Mekong River Commission
For Sustainable Development

MEKONG RIVER BASIN INDICATOR FRAMEWORK

For informing the management of the Mekong River Basin

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Mekong River Commission
Documentation and Learning Centre
184 Fa Ngoum Road, Unit 18, Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR
Telephone: +856-21 263 263 | E-mail: mrcs@mrcmekong.org | www.mrcmekong.org

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Authors:

Project management:

Dr. Tien Truong Hong, Tran Minh Khoi and Hak Socheat, Directors of Environment Management al Division, Dr. So Nam, Chief Environment Management Officer, Environmental Management Division, Heng Suthy (MRC SOBR Project Coordinator and Regional Technical Advisor/Coordinator, Environment Management Division, MRCS) and Benjamin Docker (lead consultant),

Project Technical Experts:

MRCS technical experts:

Office of CEO: Dr. Anoulak Kittikhoun, Chief Strategy and Partnership Officer

Administration Division: Somsanith Ninthavong, Chief Finance Officer

Environmental Mangement Division: Dr. Prayooth Yaowakhan, wetland and ecosystem specialist, Dr. Dao Thi Ngoc Hoang, water quality officer, Dr. Phattareeya Suanrattanachai, fishery management specialist, Vanna Noun, Fisheries and aquatic ecology officer.

Technical Support Division: Dr. Janejira Chuthong, chief hydrologist, Dr. Lam Hung Son, head of RFMMC, Dr. Sothea Khem, river flood forecaster, RFMMC, Dr. Nguyen Duc Tuan, water and climate monitoring specialist, Thi Thanh Yen Ton Nu, navigation specialist, Ix Hour, drought management specialist, and Preap Sameng, Assistant Hydrology, RFMMC.

Planning Division: Dr. Thim Ly, chief river basin Planner, Nguyen Thi Ngoc Minh, socio-economic specialist, Dr. Nguyen Dinh Cong, climate change adaptation specialist

International Experts:

Malcolm Wallace (lead international consultant on SOBR), John Sawdon (consultant to support Social and Economic dimensions), Peter Droogers (consultant to support the Environment and Climate Change dimensions focusing on hydrology, flow, sediment, flood, drought, climate change, bank erosion, navigation and salinity intrusion), Gijs Simons of FutureWater (consultant firm to support the development of State of Basin Report in China and Myanmar), Andrés Felipe Marín Muñoz (consultant to support on data processing, data management and GIS mapping)

National Experts

Environment Division: Virana Sonnasinh, Nathinee Srinate, Dang Thi Thanh Huyen and Ke Wongwattana

Technical Division: Ros Sophornna, Huon Rath, Heng Bauran, Tong Seng and Khamseng Aly

Planning Division: Dararat Yem, Vithet Srinetr and Nguyen Thu Ha

Foreword

The Mekong River Basin is undergoing rapid and extensive change. This change is reflected across social, economic and environmental spheres, through the impact of climate change, and in the evolving landscape of cooperation between upstream and downstream riparian states. Tracking changes in conditions, analysing the potential implications and working cooperatively to leverage the benefits and avoid, minimise or mitigate the problems, is critical to achieving the objectives of the *1995 Mekong Agreement*.

The MRC has been monitoring conditions across the Lower Mekong Basin for decades and the results of this effort are reflected in the various products and services the organisation provides its Member Countries to inform their decision-making. The information is also used in the publication of a comprehensive State of the Basin report at the beginning of each MRC planning cycle, providing countries with a common understanding of conditions from which to identify appropriate development, conservation and management plans.

To provide greater strategic direction to the monitoring and assessment effort, I am very pleased to present the recently updated and approved Mekong River Basin Indicator Framework, formerly known as the MRC Indicator Framework.. The Framework is a flagship product of the MRC. It aims to provide a consistent and streamlined approach to data collection, analysis and reporting by all relevant actors, to help alert Member Countries and stakeholders to the key issues and trends and identify areas for further investigation and cooperation across five core dimensions (environment, social, economic, climate change and cooperation).

