case studies, which have been successfully implemented and helped to increase the

resilience of systems to climate change. Many institutions need to strengthen their capacity on ecological and social assessments, including economic valuation studies. MRC should focus the CCAI on boosting knowledge and capacity for SEA, EIA etc. on key ecosystems and related social systems. MRC could also target to set up information centres on climate change in close cooperation with local partners as well as designing climate change training for top policy level stakeholders.

There is a major gap in the language between the "global dialogue", model builders and efforts f downscaling and those institutions, organizations and individuals that work with practical adaptation initiatives in the region. In other words there is something of a disconnect between the climate change lobby and the regional and national organizations working with environment and natural/aquatic resources management (including fisheries). In practical terms it seem that the international climate change movement (including downscaling efforts) are working without knowing (or informing themselves) on what happens and are being implemented locally and in the region.

The CCAI offers the MRC a chance to rethink its role in IWRM. The CCAI should have a focus on facilitating better interaction between top-down action plans and bottom-up community work. Being in the position of facilitating communication between these processes will, in the long-term, better position MRC to identify vulnerabilities in planning and adaptation strategies. The CCAI could help to ensure that local experiences on climate change adaptation and mitigation are fed across countries and into cross sector processes.

Some groups proposed specific issues that may need more attention including:
- the impact from changed water temperature;
- the impact from climate change on groundwater and related issues such as arsenic contamination;
- the level of impact of climate change as compared to other factors (e.g. forest change, urbanisation);
- potential drivers of land and water changes;
- the role of bio-fuels in mitigation and adaptation;
- political impact from climate change in the region.

It was also proposed that more work is needed on:
- adaptation strategies for reduction in emission of green house gases (GHG) and studies on how to ensure that adaptation measures are consistent with emission reductions;
- emissions of GHG in relation to land clearing and burning;
- alternative energy/renewable energy and how this may affect strategies on hydropower and other responses to climate change;
- crop weather risk insurance programme;
- crop substitution in response to draughts;
- climate change modelling etc.

3. What feedback would you offer to MRC CCAI including potential collaboration?
Most participants saw a role for them selves, or their institutions, in support of the Initiative – given that resources are made available as needed, at least in the context of seed funding to allow ongoing activities to match and liaise with the Initiative.

In general it was stressed that the role of MRC should primarily be as a facilitator and coordinator, as MRC can not do all parts of the CCAI. MRC could help to define the CCAI work across the whole region, and it is important that the CCAI link up to the Basin Development Plan. MRC should focus its technical efforts on trans-boundary issues. MRC should also facilitate other organisations outside the region, working with climate change, to be linked to the work on climate change in the Mekong region. This could for example include the creation of a panel of experts on climate change, providing a supportive role for the member countries participation in COP

meetings etc. The importance of creating stronger linkages with China was emphasised by several groups.

MRC should engage in policy making on climate change issues and link activities on climate change to local and regional decision making processes. MRC should also provide a structure and a system to compile and share adaptation strategies on climate change. There is a need for a meta-database on e.g. collaborators, organisations, expertise, interests and current projects on climate change -not only including key players but also a wider network. MRC could also develop a database centre for technical information and tools and methodologies for climate change projection, impact assessment and adaptation for common use by the Member Countries. Finally, it is important that the CCAI is placed in the current context of development in the basin. There is a need for a situation analysis covering;

- information on and identification of impacts on climate change in the region;
- action to be taken for adaptation;
- experience sharing;
- available resources and logistics;
- options for adaptation

Dr Suppakorn's, presentation on 'Climate Change Roster of Experts – A Collection of Regional Expertise', addressed the lack of experts on climate change issues in the region and proposed to form a common pool of human resources to work on different aspects of climate change to support the MRC CCAI as well as the countries in the region in general. The climate change roster of experts would be expected to be a group of experts which covers various disciplines and could consist of international experts who may be interested in climate change in the Southeast Asia context, as well as regional experts. These experts would form a special taskforce to work on certain issues concerning climate change when needed. These experts would produce knowledge and know-how on climate change issues with focus on regional and local contexts. The information produced can be feed back to the CCAI and national governments for planning as well as be used for negotiation in international climate change meetings. The formulation of the climate change roster of expert and the governance of the body is yet to be explored, but it should be independent in terms of being a technical "think-tank" for the region, to provide politically neutral information to all countries. In addition, this body should be institutionalized and recognized as well as endorsed by the governments in the region.

Mr. Jeremy Bird, CEO, MRCS provided concluding remarks about the meeting and outlined the next steps to promote the MRC CCAI for the LMB. Mr Bird concluded that it has become clear that there is a strong commitment for action amongst the Member Countries and regional partners to meet the climate chance challenges. Much work on adaptation has already been done and MRC will do its best to coordinate and integrate the benefits from all the good work already going on into the MRC CCAI. MRC recognises the urgent need to support the Member Countries in their further work on climate chance with a specific focus on climate change impacts and strategies for adaptation. Climate change needs to be put in the context of the rapid development in the Mekong Basin and the MDGs and requires a basin wide integrated approach, based on the principles of IWRM as outlined in MRC Strategic Plan 2006-2010. Although climate change is a complex crosscutting issue, MRC needs to be realistic and stay focused, providing information on the implication of climate change to the different stakeholders in the basin, including governments, provincial authorities, communities and the private sector. MRC should help to lay a foundation for improved regional knowledge on adaptation strategies at all levels, and facilitate regional sharing of climate related data and experiences. Capacity building and awareness raising at regional national and local levels as well as case studies on key vulnerable areas and systems will constitute key activities of the MRC CCAI. In the coming months MRC will have a continued dialogue with different stakeholders, to explore synergies between initiatives and seek value added of the MRC CCAI. MRC will finalise a proposal for the MRC CCAI by the end of March 2009 in close consultation with Member Countries and partners. Priority activities will be

implemented during 2009-2010, and full implementation together with Member Countries and partners will hopefully start in 2010.

