



MEKONG

CLIMATE CHANGE ADAPTATION STRATEGY
AND ACTION PLAN

NOVEMBER 2017

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Preface

Climate change is expected to have serious impacts on the temperature and hydrology of the Mekong River. Uncertainties in the direction of the changes are high given the range of plausible future climatic patterns and emissions that have to be considered, but this is ever more a reason to study the situation, set a vision and develop measures through which MRC can contribute to increase the resilience of livelihoods and ecosystems in the Lower Mekong Basin (LMB) regardless of the direction of change. It is therefore with great pleasure that I can present to you the first Mekong Climate Change Adaptation Strategy and Action Plan (MASAP). Development of the MASAP was a joint effort of the Member Countries of the MRC (Cambodia, Lao PDR, Thailand and Viet Nam).

The MRC was mandated in 2007 to launch the Climate Change and Adaptation Initiative (CCAI) and in 2011 to lead the development of the MASAP. The MASAP is an important addition to the Basin Development Strategy 2016-2020 as it takes a long-term perspective of the potential changes in the LMB due to climate change. With climate change unfolding and climate change knowledge evolving over time, the MASAP should be updated regularly, based on the latest insights. This process is proposed to be aligned with the overall strategic planning as done through the BDS.

Various initiatives already exist at the national levels to cope with climate change. The MASAP has condensed the current state-of-the-art knowledge on climate change in the LMB. It identifies priorities and actions for the MRC in order to support the Member Countries to further increase the resilience in the LMB. The MASAP provides the opportunity for the Member Countries to use and build upon this knowledge and streamline their actions with their neighbouring countries.

The MASAP is also intended to create greater awareness of the impacts of climate change and the actions that can be taken at MRC level to mitigate them. Greater awareness will enhance support for developing adaptation measures. Moreover, where climate change impacts the general way of working, it also provides opportunities for change, and through this change, to implement improvements.

The MASAP is an important step towards the sustainable development of the LMB. The strategy has been developed through a thorough process involving national consultations, regional working groups and stakeholder forums. The wide involvement and participation that encompasses consideration of many different interests ensures substantial support for further implementation of the strategy.

Executive summary

A strategy in a changing climate

With climate change, there is a need to address water management at national, regional and international levels in a coordinated way. The Mekong Climate Change Adaptation Strategy and Action Plan (MASAP) sets out the strategic priorities and actions at basin level through which the Mekong River Commission (MRC) can contribute to addressing climate change risks and strengthen basin-wide resilience. The MASAP identifies critical dimensions of development that need transboundary cooperation for the purpose of adaptation to climate change, and enhances the capacity of Member Countries in implementing their own national strategies. In terms of climate-resilience for the Lower Mekong Basin (LMB), the MASAP contributes to ensuring that people, communities, businesses, and other organizations be able to cope with current climate variability as well as adapt to future climate change, preserving development gains, and minimizing damages.

The MASAP is part of, among others, the MRC Integrated Water Resources Management-based Basin Development Strategy (BDS) 2016-2020, the MRC Strategic Plan 2016-2020, and the MRC Climate Change and Adaptation Initiative (CCAI) Framework Document 2009-2025. The MASAP will contribute to ensuring sustainable development of the Mekong River Basin in line with the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin. The MASAP provides initial direction for basin-wide climate change adaptation that will continue to be reviewed and updated by MRC.

A comprehensive process

The formulation of the MASAP followed a roadmap comprising four stages: Preparation (2012-2013), including various studies to understand the state of the art knowledge of climate change and adaptation in the region, Formulation (2014-2015), providing the knowledge base for the MASAP and the strategic priorities and actions, and Finalisation and Approval (2016-2017), seeking inputs and agreement from Member Countries. In addition to the Member Countries, stakeholders were involved during the whole MASAP development process, through the engagement of various national expert teams, a series of national and regional consultations, working sessions, stakeholder forums and communication campaigns.

The Formulation stage included an appraisal of the legal, policy and institutional aspects at national and regional level in the LMB. From this it was concluded that at the regional level, both MRC and the Association of South East Asian Nations (ASEAN) provide solid legal support for regional climate change adaptation actions. At the national level, legislation in general supports adaptation. Furthermore, the Paris Agreement 2015, the Sustainable Development Goals (SDG) and the Sendai Framework provide strong policy support for adaptation at the regional and national level, while ASEAN, the Greater Mekong Sub-region (GMS) and the newly established Mekong-Lancang Cooperation (MLC) support adaptation policies at the regional level. In all MRC Member Countries, national policies and strategies on climate change are developed, although not all sector policies and/or legal and institutional settings are fully tuned to the new policy developments yet. Finally, on the topic of climate change adaptation, the coordination between the relevant ministries as well as between the national and provincial levels, and the national and regional levels, could be improved, and the role of the private sector could be strengthened.

As part of the Formulation stage, the climate change impacts on water and water related sectors have been assessed. Following international standards and recommendations, a range of plausible future climatic patterns simulated by a General Circulation Model (GCM) as well as a range of plausible future emissions scenarios established by the Intergovernmental Panel on Climate Change (IPCC) have been considered when simulating the impacts of climate change in the LMB. The range of impacts across the LMB have been simulated on hydrology, flood and drought behaviour, hydropower production, food production (crop yield, fisheries and aquaculture), ecosystem and biodiversity as well as livelihoods.

An uncertain future

The hydrology of the Mekong River is currently changing, principally attributed to up-stream flow modifications by the construction of dams in the Upper Mekong Basin. Also, there have been very significant changes in vegetation cover, forests, biodiversity and ecosystems across the Lower Mekong Basin. In capture fisheries, the composition of the catch is changing. There is insufficient evidence to determine if climate change has contributed to any of these changes.

In the future, the basin-wide temperature will rise. Variations in hydrology following changes in precipitation are predicted, but these changes could all either include an increase or decrease, given the spectrum of plausible future climate change scenarios that have been considered. The range of possible changes in hydrology is enormous and many people and communities are vulnerable to potentially wide-ranging impacts, as are ecosystems. Close consideration of the changes and their impacts is therefore essential.

Strategic guidance

MRC's strategic priorities should support sustainable development pathways and improvement of governance, they should also strengthen the institutions as well as provide for comprehensive information collection and dissemination and for capacity building.

Seven basin-wide strategic priorities

Seven strategic priorities are identified as a coherent basin-wide adaptation strategy for MRC to contribute to the adaptation efforts of LMB countries and minimization of negative impacts of current and future climate change in the basin. Under each strategic priority, several prioritised actions are set out as implementation steps contributing to realising the strategy.

Development of the strategic priorities and their associated actions took into account the goals, objectives and principles of the 1995 Mekong Agreement, the core functions of the MRC, the adaptation options identified and recommended from the CCAI basin-wide assessment of climate change impacts and vulnerability in the LMB, the results of a regional policy review and the relevant actions from the BDS 2016-2020.

The seven strategic priorities for basin-wide adaptation to climate change are:

1. Mainstream climate change into regional and national policies, programmes and plans;
2. Enhance regional and international cooperation and partnership on adaptation;
3. Enable preparation of transboundary gender sensitive adaptation options;
4. Support access to adaptation finance;
5. Enhance monitoring, data collection and sharing;
6. Strengthen capacity on development of climate change adaptation strategies and plans; and
7. Improve outreach of MRC products on climate change and adaptation.

Strategic basin adaptation to climate change: focus on support

The strategic priorities and underlying actions focus on supporting MRC Member Countries (MCs) in developing and implementing an adaptation strategy in an integrated way, accounting for the imperative cooperation in the LMB. To this end, actions include, among others, promotion of the use of the CCAI climate change scenarios as agreed by MCs, promotion of improved coordination between and within MCs, promotion of implementation of transboundary adaptation projects, and promotion and support to the application of the MRC approach toward development of adaptation strategies at national level.

Furthermore, the strategic priorities aim for enhancing regional and international cooperation and partnership on adaptation through, among others, strengthening cooperation with ASEAN and MLC, with International Financial Institutions and other donors, and international climate change communities.

Implementation of the MASAP: an action plan

An action plan has been developed for the implementation of the MASAP, including the actions, a timeframe for each action, and identification of the relevant stakeholders and their roles and responsibilities. The implementation of the MASAP will be monitored and regularly evaluated and reported. The Monitoring, Evaluation and Reporting (M&E) of the MASAP will be integrated into the M&E of MRC Strategic Plan. As a dynamic strategy, the MASAP will need to be updated every five years following the MRC strategic planning cycle.

Abbreviations and acronyms

ADB	: Asian Development Bank
ASEAN	: Association of South East Asian Nations
BDP	: Basin Development Plan
BDS	: (IWRM-based) Basin Development Strategy
BWA	: Basin-Wide Assessment
CCAI	: Climate Change and Adaptation Initiative (of the MRC)
CEO	: Chief Executive Officer
CNMC	: Cambodia National Mekong Committee
DMHCC	: Department of Meteorology, Hydrology and Climate Change
GMS	: Greater Mekong Sub-region (a programme of the Asian Development Bank)
GOL	: Government of Lao PDR
IWRM	: Integrated Water Resources Management
JC	: Joint Committee (of the MRC)
LMB	: Lower Mekong Basin
MLC	: Mekong-Lancang Cooperation
LNMC	: Lao National Mekong Committee
M&E	: Monitoring and evaluation
MASAP	: Mekong Climate Change Adaptation Strategy and Action Plan
MCs	: Member Countries
MEM	: Ministry of Energy and Mines
MoE	: Ministry of Environment
MoNRE	: Ministry of Natural Resources and Environment
MRC	: Mekong River Commission
MRCS	: Mekong River Commission Secretariat
MRC-SP	: MRC Strategic Plan
NIP	: National Indicative Plan
NMC	: National Mekong Committee
NMCS	: National Mekong Committee Secretariat
OECD	: Organisation for Economic Co-operation and Development
PMFM	: Procedures for Maintenance of Flow on the Mainstream
PNPCA	: Procedures for Notification, Prior Consultation and Agreement
PRC	: People's Republic of China
PWUM	: Procedures for Water Use Monitoring
TNMC	: Thai National Mekong Committee
UMB	: Upper Mekong Basin
UNDP	: United Nations Development Programme
UNECE	: United Nations Economic Commission for Europe
UNFCCC	: United Nations Framework Convention on Climate Change
VNMC	: Viet Nam National Mekong Committee
WB	: World Bank

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1. INTRODUCTION

1.1 Mandate

Climate change is scientifically confirmed worldwide, inter alia, by the Fifth Assessment Report of the IPCC.³²

The challenge is that climate change will continue, despite various international efforts for mitigation of greenhouse gas emissions³³, and its impacts will affect the environment, economy and people worldwide. Adaptation to climate change impacts has been therefore recognised as urgently needed.

Meanwhile, the LMB countries (Cambodia, Lao PDR, Thailand and Vietnam) have been identified as among the most vulnerable countries in the world. A review of existing information has indicated that regional climate change in the LMB is already occurring. Average annual basin-wide temperatures have increased, and the sea-level around the Mekong Delta is rising. A wide range of potential future changes are projected to occur, with overall significant warming, but substantial variations in changes in rainfall across the basin are projected, depending on the scenario used. Nevertheless, the projections indicate significant impacts, on agricultural systems, biodiversity, and ecosystems and ecosystem services, as well as other sectors. The economies of the LMB countries, their ecosystem sustainability and social harmony are at risk.

Recognising these critical threats to the region and the pivotal role of the MRC in addressing climate change adaptation needs, in 2007 the MRC Council at its 14th meeting asked for the development of the CCAI. The MRC Joint Committee (JC) at its 29th meeting in Thailand on 25-27 March 2009 then endorsed the concept and framework for establishment of the CCAI. The CCAI is tasked with providing knowledge, tools and capacity building and other assistance to the Member Countries to better adapt to climate change.

Among other mandates stated in the CCAI Framework Document 2009-2025 approved by MRC Council in January 2011, the MRC CCAI was asked to formulate and implement a Mekong Climate Change Adaptation Strategy and Action Plan entitled as MASAP. The work to formulate and implement the MASAP was also integrated in subsequent strategic documents of the MRC including the MRC Strategic Plan 2011-2015 and MRC Strategic Plan 2016-2020.