The 15 Strategic Indicators across the five dimensions are already incorporated into the current Basin Development Strategy and MRC Strategic Plan. These strategic indicators will now be buttressed by 53 Assessment Indicators and associated Monitoring Parameters reflecting the priority areas of cooperative regional action among Member Countries. The updated Framework is intended for use by all actors working on water resources management and development across the whole Mekong Basin. It will be fully integrated into the MRC's next planning cycle including through the development and implementation of the Basin Development Strategy and MRC Strategic Plan, and in the updating of the MRC's Information Systems. Other actors are encouraged to align their own planning, monitoring, and reporting with the Mekong River Basin Indicator Framework in order to facilitate cooperation and leverage synergies between different organisations.

I am confident the consistent and standardised approach to monitoring and evaluation that the Framework provides will allow for improved analysis of trends, diagnosis of causal issues, and the targeting of management actions in response. This backbone to our planning efforts should also enable more cost effective monitoring and I look forward to all parties working together for its successful implementation.

An Pich Hatda

CEO of the Mekong River Commission Secretariat

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Summary

The Mekong River Basin Indicator Framework (MRB-IF) has been developed as a tool to help inform Member Countries how they are progressing towards the aims of the *1995 Mekong Agreement*. By providing a consistent and streamlined approach to data collection and analysis, it can help alert the countries to key issues and trends and identify areas for further investigation across five dimensions. The Framework has been designed to enable:

1) *Cost-effective monitoring and analysis by the Mekong River Commission Secretariat and Member Countries and others over the long term*
2) *Aan assessment of status and trends in conditions across the whole of the basin, while also allowing for scenario assessments at different spatial scales as appropriate to the particular circumstances*

The Strategic Indicators are as reflected in the Basin Development Strategy 2016-2020, but have now been defined to provide greater clarity of meaning and intended use. The Assessment Indicators have been developed to:

- Align with the Strategic Indicators and with the Sustainable Development Goals, where relevant to water-related issues
- Ensure clarity of meaning, reflecting the Monitoring Parameters that sit behind each one
- Minimise duplication and be as simple as possible
- Only include matters within the MRC's sphere of influence that most resonate with the Basin vision, particularly in relation to the water, food, and energy nexus
- Distinguish between overarching outcomes and concepts such as *resilience, sustainability, and the water, food and energy nexus* and specific indicators that enable an assessment of status and trends
- Ensure appropriate focus on critical demographic features of the /Mekong River Basin (MRB) by presenting these foundational elements in their entirety rather than concealing them within broader indices

The Monitoring *Parameters* are split into outcome focused parameters and the basic *data* requirements that need to be collected or generated, as inputs. The Monitoring Parameters are presented to illustrate trends in key variables and are often 'calculated' using one or more of the required datasets. This makes the framework much more manageable and engaging and provides clarity on key data collection requirements as part of the MRC's core functions.

The Monitoring Parameters and data requirements have been prioritised to ensure cost effectiveness. This is critical to the sustainability of the Indicator Framework and the monitoring programmes, studies and surveys that will supply the information. Additional data and information can still be identified separately, but from a budget perspective it will be important to ring-fence the core needs from those that are supplementary.

The monitoring data that is used for the Indicator Framework needs to be collected so it can be applied at multiple spatial scales – basin-scale for use in the State of the Basin Report, and at the scale relevant to the particular development scenario for the assessment of future basin-wide development scenarios. In both cases, it will be critical that sub-basin scale data is collected; for example, at provincial or district level for data in the Social Dimension. This enables the conditions across the LMB to be determined and vulnerable communities identified.

Overall, the number of Strategic Indicators remains 15. However, the number of Assessment Indicators has been reduced from 68 to 53 and the number of Monitoring Parameters reduced from around 350 to 185, with approximately 275 individual datasets to collect or generate. The way in which each

dataset should be generated and the roles and responsibilities for its generation will be outlined separately in the *MRC Data Acquisition and Generation Action Plan*, consistent with the *Procedures for Data Information and Exchange and Sharing* and the MRC Information System and Decision Support Framework.

The draft methodology to implement the framework is under development and described in a separate technical document. It explains the approach to calculating the Monitoring Parameters from the relevant monitoring data, how to evaluate whether or not each Assessment Indicator has been met or not met, and provides a guide to describing the results for each Strategic Indicator.