Mr Chanthavong Saignasith, Director General, Lao National Mekong Committee Secretariat, closed the MRC Regional Climate Change Forum. He mentioned that one lesson learned from the past two days is that climate change related initiatives can not be detached from the water resources management arena. On the contrary. Dealing with the challenges of climate change calls for an integrated approach. The challenge of the climate change is that it adds one more factor to consider, a factor that is uncertain and difficult to predict and for which we can only lessen the consequences by adapting to the changes. Mr Chanthavong Saignasith concluded that the Climate Change Forum had provided an overview as to what is happening and where and by whom the various activities are pursued. This will help MRC in the future to shape the CCAI. He thanked all participatns for their valuable contributions and hoped to be able to wish everybody welcome to the next MRC Regional Climate Change Forum

3 Conclusions and recommendations

Drawing from the presentations, working group sessions and plenary discussions, this section presents a summary of key conclusions and recommendations The Forum stressed the importance of maintaining as the overall goal of the CCAI the contribution to achieving the MDGs, poverty eradication and improved food security. The main focus of a regional initiative should be assessment of climate change impacts and implementation of adaptation measures. In the MRC context, the emphasis should be the basin-wide integrated approach consistent with IWRM approaches and the MRC 1995 Agreement.

It was agreed at the Regional Forum that MRC is well placed to develop tools and policy frameworks on assessing the impacts and adaptation strategies on climate change. It is a cross-cutting issue that affects many aspects of the basin including the hydrological regime, environment, ecology, fisheries, agriculture, hydropower generation and social well-being of people living in the basin. In this sense, almost all programmes within MRC are linked to climate change, and existing capacities and earlier experience within MRC, provide a strong platform for the CCAI. As an inter-governmental River Basin Organization, MRC has the mandate and capacity to help the countries in the LMB to share data and information to address regional and local impacts from climate change, and to develop mechanisms to mitigate these impacts.

Furthermore, MRC can provide training and capacity building to line agencies on the use and integration of tools and policies into national planning and monitoring. Being a neutral party with credibility MRC can provide independent and balanced advice and information and facilitate awareness raising on climate change to its Member Countries.

3.1 General conclusions and recommendations

Climate change – an issue of shared concern requiring regional collaboration, exchange, learning and mutual support. Climate change will have fundamental economic, social and environmental impacts on LMB countries. It is essential to work together to better understand those impacts and the adaptation options which are needed to address the highest priorities. Much of this work can benefit from regional collaboration and sharing.

There is a need for a basin wide, integrated approach (IWRM) on climate change issues, linked with related issues such as disaster management and mechanisms for,

- scaling down global and regional knowledge to local levels (making it relevant and useful to stakeholders at these levels) and increasing the capacity and awareness on climate change among local stakeholders;

- scaling up local knowledge on adaptation strategies to change, and making this information available across the region.

The regional collaborative initiative needs to focus on adaptation strategies that:
- promote linkages between climate change, water and food security and overall land and water management;
- adopt an appropriate balance of engineering, social policies, economic incentives, natural systems and land use planning approaches at all levels;
- recognize the linkages between ecosystems vulnerability and the resilience of communities to climate change.

Much adaptation work is being done under different names. There are many on-going activities related to climate change both at national and regional levels. The work being done is not always referring to climate change or adaptation. Still it is highly relevant as part of the national and regional responses to climate change. It needs to be reviewed, and built on as the foundation for adaptation in the Mekong region. The LMB countries and international partners called on the MRC to help identify adaptation options and develop adaptation strategies and plans to be implemented at appropriate levels and scales according to the needs of the Member Countries. That would involve providing support at the various steps in the adaptation planning process.

3.2 The role and added value of MRC

It was agreed at the Regional Forum that MRC should facilitate a more coordinated collaboration on climate change, both between the Member Countries and between different stakeholders and sectors. MRC is especially well placed to coordinate a regional initiative on climate change because:
- MRC is an inter-governmental institution with a lot of technical knowhow on climate change related issues. Climate change will have impacts on hydrology, ecology, agriculture, fisheries and hydro-power development, all of which are core strength of MRC.
- MRC develops regional-scale tools and plans which are well suited to analyze basin-wide effects such as those expected under future climate change scenarios.
- MRC works on a regional level and on transboundary issues, processes and systems, which must be addressed to adequately assess the impacts by climate change.
- MRC facilitates and encourages the adoption of IWRM which creates a strong link between climate change and water management. Water is a major issue related to impacts and adaptation to climate change in the Mekong Basin.
- MRC encourages and facilitates the crosscutting interdisciplinary work needed to assess impacts, test adaptation methods and implementation approaches.
- Biophysical changes due to climate change will impact on people's livelihoods, with implications for sustainable development and the well being of people of the region.
- MRC is a neutral regional body in a good position to raise awareness about climate change and its impacts.

MRC was also asked by the Regional Forum to facilitate the regional sharing of climate change data, information and experiences which would evolve in the years to come. .In summary, the Regional Forum concluded that MRC is well placed to assist member Countries on a number of different issues related to climate change including:

1. **Policy frameworks** to facilitate and guide adaptation
2. **Tools** for assessing impacts and vulnerability
3. **Adaptation options** for priority sectors and areas
4. **Pilots** and demonstration of implementation
5. **Monitoring** and reporting on status
6. **Capacity building** and training

Appendix 1. Programme

Regional Forum on the MRC Climate Change and Adaptation Initiative

Bangkok, Thailand, 2-3 February 2009
Venue: Plaza Athénée Hotel Bangkok,
10 Wireless Rd. (close to Ploenchit BTS sky train station)