Moreover, the importance of MRC's work on climate change adaptation were reaffirmed by the Heads of the Governments of MRC Countries in both the Hua Hin Declaration³⁴, issued during the First MRC Summit in April 2010, and the Ho Chi Minh City Declaration³⁵, issued during the Second MRC Summit in April 2014. The Heads of the Governments emphasised the need for MRC to focus on and prioritise researching and addressing the threats to livelihoods posed by climate change and preparing for climate change adaptation measures, including the MASAP, to minimise poverty and food insecurity among vulnerable communities.

With that mandate, the MRC formulated this MASAP.

1.2 Purpose

The MASAP is a statement of the Lower Mekong Basin (LMB), setting out the MRC's strategic priorities and actions at basin level to address climate change risks and strengthen basin-wide resilience.

1 IPCC (2014). Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, (eds.)]. IPCC, . . R. K. Pachauri and L. A. Meyer. Geneva, Switzerland, Intergovernmental Panel on Climate Change p. 151 pp. <http://www.ipcc.ch/report/ar5/syr/>

33 At the core of the international efforts to address climate change are the United Nation Framework Conventions on Climate Change (UNFCCC), its Kyoto Protocol 1997, and its Paris Agreement 2015. The Convention requires all Parties to implement national programmes and measures to control greenhouse gas emissions and to adapt to the impacts of climate change. The Paris Agreement has entered into force on 4 November 2016.

34 <http://www.mrcmekong.org/assets/Publications/Events/MRCSummit2010/MRC-Hua-Hin-Declaration-05-Apr-10.pdf>

35 <http://mrcsummit.org/download/HCMC-Declaration-V5-4Apr2014.pdf>

The MASAP will thus contribute to ensuring sustainable development of the Mekong River Basin, in line with the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin (the 1995 Mekong Agreement).

The MASAP is part of the MRC's commitment stated in the MRC Basin Development Strategy (BDS) 2011-2015 and 2016-2020 and the MRC Climate Change and Adaptation Initiative (CCAI) Framework Document 2009-2025.

The MASAP provides initial direction for basin-wide climate change adaptation that is subject to regular review and updating by the MRC.

The 1995 Mekong Agreement establishes the goals, objectives and underlying principles by which the four Member Countries intend to cooperate, and to which this MASAP responds. These may be summarised as:

- To cooperate in all fields of sustainable development, utilization, management and conservation of water and related resources of the Mekong River Basin, including but not limited to irrigation, hydropower, navigation, flood control, fisheries, timber floating, recreation and tourism, in a manner to optimize the multiple-use and mutual benefits of all riparian and to minimize the harmful effects that might result from natural occurrences and man-made activities (Article 1);
- To protect the environment, natural resources, aquatic life and conditions, and ecological balance of the Mekong River Basin from pollution or other harmful effects (Articles 3 and 7);

1.3 Aligned vision

The MASAP is formulated following the MRC's vision of an economically prosperous, socially just, environmentally sound and climate resilient Mekong River Basin.

In terms of climate resilience for the LMB, the MASAP contributes to ensuring that people, communities, businesses, and other organizations are able to cope with current climate variability as well as adapt to future climate change, preserving development gains, and minimizing damages.

1.4 Added value

In the context of all LMB Member Countries prioritising climate change adaptation by signing various global climate change agreements³⁶ and having their own national strategies and plans, the added value of the MASAP is that it addresses critical climate change adaptation aspects that need transboundary cooperation, and that it enhances the capacity of Member Countries in implementing their own national strategies.

These critical aspects are, inter alia:

- **The need to address the climate and water linkage at basin level using the IWRM approach.** Climate change is also a water issue. Water, together with temperature changes, is at the centre of the expected changes, and water is a cross-cutting issue with major relevance for different socio-economic sectors in the region. In the Mekong region, climate change is likely to cause significant impacts on water resources and can develop into a significant threat in the context that the development on the basin is taking its toll on the environment and livelihoods. The MRC – via MASAP as an adaptation strategy at basin level – is considered the most suitable institution that can help LMB countries address the question of climate change and water linkages at basin level most effectively.

³⁶ All LMB countries ratified the UNFCCC and recently signed the Paris Agreement 2015. As of February 2017, the four LMB countries ratified or approved the Paris Agreement.

- **The need to address transboundary issues associated with climate change adaptation.** Climate change will affect different places in different ways, and impacts are not limited by national boundaries. Climate change impacts create interdependencies between countries. Climate change impacts upstream can have implications downstream, and vice versa. Adaptation options implemented by a country may pose direct and/or significant cross-border implications to the other country as well. Addressing transboundary issues associated in climate change adaptation via MASAP is necessary, as is following the recommended IWRM-based approach in water management.
- **The need to support riparian countries to implement adaptation strategies and plans at national, regional and international level.** While Member Countries adopt several national, regional and international commitments in climate change adaptation, their capacities to implement those strategies are still limited. Lack of awareness, understanding, information, financial and human resources for adaptation in the country have hindered implementation.³⁷ The MASAP will position the MRC as a leading regional institution in providing the support needed and thus advance MRC countries' implementation of national and international adaptation strategies.

Transboundary cooperation via MASAP is needed to address the above-mentioned critical aspects, enhance effectiveness and benefits of adaptation and reduce the environmental and economic costs of adaptation actions.

In brief, MASAP will add value to national adaptation efforts when serving as:

- A tool to address transboundary adaptation in the LMB, using the IWRM-based approach;
- A tool to support and mainstream adaptation planning at national and regional level;
- An opportunity to seek additional funding for adaptation measures at the regional scale and also at national scale;
- An orientation, through the regular basin-wide assessments of climate change impacts and vulnerability of the MRC, and for the identification of concrete relevant adaptation measures for the region; and
- A strategy aligned with and complementing the already existing national strategy and plans, as well as each Member Country's Nationally Determined Contribution (NDC) on adaptation.

1.5 Scope and limitations

Following the MRC mandate and international practices relevant to transboundary climate change adaptation, the MASAP:

- Focuses on the vulnerability of water resources, other related resources and of the people of the LMB, to current and future climate change over a 50-year period;
- Considers the existing policy, legal and institutional settings of climate change adaptation associated with water management and water-related sectors in the LMB, which forms the context in which the MASAP is formulated and will be implemented;
- Provides the MRC's strategic priorities and actions for climate change adaptation in the LMB that are considered beneficial in filling the adaptation gaps and adds value to national policies and plans; and
- Describes the implementation arrangement and potential resources for implementing the MASAP.

³⁷ Ref. CCAI Capacity Needs Assessment 2013, CCAI national and regional policy analysis assessment 2015, Proceeding of the 2nd Mekong Climate Change Forum 2014, and Proceeding of the 3rd Mekong Climate Change Forum 2017.

The MASAP only considers water and water-related sectors in accordance with MRC mandate. It focuses on actions that have a basin-wide scope. It is there to complement the significant efforts that MCs have to undertake at local and national levels.

1.6 Approach to the MASAP development

Roadmap

A roadmap for development of the MASAP (see Figure 1) was elaborated by CCAI and approved by MRC Member Countries in March 2014. Its timing has been regularly updated reflecting the progress of MASAP elaboration.

At regional level the formulation of the MASAP was led by the MRC CCAI in cooperation with other MRC Programmes/Teams.

At national level, the formulation of the MASAP was led by NMCS with close involvement of National Climate Change Focal Agencies³⁸ and related Line Agencies. More than 40 national experts were recruited from the Member Countries for policy review, data collection, modelling and assessments.

The roadmap includes four stages: Preparation, Formulation, Finalisation and Approval.

The **Preparation stage** in 2012-2013 included various studies to understand the state-of-the-art knowledge of climate change and adaptation in the region as well as an assessment on capacity needs of target stakeholders in the Member Countries. The 1st high-level roundtable discussion on transboundary climate change adaptation was organised in 2012 for the LMB governmental officers and representatives of the UNECE's global network of transboundary river basins working on climate change.

The **Formulation stage** in 2014-2015 aimed to provide the **knowledge base** for the MASAP and identify strategic priorities and actions. It included the implementation of the CCAI basin-wide assessment³⁹ of climate change impacts on water resource and water related resource and sectors (in brief, CCAI basin-wide assessment) and the CCAI review of adaptation policies and strategies, the two main building blocks of the MASAP. Potential adaptation options were identified initially through an inventory among the expert teams involved in the basin-wide assessments of climate change impacts, experiences and lessons learned gathered from CCAI local demonstration projects in the Member Countries, the 1st Rhine-Mekong Symposium in 2014, and the 2nd Mekong Climate Change Forum 2014⁴⁰. Throughout MASAP's formulation stage a high number of detailed technical reports were produced. The essence of these documents is captured in three supporting documents of the MASAP, namely "A summary of basin-wide assessment of climate change impact in the LMB", "The Basin Status Report on Climate Change and Adaptation" and the "Regional report on overview of policy for climate change and adaptation".

The **Finalisation and Approval stages** in 2016-2017 aim to seek inputs and agreement from Member Countries on the MASAP. They include rounds of national and regional consultations of the MASAP, a stakeholder engagement workshop/3rd Mekong Climate Change Forum in mid-2017, and considerations for adoption by the MRC JC and Council.

³⁸ The National Climate Change Focal Agencies in Cambodia, Lao PDR, Thailand and Vietnam are Department of Climate Change/MOE, Department of Climate Change and Disasters/MONRE, Office of Natural Resource, Environment, and Policy (ONEP), and Department of Climate Change/MONRE, respectively.

³⁹ MRC CCAI (2016) – Synthesis report of CCAI basin-wide assessment of climate change impacts on water and water related resources and sectors in the LMB- to be consulted with Member Countries

⁴⁰ MRC CCAI (2016) – Mekong Climate Change Adaptation Strategy and Action Plan – Supporting Document No.1 : *Potential adaptation measures for the LMB*

Stakeholder engagement

Stakeholder engagement was given significant attention throughout the MASAP development process. Stakeholders were involved through the engagement of various national expert teams, and the convening of a series of national and regional consultations, working sessions, stakeholder forums and communication campaigns. Stakeholder engagements were carried out with participation of various concerned stakeholders including NMCs, National Climate Change Focal Agencies, related Line Agencies, research institutes and universities, non-governmental organizations, and representatives of international river basin organisations.