The evaluation of the Strategic Indicators takes a logical framework approach drawing on the degree to which each Strategic Indicator's associated Assessment Indicators have been met or not met. The results are generally presented using one of the following descriptors:

The action-oriented nature of these descriptors aligns with the approach the MRC has taken to the *Procedures for the Maintenance of Flow on the Mainstream,* which in effect helps the MRC determine if there is a problem that needs to be addressed (or an opportunity to be exploited) and the urgency required to do so. To understand why there is an issue the evaluation of the Assessment Indicators focuses on a series of *and/or* criteria to identify the nature of the issue presenting itself (e.g. is it a food, water or energy issue, or perhaps all three?). Once the nature of the issue is determined an evaluation of the Monitoring Parameters helps identify the cause(s) and therefore where collective or individual action may be warranted.

This approach avoids the use of complicated calculations and weightings to arrive at a single score for each indicator. Given there is such a large number of indicators and Monitoring Parameters with different statistical requirements and units of measurement, taking a calculation approach through several hierarchical levels would not be very transparent and would detract from the core value of a hierarchical framework, which is the progressive elaboration of issues down to their root cause. It is important the framework provides an auditable line-of-sight through each level so that a comprehensive narrative of basin conditions can be established.

Because of the hierarchical nature of the framework, to allow evaluation of the Strategic Indicators each Assessment Indicator needs to be evaluated against one or more criteria which define whether or not the indicator has been met. The thresholds proposed for the criteria of each Assessment Indicator are wherever possible guided by existing processes and frameworks in which Member Countries participate. These include implementation of existing MRC core functions, for example on the *Procedures for the Maintenance of Flow on the Mainstream* or the Procedures for Water Quality. In these cases the MRB-IF simply reflects what has been agreed through those processes rather than replacing them or seeking to implement an alternative avenue for their agreement.

International agreements and targets that Member Countries have committed to, for instance under the Sustainable Development Goals or the United Nations Framework Convention on Climate Change, guide some other of the criteria. In other cases no thresholds are set and a direction of change (either improving or declining) in the monitoring parameters is used as the basis for the assessment (i.e. are things getting better or worse?). In a small number of cases an arbitrary threshold has been used. In these cases the figure should be considered only as a working draft, to be refined over time with the availability of improved datasets. In all cases, the thresholds are intended as markers to alert the reader and in particular the Member Countries, when further investigation and analysis may be warranted. They should not be seen as a trigger for a specific action or decision.

1. Introduction

1.1 Background

River basins are connected social and ecological systems. Actions in one part of the system can have material impacts both direct and indirect in another. The impacts can be positive or negative, immediate or delayed. Indeed often the trade-offs inherent in basin development decisions mean impacts will be consequentially different for different communities and different sectors at the same time. Exogenous and endogenous factors will influence the outcome.

The interconnected nature of a river basin through hydrological, biological, trade, energy, transport and communication pathways means that evaluating progress towards agreed objectives, or potential future conditions in response to single or cumulative actions, needs to cover a relatively broad range of matters over the full extent of the relevant geographic area, the basin.

It is, however, not possible to measure and evaluate everything, everywhere. Choices must be made about relative importance and what is cost effective within budgetary and political constraints. All expenditure has an opportunity cost. An indicator framework can help guide these choices by identifying the consequential linkages between raw data, monitoring parameters and indicators at various levels and outcomes. In doing so it helps provide a structured and systematic approach to the identification of condition and potential impacts by focusing data collection, analysis and presentation on the matters most relevant to decision-makers.

By distilling complex information into easily understandable measures, indicators also help diverse audiences with wide ranging backgrounds understand important trends. The quality of the indicator can be considered by how much it tells an audience about the actual thing of concern, which relates directly to the objectives. With a single indicator this may not be much, but together with other indicators, can be enough to generate the multiple lines of evidence necessary to inform better decisions.