Monday, 2 February 2009		
08.30 – 09.30	*Registration*	
	Opening Session: Climate Change and Adaptation Challenges	
09.30 – 09.40	*0.1 – Welcome address*	Mr Jeremy Bird, CEO, Mekong River Commission Secretariat
09.40 – 09.55	*0.2 – Opening address: A Response to Future Climate Change Impacts in the Mekong River Basin; the MRC Climate Change and Adaptation Initiative*	Dr Siripong Hungspreug, Director General, Department of Water Resources, Ministry of Natural Resources and Environment, Alternate Member of the MRC Joint Committee for Thailand
09.55 – 10.25	*Coffee break & Press Conference*	
	Keynote addresses	
10.25– 10.45	*0.3 – Climate and Water – The Challenges Ahead*	Mr Brian Dawson, Climate Change and Energy Advisor, AusAID, Australia
10.45– 11.05	*0.4 –Future Water Management - Meeting the Challenges of Adaptation towards Climate Change*	Prof. Torkil Jonch Clausen, Senior Advisor Global Water Partnership, DHI, Denmark
	Session 1 – Climate Change and Adaptation Activities in the Member States of the Lower Mekong Basin	
11.05 – 11.10	Introductory remarks by Chair Professor Anthony Jakeman, Integrated Catchment Assessment and Management Centre, The Fenner School of Environment and Society, The Australian National University, Australia	
11.10 – 11.25	*1.1 – Cambodia*	National Expert, Mr Ouk Navann, Officer of the Cambodian Climate Change Office, Cambodia
11.25 – 11.40	*1.2 – Lao PDR*	National Expert, Mr Douangchanh Lopaying, PICE Window Manager, Prime Minister's Office, Environment Protection Fund, Lao PDR
11.40 – 11.55	*1.3 – Thailand*	National Expert, Assoc. Prof. Dr Kampanad Bhaktikul, Mahidol University, Thailand
11.55 – 12.10	*1.4 – Viet Nam*	National Expert, Mr. Le Nguyen Tuong, Vietnam Institute of Meteorology,

		Hydrology, and Environment, Viet Nam
12.10 – 12.30	*1.5 – Overview of state-of-the-art of science and technology related to Climate Change Impacts and Adaptation relevant to the Lower Mekong Basin*	Dr Carmel Pollino, Senior Research Fellow, Integrated Catchment Assessment and Management Centre, The Fenner School of Environment and Society, The Australian National University, Australia
12.30 – 13.30	***Lunch***	
	(Cont') Session 1	
13.30 – 13.50	*Discussion*	Facilitators
13.50 – 14.10	*1.6 – Introduction of Overall MRC Climate Change and Adaptation Framework* *Participant introduction*	Dr Kien Tran Mai, Climate Change Programme Officer, Environment Division, MRC Secretariat and Facilitators
	Session 2 – Climate Change and Adaptation Initiatives by Development Partners/ Organisations for the Lower Mekong Basin	
14.10 – 14.15	Introductory remarks by Facilitators	
14.15 – 14.30	*A.2.1 – Anticipated Impacts of climate change in the GMS and challenges to adaptation*	Dr Hasan Moinuddin, Climate Change Task Coordinator, Biodiversity Conservation Corridors Initiative, GMS Environment Operations Center, ADB
14.30 – 14.45	*A.2.2 – Climate Change Uncertainty and Impacts in the Mekong Basin*	Dr Mac Kirby, Stream Leader, Water for a Healthy Country Flagship, CSIRO, Australia
14.45 – 15.00	*A.2.3 – Pro-poor Alternatives for Climate Change Adaptation in the Lower Mekong Basin*	Dr Andrew Noble, Regional Director, IWMI Southeast and Central Asia, Lao PDR and Dr Blake Ratner, Regional Director, WorldFish Center, Greater Mekong, Cambodia
15.00 – 15.15	*A.2.4 – Area-based Assessment on Climate Change Impact and Adaptation*	Dr Anond Snidvongs, Director, Southeast Asia START Regional Center, Thailand
15.15 – 15.30	*A.2.5 – SEI's Climate Change Adaptation Initiatives and potential linkages with the MRC CCI*	Dr Lisa Schipper, Research Fellow, Stockholm Environment Institute, Asia Centre, Thailand
15.30 – 15.45	*A.2.6 - Mainstreaming climate change adaptation: tentative findings from the UNDP UNEP Poverty Environment Initiative*	Ms Alana George, Economist, UNDP-UNEP Poverty Environment Initiative, UNDP Regional Centre in Bangkok, Thailand
15.45 – 16.00	*Discussion*	Facilitators
16.00 – 16.15	*Coffee*	
	(Cont.) Session 2 – Climate Change and Adaptation Initiatives by Development Partners/ Organisations for the Lower Mekong Basin	

16.15 – 16.30	*B.2.1 – Understanding climate change vulnerability to inform conservation and development agendas in the Greater Mekong Region*	Dr Geoffrey Blate, Climate Change Coordinator, WWF Greater Mekong, Thailand
16.30 – 16.45	*B.2.2 – Changing the Climate Forecast: IUCN approaches in the Mekong Region*	Dr Luong Quang Huy, Climate Change Programme Manager, IUCN, Viet Nam
16.45 – 17.00	*B.2.3 – Adapting to Climate Change Impacts - options at the local level*	Mr Hans Guttman, Coordinator, Wetlands Alliance, Thailand
17.00 – 17.15	*B.2.4 – Climate Change Adaptation in the Mekong Region: Research initiatives and gaps*	Dr Edsel Sajor, Research Leader, AIT and M-POWER, Thailand
17.15 – 17.30	*B.2.5 – FAO Activities in Climate Change Adaptation in Agriculture Sector in Lower Mekong River Basin*	Dr Naoki Minamiguchi and Mr Thierry Facon, FAO Regional Office for Asia and the Pacific, Thailand
17.30 – 18.00	*Discussion*	Facilitators
18.30	***Cocktail Reception***	
Tuesday, 3 February 2009		
08.00 – 08.30	*Registration*	
	Session 3 – Lessons Learnt from Case Studies on Climate Change and Adaptation in Different River Basins	
08.30 – 08.40	Introductory remarks and Overview of the Presentation Framework by Facilitators	
08.40 – 09.00	*3.1 – Regional Climate Change Projection for the SEA from the PRECIS model*	Mr Boonlert Archevaranuprok, Meteorologist, Thai Meteorological Department, Thailand
09.00 – 09.20	*3.2 – Impacts of sea level rise on water level and salinity intrusion in the Mekong Delta*	Mr Nguyen Xuan Hien, Deputy Director, Southern Institute for Water Resource Planning and Management, Viet Nam
09.20 – 09.40	*3.3 – MRC On-going Baseline Study to Support MRC Climate Change and Adaptation Initiative*	Dr Kittipong Jirayoot, Consultant, Environment Division, MRC Secretariat
09.40 – 10.00	*3.4 – Climate change adaptation on the river basin and the watershed level. Experiences with the issue of scales from the Watershed Management Project of the Mekong River Commission*	Dr Timo Menniken, Advisor, Flood Management and Mitigation Programme, Watershed Management Project, MRC
10.00 – 10.15	Discussion	Facilitators
10.15 – 10.35	*Coffee break*	
10.35 – 10.55	*3.5 – Adaptation of Rainfed-rice Farmers to Impact of Climate Change in Lower Mekong River a Case Study in Songkhone District, Savanakhet Province, Laos*	Ms Somkhith Boulidam, Deputy of Geography Department, Faculty of Social Science, National University of Laos, Lao PDR
10.55 – 11.15	*3.6 – Local adaptation towards increased risks of flooding arising from climate change in the Mekong Delta of Vietnam:*	Mr Nguyen Van Kien, Lecturer, Faculty of Agri-Natural Resources, An Giang