The following events were conducted for discussion of the MASAP:

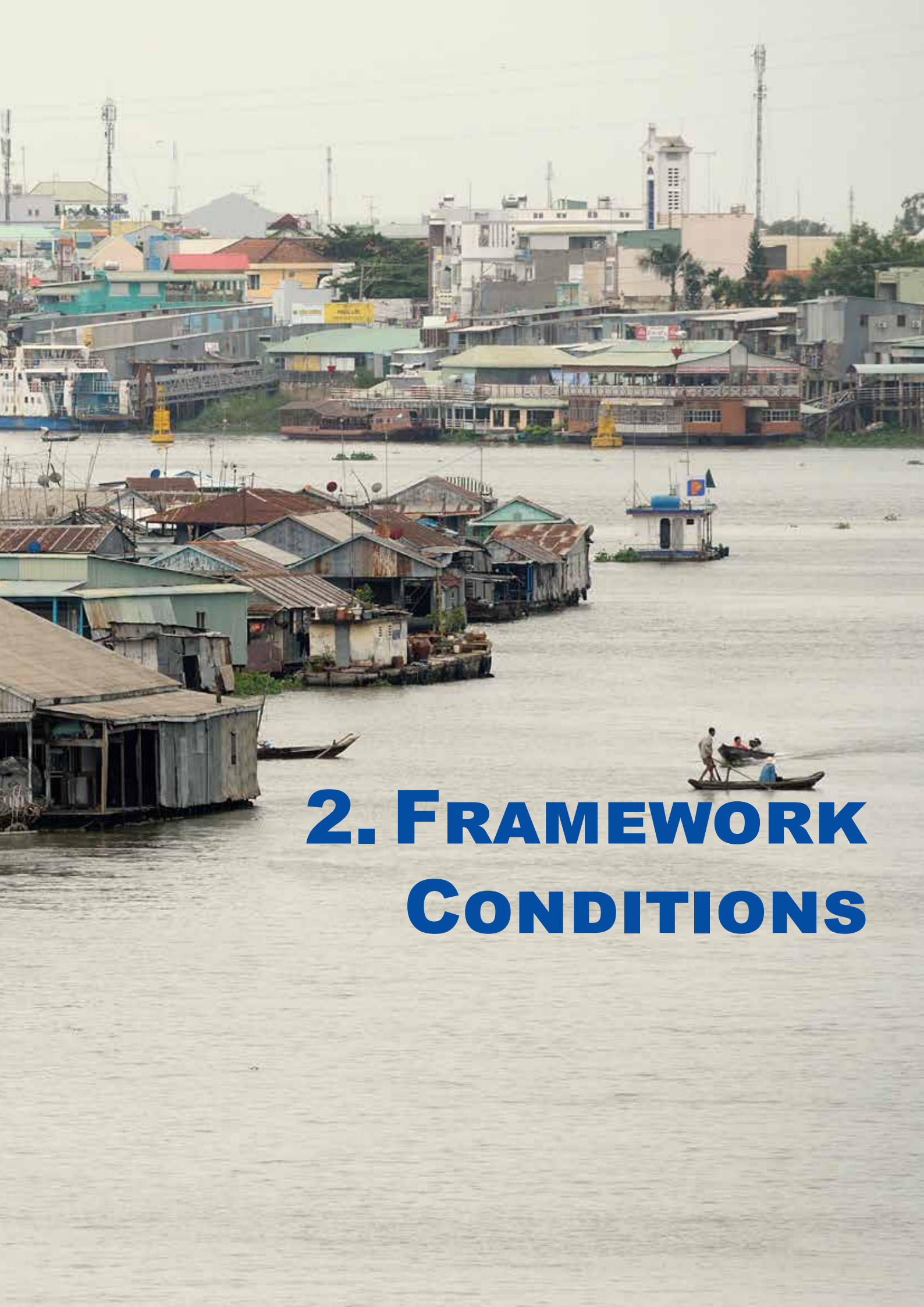
- Regional consultation with Member Countries on the roadmap to formulate the MASAP in 2014;
- One high-level roundtable discussion on transboundary adaptation to climate change for governmental officers of the LMB countries and in exchanges with representatives of the Rhine, Danube and Meuse river basins in 2012;
- A forum on adaptation to climate change in the transboundary context (the 2nd Mekong Climate Change Forum) in which MASAP objectives and roadmap for formulation were discussed with broader stakeholders in 2014;
- A series of national and regional consultations and working sessions on policy review for climate change and adaptation in LMB at national and regional levels in 2014-2016;
- A series of national and regional consultations and working sessions with the Member Countries on CCAI basin-wide assessments in 2014-2017;
- A series of national and regional consultation workshops with the Member Countries on MASAP drafts in 2016-2017; and
- A stakeholder forum on the MASAP at the end of the process (June 2017) during which the content of the strategy, its priorities and action plan were presented and discussed as well as the key findings of the policy review and the basin-wide assessments.

MASAP is a framework document pulling out key findings and recommendations from the policy review (in chapter 2) as well as key findings from the basin-wide assessment (in chapter 3). The strategy sets a vision for the MRC's role in supporting climate change adaptation in the LMB and articulates this vision around seven strategic priorities for MRC's actions.

	2013	2014	2015	2016 - Jun 2017	Jul - Nov 2017
	Preparation	Formulation		Finalization	Approval
Information inputs	<ul style="list-style-type: none"> Literature review on climate change studies Capacity need assessment Lesson learned from demonstration projects Multi-stakeholder dialogue (1st round-table discussion) 	<ul style="list-style-type: none"> Status of climate change and adaptation Extreme climate change analysis Projected climate change scenarios Basin-wide assessments of climate change impacts and vulnerability Identification of adaptation options Compilation of experiences from international, national and local levels Multi-stakeholder dialogue (2nd roundtable discussion, 1st Rhine-Mekong symposium, 2nd Mekong Climate Change Forum) 		<ul style="list-style-type: none"> Final basin-wide assessment results Multi-stakeholder dialogue (MASAP stakeholder forum/ 3rd Mekong Climate Change Forum) Guidance from JC and Council 	<ul style="list-style-type: none"> Negotiation on pending issues Endorsement from JC and approval from Council
Timeframe					
Outputs		<ul style="list-style-type: none"> Agreed roadmap 		<ul style="list-style-type: none"> 1st draft of strategy 	<ul style="list-style-type: none"> Final draft of strategy Final strategy
High-level consultation				JC	JC C

Figure 1: Roadmap for development of the MASAP





2. FRAMEWORK CONDITIONS

2.1 The legal aspects³²

At regional level, the 1995 Mekong Agreement and the ASEAN Declarations and Charters constitute the legal support for regional climate change adaptation actions in the LMB.

Established under the 1995 Mekong Agreement, the **MRC** has a strong legal basis and is an important regional organization for enabling climate change adaptation at the river basin level. Moreover, various existing MRC Procedures and Guidelines will guide regional cooperation on climate change adaptation. The MRC's current efforts, stated in its Strategic Plan 2016-2020, on strengthening the implementation of these Procedures and Guidelines are readily supportive for implementation of transboundary adaptation to climate change.

Moreover, the MASAP can be seen as an interpretation and implementation of the Mekong Agreement. In the Declarations of the last two MRC Summits, the Heads of the Governments of the MRC countries emphasised the need for the MRC to focus on and prioritise researching and addressing the threats to livelihoods posed by climate change and preparing for climate change adaptation measures to minimise poverty and food insecurity among vulnerable communities. The formulation and implementation of the MASAP is thus a timely response of the MRC to this call.

Also, **ASEAN** is legally embedded and supporting progress in the process of adaptation to climate change of its Member Countries. Climate change is also a priority in the ASEAN Community. On 8th September 2016, the Heads of the Governments of 10 ASEAN Countries reaffirmed their commitments to UNFCCC and its associated Paris Agreement through the ASEAN Joint Statement on Climate Change and the ASEAN Leaders' Joint Statement on Climate Change to the UNFCCC. They confirmed that technology development and transfer, capacity building and financial support are needed to scale up adaptation and mitigation efforts in the region.

At national level

The legal developments in the countries have been rapid over the past decade and are largely in line with the climate change policies. Minor issues may exist when legislations of different sectors are compared, but they are not prominent. Over time, it may appear that certain legislation is hindering implementation of adaptation measures. Monitoring of implementation and updating of the MASAP will help address these issues appropriately.

The legislation on data and information exchange generally holds several limitations for information exchange between the countries and also with the MRC. This could delay in-depth assessments of climate change effects and in turn hinder effective actions. Improved implementation of the Procedure for Data and Information Exchange Sharing (PDIES) would be beneficial in this respect.

2.2 The policy aspects

The MASAP is built on the commitment of the MRC countries, and provides outcomes that support the policies in place at national, regional and international levels.

Conversely, policies in place should enable the development and implementation of the MASAP. This entails that the existing policies recognise climate change and support adaptation to climate change at transboundary level.

³² Section based on the Regional report on overview of policy for climate change and adaptation in the Lower Mekong Basin, MRC, 2016.

At international level

Various existing global climate change agreements and frameworks support the formulation and implementation of this MASAP. The most important are the Paris Agreement 2015, the SDG and the Sendai Framework.

The Paris Agreement is a universal, legally binding global climate deal. At the 21st Conference of the Parties to the UNFCCC held in Paris in 2015, 195 countries adopted the Paris Agreement. On 5 October 2016, the threshold (“at least 55 Parties to the Convention accounting in total for at least an estimated 55 percent of the total global GHG emissions”) for the Paris Agreement to enter into force was achieved. The Paris Agreement consequently entered into force on 4 November 2016. The Agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C.

With respect to climate change adaptation, Article 7 of the Paris Agreement provides general principles for adaptation, stresses the importance of international cooperation in adaptation and promotes development of adaptation policies and plans. The regional dimensions of the Paris Agreement are explicitly relevant to the MASAP.

The Paris Agreement thus provides a strong push towards improved climate change adaptation actions. In response, the MASAP can support implementation of the NDCs³³, for instance, on the topics of improving the information base and on capacity building. These two areas of action are thus included as strategic priorities in the MASAP, recognising the unique and strong position of the MRC on climate-related water management issues.

The SDGs also provide a framework towards climate change adaptation for which the MASAP can respond effectively.

Goal 13 (*Take urgent action to combat climate change and its impacts*) explicitly targets adaptation by defining the following goals:

- 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
- 13.2 Integrate climate change measures into national policies, strategies and planning
- 13.3 *Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning*

Other goals under the SDGs, including on food security (Goal 2), sustainable water management (Goal 6), and ecosystem protection (Goal 15) could be targeted through the MASAP. These goals consequently also relate to the strategic actions as described in Chapter 4 and implementation of the MASAP, and will also support countries in achieving the SDGs.

The Sendai Framework aims to substantially reduce disaster risk and losses through a better understanding of disaster risk and investing in disaster reduction and preparedness. Since the effects of climate change in increasing water-related disasters, such as flood and drought, are prioritised in the LMB and considered in the MASAP, the MASAP also contributes to implementing the Sendai Framework.

³³ See UNFCCC NDC registry <http://www4.unfccc.int/ndcregistry/Pages/Home.aspx> and specific document for Cambodia (<http://www4.unfccc.int/ndcregistry/PublishedDocuments/Cambodia%20First/Cambodia%27s%20INDC%20to%20the%20UNFCCC.pdf>), for Laos (<http://www4.unfccc.int/ndcregistry/PublishedDocuments/Lao%20People%27s%20Democratic%20Republic%20First/Lao%20PDR%20First%20NDC.pdf>), for Thailand (http://www4.unfccc.int/ndcregistry/PublishedDocuments/Thailand%20First/Thailand_INDC.pdf) and for Vietnam (<http://www4.unfccc.int/ndcregistry/PublishedDocuments/Viet%20Nam%20First/VIETNAM%27S%20INDC.pdf>).

In sum,

- The three above-mentioned global frameworks together establish a strong basis for the global movement that supports the MASAP. They each comprise provisions to support countries in working towards the respective goals and will as such be supportive when it comes to implementation of the MASAP.
- The MASAP, on the other hand, provides a regional response that contributes to achieving the relevant climate change adaptation goals in these global frameworks. As the MASAP is built on similar principles as are laid down in these global frameworks, its implementation will directly contribute to fulfilling the goals of these three global frameworks.
- Moreover, the existing global climate change agreements offer favourable opportunities for climate change adaptation actions in the Lower Mekong Basin and its countries. These include opportunities for funding and technical assistance that come along with the global or regional programmes responding to these global frameworks. In order to grasp these opportunities, the LMB countries need to strengthen their capacity to formulate and implement adaptation projects that will strongly benefit from the strategic frame provided by a transboundary adaptation strategy such as the MASAP.

At regional level

The regional policies and activities that are most relevant to MASAP are the ones of ASEAN, GMS and the newly established MLC.

- ASEAN has a policy setting that supports working towards climate change adaptation. Among other things, ASEAN has an Action Plan on Joint Response to Climate Change (AAP-JRCC) 2009-2015 and is implementing an ASEAN-UN Action Plan on Environment and Climate Change 2016-2020. ASEAN and the MRC can strengthen each other in this respect. Streamlining of efforts in climate change and adaptation could prove to be beneficial.
- GMS covers the entire Mekong Basin and its climate change adaptation efforts are of high relevance for the MRC. Also here, closer linkages would support the implementation of the MASAP.
- MLC can become an important support for adaptation efforts. MLC explicitly lines up with ASEAN, thus also strengthening the work under ASEAN. Socio-economic development and especially hydropower development is an important issue in the LMB with substantial transboundary implications. An integrated approach is needed and should be dealt with from a regional perspective.

In general, reaching climate change resilient socio-economic development requires an integrated approach and should be dealt with from a regional perspective. Regional organizations like ASEAN and the MRC, and regional initiatives like GMS and MLC can be instrumental for such an approach. All countries can gain by joining forces and exchanging experiences in dealing with climate change. Thus, ***enhancing regional cooperation and partnerships on climate change adaptation*** is set as one of the strategic priority in the MASAP.