According to Bertule *et al.* (2018)[1] "*too many indicators can cloud interpretation and exceed financial and human resources for collection and analysis while too few will result in insufficient information to characterise the system as outlined in the framework, potentially leading to erroneous conclusions and ill-advised policy decisions*". They advise that at a minimum, there should be sufficient indicators to answer the question of whether basin management is moving towards the agreed outcomes, goals or targets to be achieved (Kusek and Rist 2004).[2]

With that in mind, to be fit-for-purpose an indicator framework should have indicators:

- Linked to clear objectives
- Amenable both to an assessment of current condition as well as future impacts
- That are only ever indicative, not attempting a comprehensive evaluation
- Measurable, using consistent and reliable data collected through cost sustainable monitoring programmes or periodic surveys and studies
- At various hierarchical levels to serve a broad range of audiences

Indicators can be any quantitative or qualitative measure that is used to assess the state of something or its performance relative to a benchmark. They identify relative positions to facilitate comparison

1 Bertule, M., Bjørnsen, P.K., Costanzo, S.D., Escurra, J., Freeman, S., Gallagher, L., Kelsey, R.H. and Vollmer, D. (2017). Using indicators for improved water resources management - guide for basin managers and practitioners. 82 pp.

2 Kusek, J.Z. and R.C. Rist. 2004. Ten steps to a results based monitoring and evaluation system: a handbook for development practitioners. Washington DC: The World Bank.

and, if measured over time, help identify trends.[3] Often, indicators are used as proxies for complex phenomena that cannot be measured and monitored based on direct observations. An example of this is Gross Domestic Product (GDP), which is used to measure a country's economic performance. Indicators can be a valuable management tool distilling complex information into a standardized format that, if constructed well, is easily interpreted by managers and decision-makers. Such indicators can then be used to monitor the effectiveness of policies as well as to promote accountability (Bertule *et al.* 2018).

1.2 Structure and Purpose

The MRC Indicator Framework provides a unified and integrated approach to assessing how well the MRC and its Member Countries are progressing towards the aims of the 1995 Mekong Agreement, as part of the 5-year basin development planning cycle. The Framework seeks to reflect Member Country commitments under the 1995 Mekong Agreement:

> *"to cooperate and promote in a constructive and mutually beneficial manner in the sustainable development, utilization, conservation and management of the Mekong River Basin water and related resources for navigational and non-navigational purposes, for social and economic development and the well-being of all riparian States, consistent with the needs to protect, preserve, enhance and manage the environmental and aquatic conditions and maintenance of the ecological balance exceptional to this river basin"*

The overall design of the MRB-IF has been discussed with the Member Countries and, as a working document, agreement reached on its scope (the five dimensions), the 15 Strategic Indicators, 53 Assessment Indicators and 182 Monitoring Parameters. Applying the MRB-IF should help Member Countries and the MRC gauge whether the 1995 Mekong Agreement is being effectively implemented. The State of the Basin Report for 2018 was the first full test of an earlier draft of the MRB-IF, notwithstanding some immediate limitations on data availability, and the MRB-IF was revised based on this experience.

The MRC Indicator Framework is hierarchical in nature (Figure 1) and has been identified for use in support of:

1) State of the Basin reporting;
2) Assessment of basin-wide development plans, scenarios and projects, including in relation to the conservation, utilisation and management of the water and water-related resources;
3) Collection and sharing of data and information needed for MRC activities agreed in the MRC Strategic Plan and enabled by the improved implementation of the *Procedures for Data and Information Exchange and Sharing*; and
4) Decentralisation and strengthening of primary data collection at the national level.

Strategic Indicators have been selected to inform high-level decision-makers and stakeholders on key issues related to the development, utilisation, conservation and management of the Mekong Basin. The Assessment Indicators are intended to provide the basis for evaluating the Strategic

Indicators and to provide planners with a capacity to assess alternative development scenarios. The Monitoring Parameters are intended to provide the basis for relevant and quality assured data sets from which Assessment and Strategic Indicators can be evaluated and to support the MRC's other studies and assessments. Furthermore, agreeing a set of Strategic Indicators is seen as the first step towards defining longer term management objectives for the Mekong Basin, and the means to achieve

3 OECD, 2008. Handbook on Constructing Composite Indicators: Methodology and User Guide.

them through the five-yearly updates of the Basin Development Strategy.