	a case study in An Giang province	University, Viet Nam
11.15 – 11.35	*3.7 – Drought Management Considerations for Climate Change Adaptation: Focus on the Mekong Region – A case study in Cambodia*	Mr Nguyen Ngoc Huy, Laboratory of International Environment and Disaster Management, Kyoto University, Japan
11.35 – 11.55	*3.9 – Results and lessons learnt from the Murray-Darling Basin Sustainable Yields Project*	Dr Mac Kirby, Stream Leader, Water for a Healthy Country Flagship, CSIRO, Australia
11.55 – 12.30	Discussion	Facilitators
12.30 – 13.30	***Lunch***	
	Session 4 – Approach and Methodology for the MRC Climate Change and Adaptation Initiative	
13.30 – 13.35	Introductory remarks by Facilitators	
13.35 – 13.50	*4.1 – Components of Planned Activities under the MRC Climate Change and Adaptation Initiative*	Dr Vithet Srinetr, Environment Programme Coordinator, Environment Division, MRC Secretariat
13.50 – 14.10	*4.2 – The Integrated Impact Assessment Framework for the MRC Climate Change and Adaptation Initiative*	Dr Jeremy Carew-Reid, Director, International Centre for Environmental Management, Viet Nam
14.10 – 14.30	*Discussion*	Facilitators
	Working Session: Feedback on the MRC Climate Change and Adaptation Initiative *Facilitated discussion in Working Groups*	
14.30 – 14.35	Introductory remarks by Facilitators	
14.35 – 15.15	*Feedback Discussion on the MRC Climate Change and Adaptation Initiative*	All participants
15.15 – 15.35	*Coffee break*	
15.35 – 16.15	*Feedback Discussion on the MRC Climate Change and Adaptation Initiative*	All participants
16.15 – 16.30	Climate Change Roster of Experts – A collection of regional expertise	Dr Anond Snidvongs, Director, Southeast Asia START Regional Center, Thailand
16.30 – 16.45	Summary and Next Steps to promote the MRC Climate Change and Adaptation Initiative for the Lower Mekong River Basin	Mr. Jeremy Bird, CEO, Mekong River Commission Secretariat
16.45 – 17.00	***Closing remarks***	Mr Chanthavong Saignasith, Director General, Lao National Mekong Committee Secretariat, MRC representative

Facilitators:

Dr Aaron Wolf, Department of Geosciences, Oregon State University, the United States of America,

and Mr Suparerk Janprasart, Basin Development Plan, Planning Division, MRCS

Appendix 2. List of Participants

Name	Position/ Organisation
National representatives, NMCs and NET teams	
Lao	
Mr. Chanthavong Saignasith	Director General
Mr. Lonkham Atsanavong	National EP Coordinator
Mr. Bounthanh Bounvilay	Deputy Director General of Water Resources and Environment Research Institute (WREA)
Mr. Immala Inthabouely	Deputy Director of Climate Change Office, Dept of Environment
Mr. Phonepaseuth Phouliphanh	Acting Chief of Planning and Cooperation Division
Mr. Douangchanh Lopaying	Team Leader of Lao NET, Environment Protection Fund
Mr. Vanglor Choungtoua	NET, Rural Research and Development Center
Mr. Somphanh Phanousith	NET member
Mr. Bounheuang Phanthasith	NET member
Thailand	
Dr. Siripong Hungspreug	Director General, Department of Water Resources
Mr. Thanade Dawasuwan	Deputy Director General, Dept. of Water Resources, Thailand
Mr. Yuthachai Anuluxtipun	Land Management Department
Dr. Warasak Phuangcharoen	Senior Environmental Officer, Office of Natural Resources and Environmental Policy and Planning
Ms. Ladawan Kumpa	Senior Expert in Policy and Plan, Office of the Natural Economic and Social Development Board
Mr. Chetphong Butthep	Senior Policy and Plan Analyst, Office of the Natural Research Council of Thailand
Ms. Pitsabu Jutvapornvanit	Senior Policy and Plan Analyst, Department of Water Resources
Mr. Apaithoon Suwanchoojit	Civil Engineer, Department of Water Resources
Mrs. Ruamporn Ngamboriruk	Alternate EP Coordinator, Thai National Mekong Committee, Department of Water Resources
Ms. Thitima Phuavong	Assistant to National EP Coordinator, Thai National Mekong Committee
Mr. Benya Suphanithasnaporn	Assist National BDP Coordinator, Thai National Mekong Committee
Ms. Burachat Buasuwan	Thai National Mekong Committee
Ms. Lalita Boonpriwan	BDP Secretary, Thai National Mekong Committee
Dr. Kampanad Bhaktikul	NET Team Leader
Dr. Jiragorn Gajanesi	NET
Dr. Nathsuda Pumijumnong	NET
Ms. Jongdee To-Im	NET
Ms. Navarat Induwongs	NET
Mr. Chaiyuth Sukhsri	Faculty of Engineering, Chulalongkorn University
Ms. Supranee Runghirunvirong	Dept. of Water Resources, Thailand
Ms. Satit Seprasertsuk	Dept. of Water Resources, Thailand
Mr. Surajate Boonya-Aroonnet	Hydro & Agro Informatic Institute
Mr. Sunpakit Jewcharoen	Pollution Control Department
Mr. Tosaporn Bumrungwong	Pollution Control Department
Ms. Sayan Chanmanee	Pollution Control Department