At national level

In all MRC Member Countries, national policies and strategies on climate change have been developed. Accounting for climate change in relevant sectors has progressed rapidly since 2005, although presently not all sector policies and/or legal and institutional settings are fully tuned to the new policy developments.

In general, national policies take account of the effects of climate change and current and future extreme hydrological events. However, policy objectives on climate change in each MC are potentially competing with the socio-economic development policies and strategies of the country, especially

in spatial planning issues. Mainstreaming of climate change in the sectoral policies will remain an important issue in the coming years.

Moreover, the need for international and regional cooperation in climate change adaptation is highlighted in all sectoral and national policies. Capacity gaps in terms of coordination, financial and human resources, data and information are reportedly hindering the capacity of LMB countries to realise the needed cooperation in a timely and effective way. Two of the strategic priorities of the MASAP are thus identified as the strengthening of planning and implementing capacity for climate change adaptation strategies and plans of Member Countries, and enhancing regional and international cooperation and partnerships on adaptation.

2.3 The institutional aspects

At regional level

The two regional organizations, ASEAN and MRC, are linked to different ministries in the associated countries, which is logical because of the respective mandates. However, this also complicates the coordination of activities. Synergy mechanisms between ministries should be established.

Furthermore, it could be beneficial if the climate change activities in the GMS would be streamlined at the national level through the national climate change focal agencies. Also, links with MLC activities could be streamlined through these agencies.

At national level

In the MRC Member Countries, national climate change focal agencies dealing with climate change may facilitate an interdisciplinary approach, as representatives from different ministries are involved. For example, the involvement of the Prime Minister of Viet Nam as Chairman of the National Committee for Climate Change improves the possibility of an integrated approach.

Nevertheless, as the policies and legislation have been established quite recently and new institutions usually take time to operate effectively, special attention may be needed to further strengthen the coordination between the various sectors.

Coordination between the ministries within the countries seems to be quite complicated and sometimes a division seems to be made between green development, sustainable development and climate change, which are nevertheless closely linked to each other. Because the interdepartmental coordination required for climate change adaptation is also necessary for issues regarding socio-economic development, it may be advisable to investigate the possibilities for streamlining coordination.

The coordination of the National Mekong Committees with different sectors within the Member Countries could be further improved in all member countries.

On the topic of climate change adaptation, the coordination between the relevant ministries as well as between the national and provincial levels, and the national and regional level could be improved. Also, the role of the private sector may be strengthened.

2.4 The stakeholder aspects

The **ultimate target beneficiaries** of the MASAP are the people of the LMB, especially the poorest and most vulnerable communities living along the river banks and on the floodplains of the Mekong mainstream and its tributaries. These are the people who are most at risk from floods and droughts, and who depend on the availability of good quality water for agriculture and fish and other aquatic flora and fauna for their livelihoods. It also includes the people living in the watersheds whose use

and management of natural resources can influence the water quality and availability, and whose vulnerability to extreme climate events threatens sustainable watershed management. Adaptation strategic priorities and actions of the MASAP will help to reduce vulnerability and encourage greater resilience among these communities. Women, children and the aged are often vulnerable sections of the community, and adaptation projects and programmes developed under MASAP will need to be specially designed to consider their needs and vulnerability.

The increasing urban populations along the Mekong are also at risk of climate change, especially of extreme events such as storms and flooding, and in the Delta of sea-level rise and storm surges. Assisting municipal authorities to develop adaptation strategies that incorporate flexibility into the urban plans and infrastructure and protection for their urban populations, especially the poorest sectors, would facilitate adaptation. The poorest communities, whether rural or urban, will be addressed directly through adaptation planning and mechanisms developed at the adaptation sites in collaboration with provincial/district and line agencies, and other implementing partners.

Climate change threatens all sectors to a greater or lesser degree and the line agencies in each of the key MRC relevant sectors (agriculture, irrigation and forestry; hydropower; navigation; floods and droughts; fisheries) in each of the LMB countries are key stakeholders, with coordination through the NMCs. It is important to include and bring on board the private sector companies and organisations associated with each of these key sectors - agriculture, forestry, fisheries, hydropower, navigation - because their actions may be critical in future water resources management as climate change becomes more obvious.

The **direct beneficiaries** of the MASAP are:

- The National Climate Change Focal Points e.g. MOE in Cambodia and MONRE in Lao PDR, Thailand and Vietnam, which are responsible for facilitating and promoting implementation of the national climate change target plans throughout government and the community;
- The NMCs and sector agencies in the four LMB countries which are tasked with planning and implementing adaptation options in all their development policies and activities;
- Local government authorities and local communities in areas where adaptation projects will be developed.

The **main stakeholders** in the MASAP implementation will be:

- National climate change focal agencies and national line agencies of key MRC sectors;
- NMCs;
- Representatives of national and international NGOs;
- National climate change experts;
- The private sector;
- Representatives of local authorities and communities;
- MRC Secretariat; and
- Development partners who support the MASAP through financing and technical assistance.

The importance of stakeholder engagement in formulation of the MASAP is well acknowledged and is continuously built into its implementation.

The identified stakeholders are classified into the internal and external stakeholder groups, as referred to in the MRC Draft Report on Comparative Analysis of Stakeholder Engagement, Mekong River Commission (January 2012)³⁴.

- **Internal stakeholders** refer to those stakeholders that fall into the MRC structure, i.e. NMCs, national Focal Climate Change Agencies and Line Agencies, local authorities and communities who participate and benefit from MASAP implementation as well as the MRCS.
- **External stakeholders** are those who are not directly part of the MRC structure but are or would be involved in MASAP implementation.

These broad groups can also be divided further by other aspects, such as direct and indirect stakeholders or those of regional, national and local levels.

An overview of stakeholders to the MASAP is presented in Figure 2.

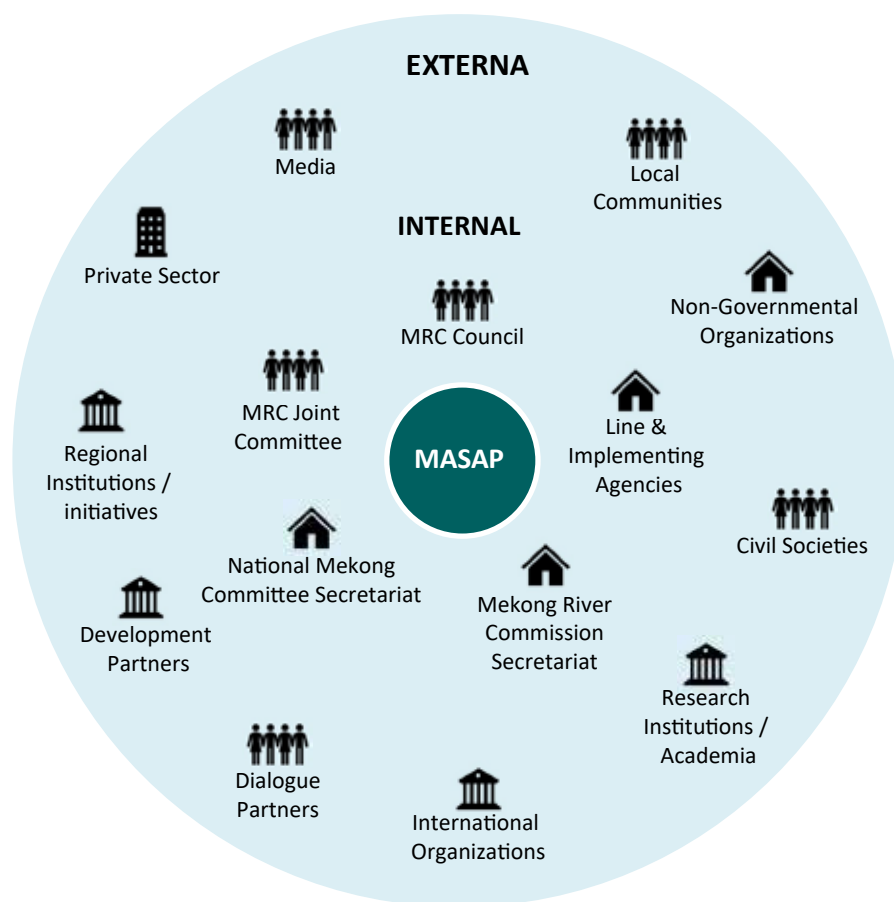


Figure 2: Overview of MASAP stakeholders

³⁴ MRC 2015. Integrated Water Resources Management-based Basin Development Strategy 2016 - 2020 for the Lower Mekong Basin. Phnom Penh, Cambodia / Vientiane, Lao PDR, Mekong River Commission



3. CLIMATE CHANGE AND VULNERABILITY IN THE LMB



3.1 The Mekong River

The Mekong River is the 12th longest river in the world. The river flows for almost 4,800 km from its source in Tibet through China, Myanmar, Lao PDR, Thailand, Cambodia and Viet Nam into the Sea, draining a basin area of 795,000 km². The River has a mean annual discharge of approximately 475 km³, the 8th largest in the world³².

The Southwest Monsoon climate of the region determines the seasonal characteristics of rainfall and flow regimes in the LMB and its rich ecosystems and biodiversity. There is a very large difference in the wet and the dry season flow caused by the Southwest Monsoon, generating wet and the dry seasons of about equal length. Inter-annual variability is large in terms of river discharges, flooded areas, and the start and end of the wet and the dry seasons. The flow from the Lancang-Upper Mekong Basin contributes 18% of the average annual flow in the LMB, and up to 40% of the dry season flow. Importantly, the seasonal cycling of water levels at Phnom Penh causes the large water flow reversal to and from the Great Lake via the Tonle Sap, with the associated flooding and drying creating a rich ecology.

3.2 Climate change

It is widely recognised that global climate change is occurring and that this is a result of the influence of human activities that are increasing the concentration of greenhouse gases in the atmosphere.

Across the LMB climatic change is also evident with rising temperatures, changing precipitation patterns and rising sea-levels over the historical record.

At present, a review of existing information available and the CCAI's trends and change analysis indicates that, in general, regional climate change is not a future phenomenon, it is already occurring. The region is already changing: trends and step changes are evident in the 1981-2010 baseline period, with conditions in the latter part of the baseline period hotter and drier than they were at the start:

- Average annual basin-wide temperatures have increased over the historical record;
- Sea-level around the Mekong Delta is rising;
- Total precipitation per year appears to be increasing across most of central-east Thailand but decreasing elsewhere in the LMB; and
- There is no evidence to date of more intense rainfall events over the basin or more frequent or intense tropical storm activity.

There is a wide range of **potential future changes** projected to occur over the next 20 to 50 years according to the GCM-based regional climate change scenarios selected by the MRC CCAI. The agreed nine future climate change scenarios for the LMB represent a combination of three levels of changes (low, medium and high emissions) and three patterns of changes (drier overall, wetter overall, and high seasonal variation)³³:

- Model projections indicate a fairly quick and drastic change in the spatial distribution of bioclimatic conditions across the northern and mountainous portions of the LMB region, with significant warming and modification of rainfall patterns predicted for 2030, increasing in this general trend and direction substantially by 2060.

³² MRC (2015). Integrated Water Resources Management-based Basin Development Strategy 2016 - 2020 for the Lower Mekong Basin. Phnom Penh, Cambodia / Vientiane, Lao PDR, Mekong River Commission

³³ Zomer, R. and W. Mingcheng, 2016. Projected Climate Change and Impact on Bioclimatic Conditions and Terrestrial Ecosystems in the Lower Mekong Basin. Final Report: Environmental Stratification and Projected Spatial Shift of Bioclimatic Strata within the LMB by 2030 and 2060. MRC-CCAI

- Temperatures are projected to increase across the basin and across seasons. The only real uncertainty is the magnitude of the increase and how quickly it occurs. By 2060 the average annual basin-wide increase could be as low as 0.4°C or as high as 3.3°C depending on the global emissions trajectory and pattern of changes that follow.
- Rainfall could increase or decrease with significant variation in the magnitude of change and the location of impacts. Average basin-wide change in rainfall by 2060 under the dry and high emission scenario is projected to be -16%, under the wet, and high emission scenario up to +17%. The predicted annual basin-wide water yields in 2030 and 2060 under the dry scenario indicate a reduction by 4-31% from the baseline, while under the increased seasonality and wetter scenario indicate an amplification of 1-20% from the baseline³⁴. Regional variations are likely to see much wetter average annual conditions in the north of the basin under the wetter overall scenario, and drier average annual conditions from the north, over the Khorat plateau and across the Tonle Sap region, in the drier overall scenario.