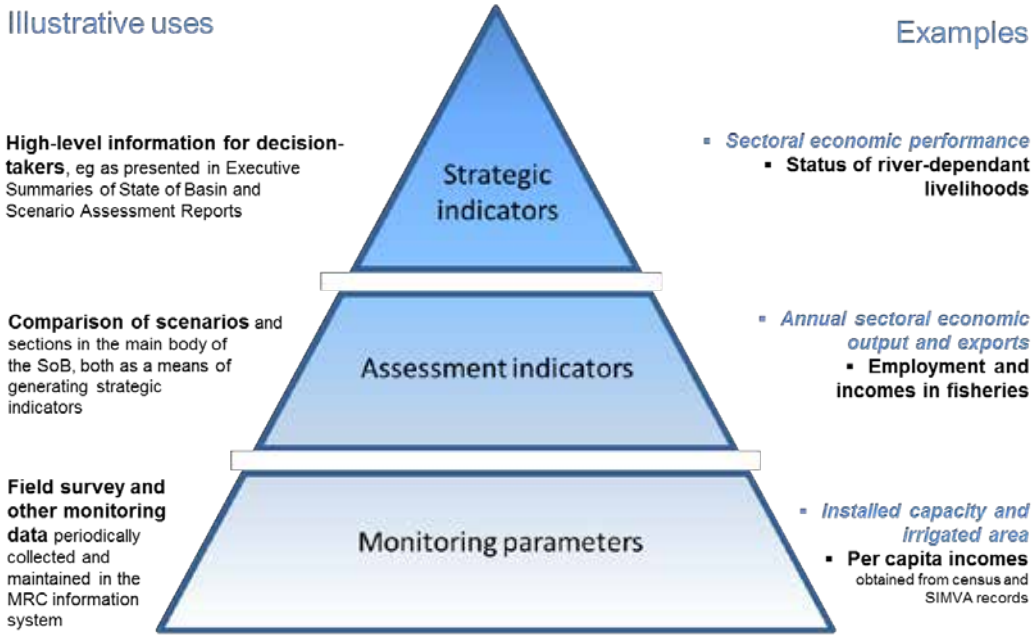


Figure 1: Three levels of the MRC Indicator Framework

1.3 Goals in the design of the MRC Indicator Framework

The design of the MRC Indicator Framework was guided by two overarching goals:

1) The Indicator Framework must support cost-effective data generation by the Mekong River Commission Secretariat and Member Countries over the long-term

As the MRC moves towards self-financing, ever greater reliance will be placed on Member Country budgets to supply and update the data required to monitor the status of the Mekong Basin. Data collection is a significant expense and it is critical that cost effectiveness in monitoring is built into the Indicator Framework from the outset. The Framework will only be successful if there is a degree of continuity in the indicators and Monitoring Parameters, enabling assessment of trends over time. In practice, this means the Monitoring Parameters must only be those that are reasonably within the budgets of Member Countries to collect over the long-term.

2) The Indicator Framework must enable an assessment of status and trends in conditions across the whole of the basin, while also allowing for scenario assessments at different spatial and temporal scales as appropriate to the particular circumstances

It needs to enable useful evaluation of progress towards the Basin vision and aims articulated in State of the Basin reports, while also supporting scenario planning of future developments, potentially at different spatial scales, as articulated in the Basin Development Strategy. These twin purposes mean that where possible data needs to be available for the entire basin. Subsets of this data can then be selectively used to assess areas affected by potential water sector developments, as appropriate to the particular circumstances.

1.4 Building on the Foundations

Given the importance of agreed objectives to the selection of indicators, the MRC vision of *an economically prosperous, socially just and environmental sound Mekong River Basin* is reflected

in the Framework (Figure 2). While the particulars of this vision may be progressively refined over time, this provides an overarching direction for the main elements of the framework. Each strategic indicator and the Assessment Indicators used to inform them says something meaningful about the extent to which this vision is being met.