Vietnam	
Dr. Le Duc Trung	Acting Director General, Vietnam National Mekong Committee
Mrs. Dao Thi Huong	Programme Officer, Vietnam National Mekong Committee
Mrs. Nguyen Thi Ky Nam	National EP Coordinator, Vietnam National Mekong Committee
Dr. Nguyen Van Thang	NET
Mr. Le Nguyen Tuong	NET
Mr. Hoaang Minh Tuyen	NET
Mr. Nguyen Van Viet	NET
Mr. Tran Quynh	NET
Mr. Nguyen Thi Hien Thuan	NET
Mr. Nguyen Huu Tan	Institute for Water Resource Planning
Mrs. Le Minh Hang	National Center for Meteorology and Hydrology
Mr. Nguyen Van Vinh	National Center for Meteorology and Hydrology
Mrs. Tran Mai Phuong	Ministry of Planning and Investment
Mrs. Nguyen Thi Thu Phuong	Vietnam Environment Administration
Dr. To Van Truong	Director of Southern Institute for Water Resources Planning
Cambodia	
H.E.Mr. Kol Vathana	Deputy General Director, Cambodia National Mekong Committee
Mr. So Sophort	Director of Project Department, Cambodia National Mekong Committee
Mr. Hak Socheat	Deputy Director of Project Department, FMMP Coordinaor, Cambodia National Mekong Committee
Dr. Chhun Vannak	Advisor to Senior Minister, Ministry of Environment
Mr. Peou Vuthyrak	National EP Coordinator, Cambodia National Mekong Committee
Ms. Tep Phollarath	Vice Chief of Climate Office, DOM, MOWRAM
Mr. Lieng Sopha	Vice Director, Inland Fisheries Redearch and Development Institute, MAFF
Mr. Chea Chan Thou	NET Team Leader
Mr. Ouk Navann	Deputy Team Leader of Cambodian NET, Climate Change Office
Mr. Sok Khom	AIFP Coordinator, Cambodia National Mekong Committee
MRCS	
Mr. Jeremy Bird	CEO, MRCS
Dr. Pornsook Chongprasith	Director, Environment Division (ENV)
Dr. Vithet Srinetr	Coordinator, ENV
Mr. Sourasay Phoumavong	Director, Planning Division (PLD)
Dr. Ashley Halls	Fisheries Progamme, FEVM CC
Mr. Fongsamuth Phengphaengsy	Programme Officer, AIFP
Dr. Timo Menniken	Advisor, Watershed Management Project
Dr. Petra Schill	Programme Coordinator, MRC GTZ Cooperation Programme
Dr. Hanne Clausen Bach	CTA, Environment Programme, ENV
Dr. Tran Mai Kien	CC Programme Officer, ENV
Dr. Hakan Berg	Senior Environmental Specialist, ENV
Ms. Berengere Prince	Technical Advisor, ICCS
Dr. Kittipong Jirayoot	Modeller, MRC consultant

Ms. Navida Manotham	Senior Secretary, ENV
Ms. Phonesanook Mahavong	Admin Assistant, ENV
Ms. Vannida Chanpradith	Secretary, Environment Programme
Dr. Thanapon Piman	Modeller, BDP, Planning Division
Mr. Suparerk Janprasart	Programme Officer, BDP,
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Mr. Seree Damnernpiriyakul	Information Management Assistant, FAS
Dr. Pich Hatda An	Operation Manager, RFMMC
Mr. Xaypladeth Chounlamany	Fisheries Programme Coordinator
Dr. Aaron Wolf	Facilitator
Speakers and Presenters	
Mr. Boonlert Archevaranuprok	Meteologist, Thai Meteological Department
Ms . Somkhith Boulidam	Lecturer, Faculty of Social Science, NUOL,Lao PDR
Prof. Tokil Jonch Clausen	Managing Director, DHI, Denmark
Mr. Brian Dawson	Advisor, Climate Change and Energy, AusAID
Prof. Anthony Jakeman	Director of Integrated Catchment Assessment and Management Centre, The Australian National University
Mr. Nguyen Van Kien	Lecturer, PhD Student, An Giang University/Australian National University
Dr. Mac Kirby	Stream Leader, Water for a Healthy Country, Flagship, CSIRO
Dr. Carmel Pollino	Senior Research Fellow, The Australian National University
Dr. Geoffrey Blate	Climate Change Coordinator, WWF Greater Mekong
Dr. Jermy Carew-Reid	Director, International Centre for Environmental Management (ICEM), Viet Nam
Mr. Nguyen Xuan Hien	Deputy Director, Southern Institute for Water Resource Planning and Management, Viet Nam
Mr. Thiery Facon	RAP Senior Water Management Officer, FAO
Mr. Hans Guttman	Coordinator, The Wetlands Alliance Programme, AIT
Dr. Luong Quang Huy	Climate Change Programme Manager, IUCN, Viet Nam
Mr. Nguyen Ngoc Huy	PhD Student, Kyoto University
Mr. Naoki Minamiguchi	Vulnerability Analaysis Coordinator, FAO
Dr. Hasan Moinuddin	Climate Change Task Coordinator, ADB-GMS
Dr. Andrew D. Noble	Regional Director of IWMI
Dr. Blake Ratner	Regional Director, The World Fish Center
Dr. Edsel Sajor	Research Leader, School of Environment, Resources & Development, AIT and M-POWER
Dr. Lisa Schipper	Research Fellow, Stockholm Environment Institute
Dr. Suppakorn Chivanno	Deputy Director, SEASTART RC
Embassy/Development Partners	
Mr. Phillippe Allen	Minister Counseller, Australian Embassy, Bangkok/Aus AID
Mr. Orestes Anastasia	Regional Environment Advisor, USAID
Mrs. Karin Andersson	Coordinator, Infrastructure and Environment, SIDA, Sweden
H.E. Mr Lars Backstrom	Ambassador, Embassy of Finnland
Mr. Rudi Veestraeten	Ambassador, Embassy of Belgium
Ms. Srin Boonyoung	Programme Officer, Embassy of Finland
Mr. John Pasch	US Agency for International Development (USAID)
Ms. Delphine Brissoneau	Programme Officer, Delegation of European Commission to