3.3 Climate change impacts on natural systems ³⁵

The impacts of the present climatic change on natural resources and socio-economic systems is currently less clear but anticipated to become more visible and significant over time, particularly as projected future climate change across the Lower Mekong Basin is extreme under some scenarios.

At present, a review of existing available information indicates that:

- The hydrology of the Mekong River is changing. Dry season flows are higher and wet season flows lower. This change is most evident in the upper reaches of the Mekong with the effect diminishing downstream, but is **unlikely to be the result of climate change**. Changes have been principally attributed to up-stream flow modifications by the construction of dams in the Upper Mekong Basin.
- Over recent decades there have been very significant changes in vegetation cover, forests, biodiversity and ecosystems across the Lower Mekong Basin. Large areas of natural vegetation and forests have been lost or significantly degraded, the number of threatened species is increasing, species populations are in decline and natural wetlands have been
- heavily modified if not destroyed. **However, there is insufficient evidence to determine the relative contribution of climate change to these changes**. The impact from legal and illegal logging, clearing for agriculture and urban areas, flow modification, and over-harvesting amongst a range of other pressures are a more significant cause of the changes observed to date.
- Changes to capture fisheries are uncertain. While overall catch appears to be increasing, the composition of the catch is changing with some species in decline, others increasing, and smaller fish making up a greater portion of the overall catch. Catch-per-unit-effort is declining, suggesting there are more people chasing fewer fish. **There is insufficient evidence to determine if climate change has contributed to any of these changes**. Major threats to LMB freshwater fish include pollution in the form of agricultural and forestry effluents, fishing and the harvest of aquatic resources, and natural systems modifications in the form of dams and other water management operations ³⁶.

³⁴ Trisurat, Y., A. Aekakkarungroj, V. Nuon, T. Piman; P. Huong Thuy Nguyen and J.M. Johnston, 2016 Basin-wide Impacts of Climate Change on Ecosystem Services in the Lower Mekong Basin. MRC CCAI

³⁵ This section draws principally on the core assessment works of the Mekong River Commission's Climate Change and Adaptation Initiative which has undertaken a Regional Report on Status of Climate Change and Adaptation in the LMB (Status Report) 2016 and a Basin-wide impact assessments of climate change on seven core water and water-related components of the Lower Mekong Basin: hydrology, flood, drought, hydropower production, ecosystems and biodiversity, food security (fisheries production, and agriculture and livestock production) and socio-economic.

³⁶ MRC CCAI, 2017. Basin-wide Assessments of Climate Change Impacts on Water and Water-related Resources and Sector in Lower Mekong Basin. Technical Report: Ecosystem Component. Climate Change Vulnerability Assessment of Lower Mekong Basin Species. Final Report. October 2017.

In the future

- Variations in hydrology, assessed over the defined regional climate change scenarios, will follow changes in precipitation and a similarly wide range of future impacts is possible. Overall basin water yield, annual river flow and level, wet season duration, peak flow and level, and dry season minimum flow and level, could all either increase or decrease depending on the emissions trajectory and the climate change models which turn out to be the most accurate in projecting future climate in the LMB. The range in possible outcomes is enormous with annual river flow changing by between -59% and +27%, and dry-season minimum one-day flow changing by between -65% and +35% at Chiang Saen by 2060 under climate change only scenarios. Basin development will interact with climate change, in some cases exacerbating the change and in some cases mitigating it: as an illustration, under climate and development scenarios, dry-season minimum one-day flow at Chiang Saen by 2060 differs by between -21% and +79%.
- Projections indicate significant and increasing climatic and biological perturbation for biodiversity, ecosystems and ecosystem services, and agricultural production systems, in the near- to medium-term future under all but the most optimistic scenarios.
- The range of possible changes in hydrology is enormous. The largest range of predicted impact at Kratie associated with climate change and 2060 development scenarios are: the range of annual river flow change is estimated as -38% to +28%; water level -1.95m to +1.29m; flood season peak flow -30% to +43%; flood season peak level -2.83m to +2.96m, minimum 1-day flow -21% to +79% and minimum 1-day level -0.18m to +0.90m³⁷. Without adaptation there will be significant deterioration of the flood conditions with more losses and people affected. The Mekong Delta is impacted by both upstream increases in flow and sea level rise, affecting the largest number of people in the region³⁸. Basin development will interact with the impacts from climate change, in some cases exacerbating the change and in some cases mitigating against it.
- The projected impact of climate change on floods depends in large part on the model applied. Under both the wetter overall model and the increased seasonal variability model, the flooded area is projected to increase for floods of all return intervals in a range of 4.6% to 27.3% increase. Under the drier overall model, the flooded area is projected to decrease for all but the very largest of floods (1 in 500 and 1 in 1000 years) in a range of 0.1% to 5.4% decrease. The biggest proportional changes are projected to occur for the smaller floods with return intervals of 1 in 2 years and 1 in 5 years: under the highest emissions scenario for the wetter overall model, the change projected to 2060 is an increase in flooded area of 38% for a 1 in 2 years flood and of 28% for a 1 in 5 years flood. Under the medium emissions scenario and wetter overall model, the flooded area is projected to increase 27% for a 1 in 2 years flood and 20% for a 1 in 5 years flood.

3.4 Climate change impacts on socio-economic systems**Past and current**

The expected perturbations on water and water-related sectors from regional climate change have the potential to have dramatic negative impacts on people's livelihoods and food security, especially those people in vulnerable communities with a heavy reliance on natural resources and the traditional bounty of the Mekong River and its tributaries.

However, the contribution of climate change to past and current changes in socio-economic systems has not been determined with any certainty. There are too many other factors at play.

³⁷ MRC CCAI, 2016. Basin-wide Assessment of Climate Change Impacts on Water and Water Related Resources and Sectors in the Lower Mekong Basin. Technical Report. Climate change impacts on hydrology of the Lower Mekong Basin – Volume 1: Water level, flow and salinity

³⁸ MRC CCAI, 2017. Enhancement of Basin-wide Flood Analysis and Additional Simulations under Climate Change to provide datasets for Impact Assessment and MASAP preparation (Stage 1). Final Report. March 2017

In future

Projected changes in the future are potentially very significant and many people and communities are vulnerable to potentially wide-ranging impacts:

- Agricultural yields are likely to be affected with the negative impacts outweighing the positive. Planned increases in irrigation, changes in agricultural practice and technological improvements are likely to be required to offset these impacts.
- In general, hydropower production is at risk due to increased droughts. Quite significant increases or decreases in hydropower production can occur depending on the scenario. Under the wetter overall model and medium emissions scenario (RCP4.5) all countries are projected to have an increase in energy production, Cambodia having the largest increase to 2030 (14.7%) and Viet Nam the largest increase to 2060 (8%). Under the drier overall model and medium emissions scenario (RCP4.5), all countries except Viet Nam are projected to have lower energy production than they otherwise would, both to 2030 (largest decrease for Thailand: 11.5%) and to 2060 (largest decrease for China: 19.4%). Mainstream dams are more sensitive to change than tributary dams ³⁹.
- Navigation may be affected by lower dry season flows making some parts of the upper Mekong impassable at certain times of year. Roads and water supply infrastructure are at risk from more intense rainfall, increased flooding and landslides, while significant expenditure may be required to protect coastal infrastructure from rising sea levels and storm surges.
- Overall food security has improved significantly in recent decades, the health of the population is better, poverty levels have fallen dramatically, the population is more urbanised and birth rates have fallen. Many households and communities along the Mekong corridor remain vulnerable to shocks, particularly droughts and floods which can have a material impact on their livelihoods. Future climate change is likely to exacerbate the losses from extreme events. Therefore, capacity building is needed for farmers to cope with the future drastic and rapid changes. Specifically, women need to be incorporated in capacity building related to all agricultural aspects but in particular to management and economics (savings, loans, etc.) ⁴⁰.
- The projected impacts of climate change on crop yields are negative for both rice and maize with greater impacts on rice. Projected impacts on fisheries are positive or negative depending on the scenario. The flood zone habitats are likely to experience greater changes than rice paddy habitats.
- In terms of ecosystem, substantial changes in bioclimatic conditions are projected across the LMB's ecoregions (Figure 4). By 2060, up to 100% of some ecoregions may experience completely novel bioclimatic conditions. Species are highly vulnerable to climate change with large numbers of fish particularly at risk due to their sensitivity to hydrological cues (Figure 5). Under a moderate scenario to 2060, soil losses are projected to increase by 16.9% under a wetter overall model.
- Without action to mitigate the impacts, the costs of climate change could be significant with large parts of the economy at risk. However, the impacts will not be felt evenly as some people and communities are more exposed than others or will experience the changes sooner or to a greater extent. Provinces in Cambodia and Lao PDR are generally more vulnerable due to higher dependency ratios and higher poverty rates, especially in the north of the LMB, and around Tonle Sap and the southern highlands.
- A socio-economic impact assessment was conducted under the CCAI. The assessment used five livelihood zones; (i) uplands, (ii) intensively used uplands, (iii) plains and plateaus, (iv) flood plain and (v) Delta (Figure 3). Climatic threats that were considered included temperature change, change in flooding extent and severity, change in salinity, change in drought duration, and climate change-induced change in the productivity of capture fisheries, aquaculture, rice and maize sectors.

³⁹ Green, A. and A. Blanchard, 2017. Basin-wide Assessment of Climate Change Impacts on Hydropower Production. Final Report. MRC CCAI

⁴⁰ MRC, 2017. Basin-wide Assessment of Climate Change Impacts on Food Security and Adaptation Options in the Lower Mekong River Basin. Final Report. August 2017

Results show that for temperature change, plains and plateaus and flood plains zones are expected to see high and increasing impact due to temperature change, which is not of the same significance elsewhere in the LMB. In contrast, the livelihood impact of changes in rice and maize productivity is felt predominantly in the upland and intensively used upland zones, a pattern which increases between 2030 and 2060. Changes in rice production also become a significant impact risk for livelihoods in lowland areas (except for the delta) by 2060. Drought impact shows a relatively minor increase by 2030 in all areas apart from the Delta, but by 2060 the expected increase in livelihoods impacted by significantly increased drought duration is considerable. Finally, flood impacts (not modelled for 2030) are shown to be important in the flood plains zone and to a lesser extent the Delta zone and plains and plateau zones of the LMB by 2060⁴¹. The climate impacts for the Delta lie mainly in salinization and sea level rise.

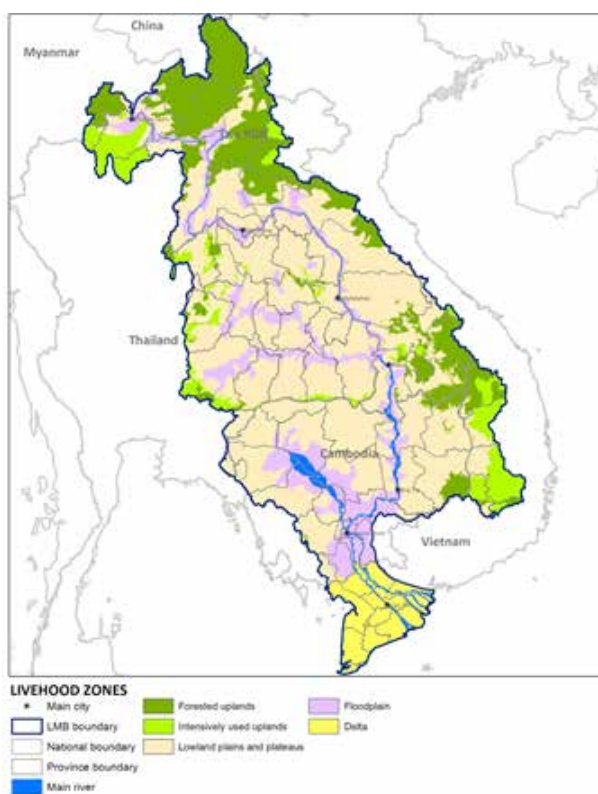


Figure 3: Map of livelihood zones in the LMB

- There are broad economic and structural changes occurring across LMB countries which will help to mitigate the impacts of climate change (e.g. economic growth, urbanisation, reducing poverty and improving health and infrastructure). However, some policies may be in conflict with adaptation measures such as resource extraction policies that degrade natural ecosystems, reducing their buffering capacity. Despite the changes that have occurred, many people are still very reliant on natural systems for their livelihoods and food security, which makes them more vulnerable to impacts on these systems.