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Mr. Simon Buckley	First Secretary, Australian Embassy, Vientiane
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Ms. Waraporn Hirunwatsiri	Environmental Specialist, The World Bank, Bangkok
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Mr. Reinhard Paichowsky	Germany Embassy, Thailand
Mr. Jonas Dallinger	GTZ, Thailand
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Organisation/Institution	
Dr. Surajate Boonya-Aroonnet	Researcher, Hydro and Agro Informatics Institute
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Mr. Chalermrat Sangmanon	SEASTART RC
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Ms. Prinyarat Leangcharoen	Thailand Development Research Institute
Ms. Pitsom Merthom	Thailand Development Research Institute
Others	
Mr. Satya Priya	Head, Business Unit, Risk and Insurance, RMSI, India
Mr. Apichai Sunchindah	Development Specialist, Bangkok
Mr. Winai Chaomiwat	Chulalongkorn Univ.
Mr. Wichayam Jarennleul	Chulalongkorn Univ.
Mr. Virat Chatdarong	Chulalongkorn Univ.
Mr. Chokchai Suthidhummaijit	Chulalongkorn Univ.
Mr. Werapol Bejranonda	Chulalongkorn Univ.
Mr. Sucharit Koontanakulong	Chulalongkorn Univ.
Ms. Boontham Sirichay	DWR Thailand
Mr. Thanaporn Phongtee Na Ayarhya	DWR Thailand
Ms. Jinna Tansaraviput	National Economic and Social Development Board (NESDB), Thailand
Mr. Visanu Voranart	NESBD
Mr. Terapoc Ketethan	Thai Carbon Fund
Mr. Jaran Danpariwyalert	Researcher
Mr. Steve Van Beeh	Writer
Mr. Su Boonleung	Observer, Thailand
Mr. Nattapol Hongsrisuk	Observer, Thailand
Ms. Nattaya Nilluon	Observer, Thailand
Ms. Parada Paepipat	Observer, Thailand
Mr. Somchai Ngaumsiborn	Observer, Thailand
Ms. Phitsanu Voranard	NESBD
Mr. Somrudee Nicro	Thailand Environment Institute (TEI)
Mr. Surichai Wungaeo	Chulalongkorn Univ.
Mr. Rawadee Jarumgathanapong	Land Policy Forum

Appendix 3. Forum Brief

Regional Forum on the MRC Climate Change and Adaptation Initiative

2 – 3 February 2009
Venue: Plaza Athénée Hotel Bangkok
10 Wireless Rd. (close to Ploenchit BTS sky train station)

Forum Brief

The Environment Programme of the MRC started implementing the initial phase of the MRC Climate Change and Adaptation Initiative in July 2008. During its initial phase (July 2008–March 2009), the project aims to formulate a detailed framework and project document, including budgeted activities with clearly defined milestones and an indicative schedule of implementation for the period 2009-2012. Project formulation will be undertaken through a dialogue and consultation with stakeholders during the formulation phase of the Initiative.

The Regional Climate Change Forum will be one of several activities fostering close dialogue and consultation with stakeholders concerned with climate change and adaptation activities in the Lower Mekong Basin. The Forum will provide an opportunity to introduce the MRC Climate Change and Adaptation Initiative and to gain feedback from key stakeholders on the approach and framework of the Initiative.

1) Background

Various stakeholders in the region are increasingly expressing their concern over climate change, and there is a high demand for better understanding of the potential impacts from climate change. A large number of development partners/organisations are currently initiating various climate change activities in the Lower Mekong Basin. In this context, the Mekong River Commission (MRC) has particular relevance because:

- Climate change will have impacts on hydrology, ecology, agriculture, fisheries and hydro-power development, all of which are core interests to the MRC.
- Biophysical changes in water related ecosystems due to climate change will impact on people's livelihoods, with implications for sustainable development and the well being of people of the region.
- The MRC develops regional-scale tools and plans which are well suited to analyzing basin-wide effects such as those expected under future climate change scenarios.
- Climate change will require policies that can address transboundary effects and issues.
- There is a need for raising awareness about climate change and its impacts, and as a neutral regional body, the MRC is in a good position to fill that role.

Over the first five years (2008–2012), the MRC Climate Change and Adaptation Initiative will be divided into three broadly interlinked work packages.

- Work Package 1 – Formulation
- Work Package 2 – Basin-wide Integrated Assessment on Impact and Adaptation to Climate Change
- Work Package 3 – Provisions for sustainability of climate change policy planning

2) Objectives of the Regional Climate Change Forum

The primary objectives of the Regional Climate Change Forum are to:

1) provide an opportunity to assess the MRC Climate Change and Adaptation Initiative and gain feedback from key stakeholders on the approach and framework of the Initiative that will lead to the refinement of the Initiative;

2) review information on past, current and future activities in the Member States and discuss needs and gaps in climate change and adaptation knowledge and activities in different sectors, scales and levels in the Lower Mekong Basin;

3) gather information on past, current and future activities and identify needs and gaps in climate change and adaptation knowledge from development partners/organisations;

4) promote initiation of dialogues on climate change and adaptation in the Lower Mekong Basin among the MRC and development partners/organisations;

5) establish a platform for discussing some of the key climate change and adaptation issues in the Lower Mekong Basin that will synthesise information and knowledge on climate change and adaptation for the benefit of the Member States.

3) Overall Structure of the Regional Climate Change Forum

A tentative agenda for the Regional Climate Change Forum is attached. The Forum will be structured into six sessions consisting of approximately 20 presentations on Monday 2 February, and 12 presentations, followed by working group discussions, on Tuesday 3 February:

Opening Session: Climate Change and Adaptation Challenges

The opening session on Monday 2 February, will welcome the participants, set the stage and introduce the MRC Climate Change and Adaptation Initiative through a welcome address by Jeremy Bird, CEO of the MRC Secretariat, and an opening address by the Chairman of the Joint Committee of the MRC for 2008/2009, followed by keynote addresses by International Experts on topics highly relevant to the Lower Mekong Basin. The keynote addresses will set the scene for the Climate Change Forum sessions.

Session 1 – Climate Change and Adaptation Activities in the Member States of the Lower Mekong Basin

In this session on Monday morning, national experts of the member countries will present an overview of key past, current and future climate change and adaptation activities and

strategies in the Member States of the Lower Mekong Basin. While the national experts will together outline the overall context of climate change and adaptation in the Lower Mekong Basin, the MRC's International Expert will present an overview of state-of-the-art science and technology related to climate change impacts and adaptation relevant for the Lower Mekong Basin. This session will consist of presentations that will provide important information for the discussions on needs and gaps in the Lower Mekong Basin with respect to climate change and adaptation activities.

Session 2 – Climate Change and Adaptation Initiatives by Development Partners/ Organisations for the Lower Mekong Basin

To complement session one, session two on Monday afternoon provides an opportunity for development partners/organisations to describe their past, current and future climate change and adaptation activities relevant for the Lower Mekong Basin, and to present their views on the most important climate change and adaptation issues in the Lower Mekong Basin. In addition, this session welcomes the development partners/organisations to identify their comparative strengths and efforts in addressing climate change in the Lower Mekong Basin. This session will encourage all development partners/organisations and the MRC to align their activities on climate change and adaptation to mutually support the member countries.

Session 3 – Lessons Learnt from Case Studies on Climate Change and Adaptation in Different River Basins

In this session on Tuesday morning, riparian and international experts will present case studies from river basins relevant to the Lower Mekong Basin context and highlight lessons learnt from these case studies. Tentative topics include climate change modelling and scenario building; current and future climate risks; vulnerability to climate impacts and adaptation; national adaptation strategies and plans; and regional initiatives to tackle climate change impacts in river basins. This session will aim to benefit from previous relevant case studies enhancing the understanding of relevant climate change and adaptation issues for the Lower Mekong Basin and provide inputs to the discussions on shaping the MRC Climate Change and Adaptation Initiative.

Session 4 – Approach and Methodology for the MRC Climate Change and Adaptation Initiative

Session four on Tuesday afternoon will enhance understanding of the approach and methodology proposed for the MRC Climate Change and Adaptation Initiative. The presentation by the MRC's international expert will cover issues relating to the integrated climate change impact and adaptation assessment framework, components of the planned activities and the overall work plan for the MRC Climate and Adaptation Initiative. This session provides an opportunity to cover the relevant technical questions, and move the Forum towards discussing and gathering feedback from the participants on the MRC Climate Change and Adaptation Initiative.

Working Session: Feedback on the MRC Climate Change and Adaptation Initiative

In this final session on Tuesday 3 February, stakeholders are invited to participate through working groups. The facilitated discussions in this session will be guided by the presentations and discussions during the previous sessions, a set of guiding questions prepared by the MRC Secretariat and the project brief. Feedback and recommendations are expected to emerge on needs and gaps in the Lower Mekong Basin with respect to climate change and adaptation activities; interaction and collaboration between organisations and their networks; and the approach and framework of the MRC Climate

Change and Adaptation Initiative. The ideas and views emerging from this Regional Climate Change Forum will contextualise the detailed work plan for the MRC Climate Change and Adaptation Initiative. Toward the end of the session SEA START RC representative will be invited to discuss Climate Change Roster of Experts for the region. Before the closing of the Regional Climate Change Forum, MRC Secretariat representative will summarise the outcome of the Forum and present the next steps for the MRC Climate Change and Adaptation Initiative. The Joint Committee Member of the MRC will conclude the Regional Climate Change Forum.

Appendix 4. Guiding questions for discussions

Guiding Questions for Discussion

Regional Forum
on
MRC Climate Change and Adaptation Initiative
2-3 February 2009
Bangkok, Thailand
Organized by Mekong River Commission Secretariat

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1) Objectives of the Regional Climate Change Forum

The primary objectives of the Regional Climate Change Forum are to:

1) provide an opportunity to assess the MRC Climate Change and Adaptation Initiative and gain feedback from key stakeholders on the approach and framework of the Initiative that will lead to the refinement of the Initiative;

2) review information on past, current and future activities in the Member States and discuss needs and gaps in climate change and adaptation knowledge and activities in different sectors, scales and levels in the Lower Mekong Basin;

3) gather information on past, current and future activities and identify needs and gaps in climate change and adaptation knowledge from development partners/organisations;

4) promote initiation of dialogues on climate change and adaptation in the Lower Mekong Basin among the MRC and development partners/organisations;

5) establish a platform for discussing some of the key climate change and adaptation issues in the Lower Mekong Basin that will synthesise information and knowledge on climate change and adaptation for the benefit of the Member States.

2) Guiding questions for the sessions

Opening Session: Climate Change and Adaptation Challenges

The opening session on Monday 2 February 2009, will welcome the participants, set the stage and introduce the MRC Climate Change and Adaptation Initiative through a welcome address by Jeremy Bird, CEO of the MRC Secretariat, and an opening address by the Chairman of the Joint Committee of the MRC, followed by keynote addresses by International Experts on topics highly relevant to the Lower Mekong Basin. The keynote addresses will set the scene for the Climate Change Forum sessions.

Session 1 – Climate Change and Adaptation Activities in the Member States of the Lower Mekong Basin

In this session on Monday morning, national experts of the member countries will present an overview of key past, current and future climate change and adaptation activities and strategies in the Member States of the Lower Mekong Basin. While the national experts will together outline the overall context of climate change and adaptation in the Lower Mekong Basin, the MRC's International Expert will present an overview of state-of-the-art science and technology related to climate change impacts and adaptation relevant for the Lower Mekong Basin. This session will consist of presentations that will provide important information for the discussions on needs and gaps in the Lower Mekong Basin with respect to climate change and adaptation activities.