These key findings are synthesized in the supporting document of the MASAP “A summary of basin-wide assessments of climate change impacts in LMB”.

In general, a number of challenges lay ahead in the region and need significant efforts and investments to ensure basin-wide resilience. Member Countries are already taking important actions to tackle these challenges but mainly at national levels. This is why one MASAP strategic priority is aiming at enabling implementation of transboundary and gender sensitive adaptation projects while another focuses on supporting access to adaptation finance.

⁴¹ Summary report of the CCAI socio-economic assessment

A summary of historical and projected change and key vulnerabilities due to climate change is provided in Table 1.

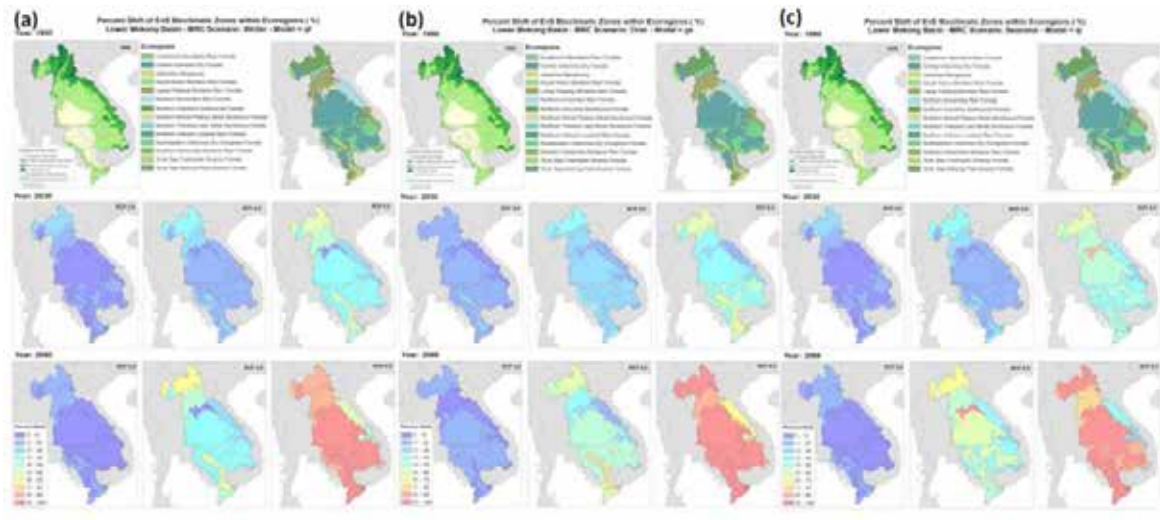


Figure 4: Proportion of each ecoregion shifting to a different bioclimatic zone under baseline conditions and as projected for 2030 and 2060 across RCP 2.6, RCP 4.5 and RCP 8.5 emission scenarios by (a) wetter overall scenarios model, (b) drier overall scenarios model and (c) increased seasonal variability scenarios model

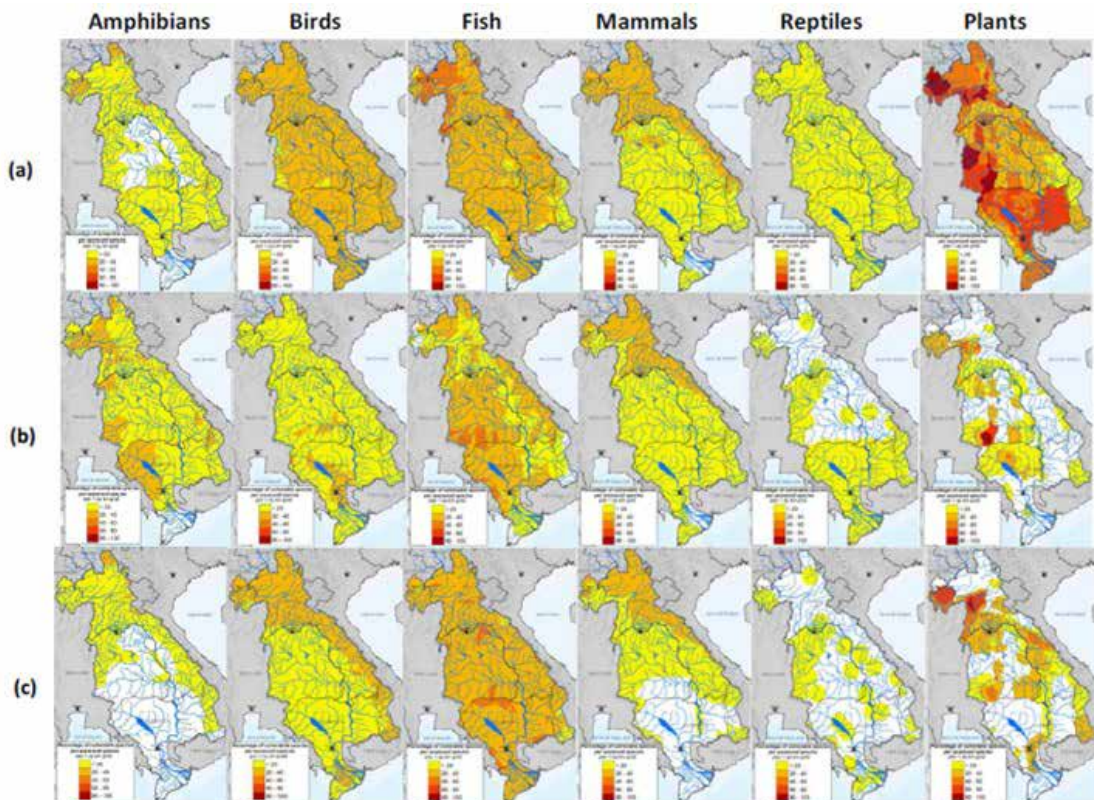


Figure 5: Percentage of species per grid cell vulnerable to climate change across the LMB for (a) wetter overall, (b) drier overall and (c) increased seasonal variability models for RCP 4.5 to 2060 with optimistic assumptions

3.5 Adaptation measures

To mitigate the above impacts and increase resilience to climate change in the LMB, adaptation measures have to be implemented.

Classification

Adaptation measures can be classified into two main groups: policy-based and vulnerability-based adaptation measures.

- *Policy-based measures* are the measures generally dealing with improving the ‘enabling environment’ or framework conditions for climate change adaptation. They target the policy, legal and institutional settings as well as the financial and information systems and capacity building; and
- *Vulnerability-based measures* are the technical and infrastructure measures generally dealing with the expected water, resources and socio-economic vulnerability.

Identification

During the development of CCAI’s basin-wide assessment, potential adaptation measures to address climate change vulnerability in the LMB were identified with the involvement of multiple stakeholders.

Table 1: Summary of historical and projected change and key vulnerabilities due to climate change

		Historical basin-wide change	Projected basin-wide change	Key impacts and vulnerabilities
Climate		↑ temperature ↑ precipitation (but regional variations)	↑ temperature ↑/↓ precipitation	
Natural systems	Water resources	↑ dry season water levels ↓ wet season flows	↑/↓ basin water yields, annual and seasonal flow and water level, wet season duration & peaks, and dry season minimums ↑ dry season salinity intrusion	Increased floods and more severe droughts; Salinity intrusion further inland; Change in hydro-biological cues.
	Vegetation and forests	↓ natural vegetation ↓ forest cover	-	Reduced species adaptive capacity (low intrinsic dispersal capacity)
	Biodiversity and ecosystems	↓ species populations ↓ wetland area ↓ terrestrial ecoregions	↓ species and suitable habitats ↑ ecoregions experiencing novel bioclimatic conditions	Reduced species adaptive capacity (<u>low annual reproductive output and physical barriers/ habitat disconnection</u>) Species extinctions Reduced ecosystem services
	Fisheries	↑ overall yields ↓ catch per unit effort Change in species catch composition	↑ vulnerable species ↑/↓ habitat yields	Reduced species adaptive capacity (e.g. barriers that prevent dispersal) Species extinctions
Socio-economic systems	Agriculture and irrigation	↑ agricultural yields ↑ irrigation	N/A	Crop yields at risk due to temperature increases, floods and droughts
	Fisheries and aquaculture	↑ overall yields ↓ catch per unit effort	N/A	Aquaculture at risk of temperature, floods, droughts, sea-level rise and water quality
	Food security	↑ food security	N/A	Vulnerabilities in North and Central part of LMB with high poverty rates and high dependency ratios
	Energy (hydropower)	↑ hydropower production	N/A	Vulnerable to increased droughts
	Navigation & infrastructure	↑ navigation ↑ infrastructure including grid electricity, water supply and sanitation, paved roads	N/A	Decreases in water level a threat to navigation in upper reaches Roads and water supply infrastructure vulnerable to more intense rainfall, floods and landslides
	Human health	↑ human health	N/A	Water and vector-borne disease; heat stress
Poverty, wellbeing, employment and income	↓ poverty ↓ reliance on agriculture ↑ income	N/A	North and Central part of LMB more vulnerable due to high poverty rates, high dependency ratios and greater reliance on agriculture	



An aerial photograph of a city, likely Manila, Philippines, showing a large river (Manila Bay) with several large ships and smaller boats. The city buildings are visible in the foreground and background, with a mix of modern high-rises and older structures. The sky is hazy. The text is overlaid on the right side of the image.

4. STRATEGIC GUIDANCE AND PRIORITIES FOR BASIN ADAPTATION TO CLIMATE CHANGE

4.1 Overview

The lessons learned from the policy review and assessment of projected climate change impacts, as part of the CCAI basin-wide assessment, has laid the groundwork for determining the MRC strategic priorities on adaptation.

These priorities should:

- *Support sustainable development pathways, especially those that have broad socio-economic benefits and rationale and ensuring resilience to shocks;*
- *Support improved governance and strengthened institutions that allow for participatory approaches, improved coordination and enhanced decision-making capacity;*
- *Provide for information (including monitoring and early-warning) and capacity building, which are essential to enabling good decisions at all levels of government and community.*

Finally, the knowledge about the magnitude of climate change as well as of the uncertainty about the magnitude of the effects of a changing climate is of major importance for managing adaptation to climate change. Recognising this, the MASAP emphasizes promoting the dissemination of the MRC's knowledge base of climate change and adaptation in the LMB, built by the CCAI. A strategic priority is thus set out for improving outreach of CCAI products on climate change and adaptation.

The MASAP provides a set of seven strategic adaptation priorities and actions at basin level that will enhance adaptive capacity and resilience to climate change of the MRC Member Countries and thus sustainable development of the LMB.

Under each strategic priority, several prioritised actions are set out as implementation steps contributing to realise the strategy.

In identifying strategic priorities and their associated actions the following considerations have been specifically undertaken:

- The goals, objectives and principles of the 1995 Mekong Agreement, particularly the two major roles of the MRC mandated by the 1995 Mekong Agreement, that are: to promote sustainable development of the Mekong water and related resources and to coordinate the management of the river;
- The core functions of the MRC, including core river basin management functions at the regional and national levels, as described in the roadmap for decentralization;
- The results of a regional policy review³² as performed by the CCAI for the development of the MASAP; and
- The relevant actions from the BDS 2016-2020³³.

The implementation of these strategic priorities and underlying actions will be based on cooperation with and between the Member Countries, Dialogue Partners, relevant regional and international organizations and broader stakeholders in the basin.

³² MRC, 2016. Regional Report on overview of policy for climate change and adaptation in the Lower Mekong Basin.

³³ MRC, 2016. Basin Development Strategy 2016-2020. Available online at <http://www.mrcmekong.org/assets/Publications/strategies-workprog/MRC-BDP-strategy-complete-final-02.16.pdf>

The seven strategic priorities for basin-wide adaptation to climate change are:

1. Mainstream climate change into regional and national policies, programmes and plans;
2. Enhance regional and international cooperation and partnership on adaptation;
3. Prepare transboundary and gender-sensitive adaptation options;
4. Support access to adaptation finance;
5. Enhance monitoring, data collection and sharing;
6. Strengthen capacity on development of climate change adaptation strategies and plans; and
7. Improve outreach of MRC products on climate change and adaptation.

4.2 Strategic priorities and actions for basin adaptation to climate change

Mainstream climate change into regional and national policies, programmes and plans (#1)

Climate change fundamentally alters precipitation patterns, influencing the water and water-related resources and sectors in the basin, as shown in Chapter 3. Any water-related strategies and long-term programmes in the LMB should therefore consider such modifications due to climate change and should address them in the planned actions. This process is called climate change mainstreaming.

Definitions of climate change mainstreaming

In the context of climate change, mainstreaming implies that awareness of climate impacts and associated measures to address these impacts are integrated into the existing and future policies and plans of the countries, as well as multilateral institutions, donor agencies and NGOs.

Also, mainstreaming involves the integration of policies and measures that address climate change into development planning and ongoing sectoral decision-making, so as to ensure the long-term sustainability of investments as well as to reduce the sensitivity of development activities to both today's and tomorrow's climate.

Aligned to this strategic priority at regional level, awareness of climate change impacts and associated measures to the MRC sectoral strategies developed during 2016-2020, the National Indicative Plans (NIPs) and the BDS 2021-2025 should be mainstreamed. In other words, these regional and nation strategies and plans should be made climate proof. Climate proofing also comprises including opportunities for increasing resilience.

Furthermore, to ensure consistency regarding future climate projections between the MRC sectoral strategies 2016-2020, the National Indicative Plans (NIPs), the BDS 2021-2025 and the MASAP, all should be based on the climate change scenarios, developed by CCAI and agreed by the Member Countries in 2015.

Definitions of climate proofing in the context of climate change adaptation

Climate proofing refers to the process of cross-checking that all elements of a programme and its implementation, including specific measures and projects, address climate change issues. This involves ensuring that funding is resilient to future climate impacts³.

Climate proofing is identifying risks to a development project, or any other specified natural or human asset, because of climate variability and change, and ensuring that those risks are reduced to acceptable levels through long-lasting and environmentally sound, economically viable and socially acceptable changes implemented at one or more of the following stages in the project cycle: planning, design, construction, operation and decommissioning⁴.

As one of the purposes of the MASAP is enhancing adaptive capacity of the Member Countries, mainstreaming should also be considered at national level. This can be done through mainstreaming BWA findings and MASAP strategic priorities into national policies, programmes and plans.

To ensure that the adaptation strategy remains relevant under new insights and developments in climate change and its effects, regular updating of the MASAP is needed.

The **prioritised actions** to be implemented under the strategic priority of **mainstreaming climate change into regional and national policies, programmes and plans** are:

- Climate proof MRC sectoral strategies 2016-2020 and the next BDS;
- Promote mainstreaming of BWA findings and MASAP's adaptation strategic priorities at national level; and
- Update the MASAP.

The intended outcome of this first strategic priority is that climate change is embedded in relevant MRC strategies and national policies are strengthened.

Enhance regional and international cooperation and partnership on adaptation (#2)

Adaptation requires solidarity among MRC MCs to ensure that disadvantaged regions and regions most affected by climate change will be capable of taking the measures needed to adapt. Transboundary cooperation can enable more efficient and effective adaptation, among other things, by pooling available data, models, scenarios and resources and enlarges the planning space for locating adaptation measures^{34, 35}.

Transboundary cooperation demands not only strong political will but also a solid institutional basis both at the national and regional level, especially on topics that are still under development, like climate change adaptation.

Cooperation at the regional level between the MRC and other regional coordination mechanisms like ASEAN and MLC will yield improved consistency between the regional responses, avoid duplication of efforts, and help strengthen efforts.

³⁴ UNECE (2009). Guidance on Water and Adaptation to Climate Change. New York and Geneva, United Nations. <http://www.unece.org/index.php?id=11658>

³⁵ UNECE (2015). Water and Climate Change Adaptation in Transboundary Basins: Lessons Learned and Good Practices. New York and Geneva, United Nations p. 128. <http://www.unece.org/index.php?id=39417>

Also, valuable knowledge on climate change adaptation can be collected through the exchange of good practices and experiences with climate change communities at national, regional and international level. The MRC is well placed to facilitate exchange of good practices between MCs on adaptation. Besides, strengthening the links and partnerships with selected international and regional communities and making such partnership more sustainable can be institutionalized within the MRC.

The **prioritised actions** to be implemented under the strategic priority of **enhancing regional and international cooperation and partnerships on adaptation** are:

- Promote and facilitate exchanges of good practices between MCs on CCA;
- Strengthen cooperation with ASEAN and MLC regarding climate change;
- Strengthen and/or institutionalize partnerships between MRC and international climate change communities.

The intended outcome of this second strategic priority is that the climate community in the LMB is strengthened.

Enable preparation of transboundary and gender-sensitive adaptation measures (#3)

As mentioned in chapter 3, a number of adaptation measures can be implemented to mitigate the climate change impacts on water and water-related resources.

Projects shall be identified by the MRC and MCs for realising transboundary adaptation measures. Implementation of these projects will ensure progress towards the implementation of MASAP's vision.

The Gender Action Plan adopted by the UNFCCC Parties during COP 23 seeks - under priority area A - to enhance the understanding and expertise of stakeholders on the systematic integration of gender considerations and the application of such understanding and expertise in policies, programmes and projects on the ground.

In line with this Gender Action Plan, special attention will be given to gender in the preparation of these transboundary adaptation projects. During identification and preparation of such projects it should indeed be acknowledged that within a single community, each individual has a different level of vulnerability to climate change. Their specific role in the community and their individual sensitivity to climate factors lead to different vulnerability levels and adaptation needs. Therefore, for adaptation measures to be effective and efficient, they need to reflect these differentiated vulnerabilities and needs among the different groups of a community (e.g. woman, children, elderly, etc.). In designing the identified projects, gender and age awareness as well as equity, will be considered.

The **prioritised actions** to be implemented under the strategic priority of **enabling preparation of transboundary adaptation options** are:

- Consolidate the existing MRC transboundary projects (the five NIP Joint Projects) with climate change adaptation measures;
- Develop further initial ideas for new transboundary adaptation projects.

The intended outcome of this third strategic priority is that the resilience of the LMB to climate change has increased.

Support access to adaptation finance (#4)

Specific attention is needed regarding finance in order to secure sufficient funding for implementation of the MASAP.

Various international funding mechanisms exist to support countries in implementing climate change adaptation initiatives. The MRC will identify and analyse the relevant mechanisms and will keep track and inform MCs of the changes in the mechanisms and the climate adaptation finance landscape.

Besides, the MRC should investigate its potential to access to climate funding. There are a high number of climate funds worldwide, each having its specificities in terms of size, focus of interest, objectives and modality of access. Getting access to climate funding would allow the MRC to develop projects in line with funds' specific requirements. It would also be an opportunity to strengthen the MRCS's capacities in project development and accessing finance in the future. For MCs, having access to such funds through the MRC can be the opportunity i) for additional access to these funds in the Lower Mekong Basin, ii) to learn from the process of accessing them, iii) to avoid relying on 'business as usual' international access channels, iv) of having access through an institution which is closer to the MCs.

The **prioritised actions** to be implemented under the strategic priority of **supporting access to adaptation finance** are:

- Identify approaches/mechanisms of access to climate change adaptation finance by the MCs and MRC; and
- Investigate MRC potential and provide support to get access to climate funding.

The intended outcome of this fourth strategic priority is that access to climate finance in the LMB has increased.

Enhance monitoring, data collection and sharing (#5)

Improved information is needed to reduce the uncertainty associated with risk assessment, vulnerability assessment and progress and effectiveness of adaptation strategies. Such information is ever more important as many future projections are not in agreement over the direction of the changes as a result of climate change. Improved information will support detection of the actual direction as it is changing. Data collection and sharing are needed to provide the necessary information at the basin scale.

The CCA indicators of the basin-wide monitoring and reporting system will need to be completed and improved in order to provide the relevant information to identify status and trends in climate change effects and adaptation. Collection of the data by the MCs to assess the indicators and sharing of the data with the MRC are needed to ensure that sufficient information is available to make informed decisions and to be able to improve the MASAP in its next planning cycle. The collected information will be reported and compiled into the updated overviews of status and trends of the CCA indicators by the MRCS. This includes regular updating of the MRC database and of the 5-year status report.

The **actions** to be implemented under the strategic priority of **promoting monitoring, data collection and sharing** are:

- Operationalise and institutionalise CCA M&E;
- Enhance early forecast, warning on extreme events.

The intended outcome of this fifth strategic priority is that information on climate risks, impacts and vulnerability in the LMB is synthesized and accessible.

Strengthen capacity on development of climate change adaptation strategies and plans (#6)

Capacity building is needed to enhance national and regional capacity on development of climate change adaptation strategies and plans.

The MRC CCAI has, over time, developed a range of guidelines, methods and tools related to climate change adaptation. These will be made available for Member Countries to use. On request, MRCS will provide support to Member Countries in applying the guidelines, methods and tools. For instance, MRCS has performed the basin-wide assessment (BWA) in preparation of the MASAP and is ready to support the Member Countries in developing a climate change impact and vulnerability assessment by sharing its approach, experience and the available methods and tools.

Next to this, MRC will share, on request, its approach and experience in developing the MASAP with the Member Countries to support them in developing national and sub-national adaptation strategies.

The **prioritised actions** to be implemented under the strategic priority of **strengthening the capacity on climate change adaptation and strategy development** are:

- Promote and support at national level the application of the MRC climate change scenarios, climate change impact and vulnerability assessment approach, methods and tools;
- Promote and support at national level the application of the MRC approach toward development of adaptation strategies; and
- Update the Capacity Needs Assessment, formulate and implement Capacity Building Activities.

The intended outcome of this sixth strategic priority is that capacities to address climate risks at transboundary and national levels are enhanced.

Improve outreach of MRC products on climate change and adaptation (#7)

To ensure that the MRC findings and products on climate change adaptation are known and used in the MCs and the outside world, activities are identified to communicate and disseminate these products.

The MRC website and Data Portal contains information on the activities and results of the work by MRC CCAI. This information will be maintained and updated when relevant. News and updates will be announced through social media like the MRC Facebook page. Through this channel, the public at large can also gain more awareness of climate change effects and adaptation.

The process and results of the MASAP will be presented and discussed at relevant events including the Mekong Forum to gain further experience. To get more involvement of and interaction with universities, the MRC CCAI work including the MASAP, will be communicated with several universities in the region. A communication campaign will be designed for this.

The strategic actions to be implemented under the strategic priority of improving the outreach of MRC products on climate change and adaptation are:

- Maintain and update MRC CCAI website, data portal and social media;
- Disseminate MASAP and other CCAI products at relevant events including the Mekong Forum; and
- Develop communication campaigns on MRC CCAI products, including the MASAP, to universities and other stakeholders.

The intended outcome of this seventh strategic priority is that MRC products on climate change adaptation is accessible and used by stakeholders.



A wide-angle photograph of a river at sunset. The sky is a pale, hazy yellow, and the water reflects this light. In the lower-left foreground, a person is sitting in a small, narrow boat on the river. The boat is dark and has some equipment on board. The riverbank is visible in the bottom-left corner, showing a concrete or earthen structure. The overall mood is calm and serene.