Guiding questions for the session

1) *To what extent is the state of knowledge of the Member Countries on climate change, impacts and vulnerability of systems and sectors relevant to the Lower Mekong Basin?*
2) *To what extent do the Member Countries have policy and institutional frameworks to address climate change and adaptation?*
3) *Who are the key stakeholders of the Member Countries at national, provincial, and community level and what are or shall be their role and responsibility in responding to climate risk of the Lower Mekong Basin?*
4) *Which key aspects of the state-of-the-art science and technology related to climate change impacts and adaptation would be meaningful to apply in the Member Countries for their establishment of national and regional adaptation strategies and action plans?*

Session 2 – Climate Change and Adaptation Initiatives by Development Partners/ Organisations for the Lower Mekong Basin

To complement session one, session two on Monday afternoon provides an opportunity for development partners/organisations to describe their past, current and future climate change and adaptation activities relevant for the Lower Mekong Basin, and to present their views on the most important climate change and adaptation issues in the Lower Mekong Basin. In addition, this session welcomes the development partners/organisations to identify their comparative strengths and efforts in addressing climate change in the Lower Mekong Basin. This session will encourage all development partners/organisations and the MRC to align their activities on climate change and adaptation to mutually support the member countries.

Guiding questions for the session

1) *What are key shared and different interests of the Development partners and regional organizations with respect to climate change and adaptation to assist and support the Member Countries of the Lower Mekong River Basin?*
2) *How can the MRC Climate Change and Adaptation Initiative collaborate with those partners and organizations with a view to avoid duplication of efforts and to concert with their activities?*
3) *How can Development partners and regional organizations possibly coordinate and link their activities and support with the MRC Climate Change and Adaptation Initiative to benefit the Member Countries?*
4) *What are the gaps and constraints of the Development partners and Regional Organizations which the MRC Climate Change Initiative could fill to support the Member Countries to their implementation of adaptation strategies and action plans?*

Session 3 – Lessons Learnt from Case Studies on Climate Change and Adaptation in Different River Basins

In this session on Tuesday morning, riparian and international experts will present case studies from river basins relevant to the Lower Mekong Basin context and highlight lessons learnt from these case studies. Tentative topics include climate change modelling and scenario building; current and future climate risks; vulnerability to climate impacts and adaptation; national adaptation strategies and plans; and regional initiatives to tackle climate change impacts in river basins. This session will aim to benefit from previous relevant case studies enhancing the understanding of relevant climate change and adaptation issues for the Lower Mekong Basin and provide inputs to the discussions on shaping the MRC Climate Change and Adaptation Initiative.

Guiding questions for the session

1) *What is the up-to-date knowledge of the Member Countries on understanding climate change impacts and vulnerabilities of the Mekong River Basin?*
2) *What are the key scientific climate studies and research areas interests of the Member Countries with respect to climate change adaptation strategy and action plan?*
3) *How can the MRC Climate Change and Adaptation Initiative use those lessons learnt as part of an establishment of regional climate change adaptation options for the Member Countries?*
4) *What are the key messages learnt from other river basin studies as a building block for further steps for the Lower Mekong River Basin?*
5) *Can the MRC Climate Change and Adaptation Initiative integrate those lessons into its future plan and activities in the next phase of implementation?*

Session 4 – Approach and Methodology for the MRC Climate Change and Adaptation Initiative

Session four on Tuesday afternoon will enhance understanding of the approach and methodology proposed for the MRC Climate Change and Adaptation Initiative. The presentations by the MRC's international expert and MRC Secretariat will cover issues relating to the integrated climate change impact and adaptation assessment framework, components of the planned activities and the overall work plan for the MRC Climate and Adaptation Initiative. This session provides an opportunity to cover the relevant technical questions, and move the Forum towards discussing and gathering feedback from the participants on the MRC Climate Change and Adaptation Initiative.

Guiding questions for the session

1) *Which of the possible approaches and methodologies should be the foundation for the MRC Climate Change and Adaptation Initiative for the Lower Mekong River Basin?*
2) *How do we design the components of planned activities of the next phase of implementation of MRC Climate Change and Adaptation Initiative to incorporate past and current relevant activities of Development Partners and other regional organizations and the Member Countries with a view of mutual support and avoiding duplication of efforts?*
3) *Does the proposed plan of components and activities of the MRC Climate Change and Adaptation Initiative fill the gaps, needs and priorities of the Member Countries to achieve their implementation of national and regional adaptation strategies and action plans?*
4) *What are the key features of an Integrated Approach for climate change impact and vulnerability assessment for establishment of regional adaptation strategies and action plans for the Lower Mekong River Basin?*

Working Session: Feedback on the MRC Climate Change and Adaptation Initiative

In this final session on Tuesday 3 February, stakeholders are invited to participate through working groups. The facilitated discussions in this session will be guided by the presentations and discussions during the previous sessions, a set of guiding questions prepared by the MRC Secretariat and the project brief. Feedback and recommendations are expected to emerge on needs and gaps in the Lower Mekong Basin with respect to climate change and adaptation activities; interaction and collaboration between organisations and their networks; and the approach and framework of the MRC Climate Change and Adaptation Initiative. The ideas and views emerging from this Regional Climate Change Forum will contextualise the detailed work plan for the MRC Climate Change and Adaptation Initiative. Toward the end of the session SEA START RC representative will be invited to discuss Climate Change Roster of Experts for the region. Before the closing of the Regional Climate Change Forum, MRC Secretariat representative will summarise the outcome of the Forum and present the next steps for the MRC Climate Change and Adaptation Initiative. The Joint Committee Member of the MRC will conclude the Regional Climate Change Forum.

Guiding questions for the session

1) *What is the key feedback that the MRC Climate Change and Adaptation Initiative shall take into consideration in order to promote a collaboration and participation of the Member Countries, development partners and regional organizations?*
2) *How does the MRC Climate Change and Adaptation Initiative create a platform and mechanism to ensure an improvement of collaboration and exchange of knowledge and information within and among the Member Countries and external partners?*
3) *What are the proposed next step to promote the MRC Climate Change and Adaptation Initiative to be owned by the Member Countries and to be collectively supported by development partners and regional organizations?*