5. ACTION PLAN FOR BASIN ADAPTATION TO CLIMATE CHANGE

5.1 Roles and responsibilities of implementation

The MASAP's strategic priorities and actions will be addressed by a broad range of stakeholders in the basin, including both internal and external stakeholders to the MRC. A brief description of MASAP stakeholders is provided in Section 2.5.

In implementation of the MASAP the various stakeholders have a role to play. Internal stakeholders have the roles to support, promote and carry out the actions. Other external stakeholders may find interest in cooperating with the MRC to implement the MASAP. Table 2 summarizes the roles and responsibilities of various stakeholders in implementation of the MASAP.

Table 2: Roles and responsibilities of various stakeholders in implementation of the MASAP

Stakeholder	Roles and responsibilities
Mekong River Commission Council	Provide strategic guidance to implementation and promotion of the MASAP at a high-level to all relevant national and regional development initiatives
Mekong River Commission Joint Committee (JC)	Provide direct implementation guidance to implement and promote the MASAP at senior-level to all relevant national and regional development initiatives
Mekong River Commission Secretariat (MRCS)	Facilitate, support and monitor the implementation of the MASAP and regularly report to the Joint Committee and Council
National Mekong Committees Secretariat	Act as liaison between MRC and the respective national climate change committees and mainstream climate change adaptation into the National Indicative Plans (NIPs)
National Line Agencies including National Climate Change Focal Agencies	Develop and implement transboundary – influential climate change adaptation projects
Dialogue Partners	Take account of basin-wide climate change adaptation approach and priorities as suggested by the MASAP and continue exchanging and sharing of information and technical expertise
Development Partners	Promote the basin-wide climate change adaptation approach as suggested by the MASAP and continue providing financial and technical support in addressing MASAP strategic priorities and actions both at regional and national bilateral levels
Regional institutions/initiatives	Identify synergies and support co-implementation of actions. Avoid duplication of efforts.
Research institutes and universities	Consider and promote basin-wide climate change adaptation approaches and priorities as suggested by the MASAP and contribute to the generation and dissemination of information and knowledge

Stakeholder	Roles and responsibilities
Other non-governmental organizations / civil society organizations	Promote basin-wide climate change adaptation approaches and priorities as suggested by the MASAP and contribute to information generation and stakeholder communication and outreach
Private sector	Cooperate with the MRC and MCs in searching for synergies and mutual support for climate change adaptation

The MRC stakeholder engagement strategy³² will be applied to guide the mechanisms and modalities of mobilising the active participation of LMB stakeholders to promote and realise implementation of the MASAP.

5.2 Action Plan

Table 3 below provides an overview of the action plan. It details:

- the strategic priorities (from 1 to 7);
- the main activities with some highlighted specific sub-activities contributing to the main activity;
- the timeframe of each main activity; and
- the indicator(s) for each main activity.

³² To be developed according to SP 2016-2020

Table 3: Implementation timeframe of MASAP's strategic priorities and actions

Strategic priorities / Objectives	Outcome	Activities / Outputs	Timeframe	Indicators
1. Mainstream climate change into regional and national policies, programmes and plans	Climate change is embedded in relevant MRC strategies and national policies are strengthened	1.1. Climate proof MRC sectoral strategies 2016-2020 and the next BDS	2018-2020	1. Increase in percentage of MRC staff that are "globally aware" of CCAI main products and key findings (based on a survey)
		<ul style="list-style-type: none"> Promote the use of the CCAI climate change scenarios and the findings of CCAI BWA among MRCS staff Review existing MRC sectoral strategies to explore possibilities of climate change mainstreaming Mainstream climate change adaptation during formulation process of upcoming MRC sectoral strategies and BDS 		
		1.2. Promote mainstreaming of BWA findings and MASAP's strategic priorities at national level	2018-2020	2. Number of MRC sectoral strategies that account for climate change
		<ul style="list-style-type: none"> Based on requests from MCs, identify how to mainstream BWA findings and/or MASAP's strategic priorities in pre-identified relevant national policies, programmes or plans (development of guidance) Update the national policies, programmes or plans accordingly 		3. Number of relevant national policies, programs or plans that have been strengthened following MC's requests
		1.3. Update the MASAP	2022	4. Next MASAP (2023 - 2027) has been elaborated
		<ul style="list-style-type: none"> Review the implementation of the MASAP Develop the next MASAP 		
2. Enhance regional and international cooperation and partnership on adaptation	The climate community in the LMB is strengthened	2.1. Promote and facilitate exchanges of good practices between MCs on CCA	2019-2021	5. Number of knowledge exchange processes facilitated
		<ul style="list-style-type: none"> Identify with MCs knowledge exchange needs and potentials Facilitate the knowledge exchange process 		
		2.2. Strengthen cooperation with ASEAN and MLC regarding climate change	2019-2021	6. A joint action plan with ASEAN and/or MLC is established
		<ul style="list-style-type: none"> Review existing cooperation mechanisms Establish contact with ASEAN and MLC on the topic of CC Establish a joint action plan with ASEAN and/or MLC on CC 		
		2.3. Strengthen and/or institutionalize partnerships between MRC and international climate change communities	2018-2022	7. Number of formal and informal partnerships with international climate change communities
		<ul style="list-style-type: none"> Review existing cooperation mechanisms Identify international CC communities of strategic interest to the MRC Establish contact and seek formal and/or informal partnerships Organize joint events, participate in respective events 		

Strategic priorities / Objectives	Outcome	Activities / Outputs	Timeframe	Indicators
3. Enable preparation of transboundary and gender-sensitive adaptation measures	The resilience of the LMB to climate change has increased	3.1. Consolidate the existing MRC transboundary projects (the five NIP Joint Projects) with climate change adaptation measures	2018-2020	8. Number of joint projects complemented with adaptation measures
		3.2. Develop further initial ideas or new transboundary adaptation project: <ul style="list-style-type: none"> • Review national plan and projects related to climate change adaptation • Identify potential transboundary adaptation projects • Develop roadmap • Identify potential funding sources • Support the development of project proposals for submission to funding sources • Mainstream gender into these projects 	2019-2022	9. Number of additional transboundary adaptation projects developed by MCs with MRC support 10. Number of joint projects and transboundary adaptation projects in which gender has been mainstreamed
4. Support access to adaptation finance	Access to climate finance in the LMB has increased	4.1. Identify approaches/ mechanisms of access to adaptation finance by the MCs and MRC <ul style="list-style-type: none"> • Organize a regional training on the different existing mechanisms • MRCS informs NMCs about latest developments at the regional level regarding potential funding sources • NMCs inform MRCS about latest development at the national level regarding established funds, pipeline development 	2018-2022	11. Number of regular updated bulletins on mechanisms and funding sources for climate change adaptation
		4.2. Investigate MRC potential and provide support to get access to climate funding.	2018-2022	12. Formal decision from MRC Council to seek or access to a climate fund is issued

Strategic priorities / Objectives	Outcome	Activities / Outputs	Timeframe	Indicators
5. Enhance monitoring, data collection and sharing	Information on climate risks, impacts and vulnerability in the LMB is synthesized and accessible	5.1. Operationalize and institutionalize CCA M&E <ul style="list-style-type: none"> • Promote enhanced and continued data collection and sharing on the agreed list of CCA indicators following the Procedure for Data Exchange and Information Sharing (PDEIS) • MCs inform on their respective national CCA M&E systems and share the data • MRCS complements the missing baselines with information provided by MCs and public data sets • Regular reporting on status and trends of CCA indicators 	continuous	13. Baselines are available for the 66 CCA indicators 14. First climate change and adaptation monitoring report published
		5.2. Enhance early forecasting, warning on extreme events <ul style="list-style-type: none"> • Enhance early forecasting and warning on flood extreme events (in coordination with RFMMC) • Enhance early forecasting and warning on drought extreme events (in coordination with MRC Drought activities) • Develop regular bulletins on climate change-related extreme events 	2019-2021	15. Number of regular bulletins on climate change-related extreme events

Strategic priorities / Objectives	Outcome	Activities / Outputs	Timeframe	Indicators
6. Strengthen capacity on development of climate change adaptation strategies and plans	Capacities to address climate risks at transboundary and national levels are enhanced	6.1. Promote and support at national level the application of the MRC climate change scenarios, climate change impact and vulnerability assessment approach, methods and tools <ul style="list-style-type: none"> • Organize presentation of the CCAI products to MCs, based on requests for specific applications • Provide technical support • Initiate pilot studies in the MCs • MCs reporting to MRCS on application of CCAI's products 	continuous	16. Number of events organized by MCs and the MRC to present the BWA
		6.2. Promote and support at national level the application of the MRC approach toward development of adaptation strategies <ul style="list-style-type: none"> • Organize presentation of the approach to MCs, based on requests for specific applications • Provide technical support • MCs reporting to MRCS on application of the MASAP approach 	continuous	17. Number of events organized by MCs and the MRC to present the MASAP development approach
		6.3. Update the Capacity Needs Assessment, formulate and implement Capacity Building Activities <ul style="list-style-type: none"> • Update the Capacity Needs Assessment established by CCAI in 2014 at MC level • Implement in the MCs the prioritized training needs listed in the assessment • Evaluate the Capacity Building Activities 	2019-2021	18. Number of capacity building activities implemented
7. Improve outreach of MRC products on climate change and adaptation	Information on MRC climate change adaptation products are accessible and used by stakeholders	7.1. Maintain and update MRC CCAI website, data portal and social media	continuous	19. Number of visits to website and data portal
		7.2. Disseminate the MASAP and other CCAI products at relevant events including the Mekong Forum		20. Number of events at which the MASAP has been presented
		7.3. Develop communication campaigns on MRC CCAI products, including the MASAP, to universities and other stakeholders	2018-2020	21. Number of communication campaigns organized

5.3 Implementing the MASAP

Implementation of the MASAP is the primary responsibility of the MRCS.

NMCs are primarily responsible for ensuring communication of the MASAP at the respective national levels. Also, NMCs are responsible for aligning national policies with the MASAP and identification of relevant adaptation projects. All this is done with the support of the MRCS.

5.4 Monitoring, Evaluation, and Reporting

The Evaluation of the MASAP is needed to determine its efficiency and effectiveness, its outcomes and lessons learned from implementation, considering its objectives^{32, 33}.

The Monitoring, Evaluation and Reporting (M&E) of the MASAP will be integrated into the M&E of the MRC Strategic Plan.

The following steps will need to be undertaken for M&E of the MASAP:

- Operationalize MASAP's M&E indicators (21 indicators)
- Integrate the MASAP M&E indicators and their defined operation into the M&E system of the MRC SP.
- This arrangement implies that the MRC's sessions/divisions in charge of the M&E of SP will oversee the MASAP M&E as well.

5.5 Updating of the MASAP

As a dynamic strategy, the MASAP will need to be updated every five years following the MRC strategic planning cycle. Ideally the MASAP should be updated one year before the updating of the BDS. In the next strategic planning cycle 2021-2025, the MASAP should be updated in 2023.

The updating of the MASAP should include, but not be limited to, the following tasks:

- Keep track of the improved understanding of future climate change projections and improve the understanding of both climate change impacts and effective measures to address the impacts;
- Dynamically review and update the knowledge base i.e. knowledge on climate change scenarios, climate change impacts and vulnerability, effective adaptation options, etc. The knowledge base for formulation of this 1st MASAP is provided by MRC CCAI findings, documented in a set of Technical Reports and the 1st Regional Report on Status of Climate Change and Adaptation in the LMB³⁴; and
- Monitor the implementation and relevance of the MASAP's proposed strategic priorities and actions and revise if necessary.

³² EEA (2015). National monitoring, reporting and evaluation of climate change adaptation in Europe. [EEA Technical report](http://www.eea.europa.eu/publications/national-monitoring-reporting-and-evaluation). Copenhagen, Denmark, European Environment Agency p. 68 pp. <http://www.eea.europa.eu/publications/national-monitoring-reporting-and-evaluation>

³³ UNECE (2009). Guidance on Water and Adaptation to Climate Change. New York and Geneva, United Nations. <http://www.unece.org/index.php?id=11658>

³⁴ Available on MRC website





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