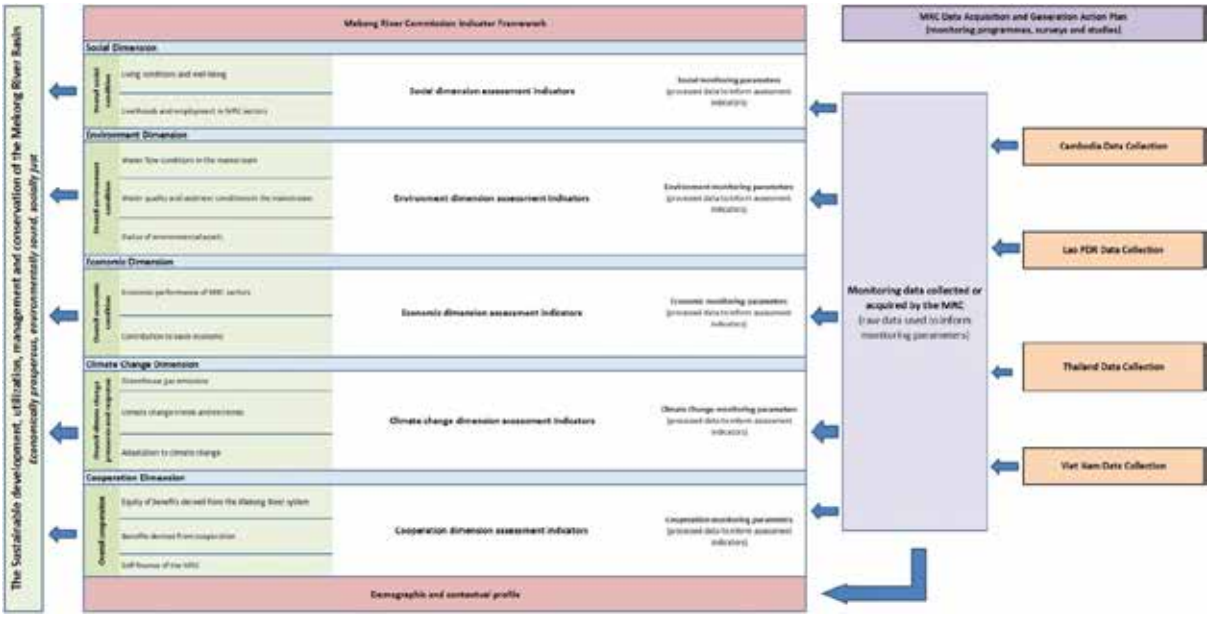


Figure 2: Structure of the MRC indicator framework and relationship with *MRC Data Acquisition and Generation Action Plan*.

The nature of the intended use of the MRB-IF has implications for the geographical scope of what is monitored or measured under each indicator. The 1995 MRC Agreement refers to the Member Countries intent to "*cooperate in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Mekong River Basin including, but not limited to irrigation, hydro-power, navigation, flood control, fisheries, timber floating, recreation and tourism …"* This commitment, together with the intent that this cooperation is "*for social and economic development and the well-being of all riparian States, consistent with the needs to protect, preserve, enhance and manage the environmental and aquatic conditions and maintenance of the ecological balance"* has guided the development of the scope of the MRB-IF to ensure adequate focus on all LMB water-related sectors.

For scenario assessment purposes, the incremental changes in indicators that need to be evaluated are limited to those areas directly impacted by changes in water and natural resource management activities within the purview of MRC (broadly being those now listed under economic development) together with those areas impacted by changes of flow and water quality in the Mekong mainstream. These have been summarised as "*Areas directly impacted by developments in the MRC areas of cooperation (including reservoir areas, relevant wetland areas) and areas adjacent to the mainstream where socio-economic activities are influenced by flow and environmental conditions within the mainstream*".

However, for assessing status and trends in condition, it is more appropriate that the MRB-IF should be applied to the entire basin (be that the LMB or whole basin) due to the interconnected nature of social, environmental and economic drivers, pressures and responses. It follows therefore that for the MRB-IF to be applicable across the entire basin the design of the Monitoring Parameters is based on data that are available throughout the basin. Noting, however, that the MRB-IF can be instrumental in

fine tuning future data collection efforts.

In the context of supporting the preparation of the State of the Basin report, it is apparent that some data are very useful to know and helpful for broader planning decisions or as input to other Monitoring Parameters, but are in many respects well beyond the scope and influence of the MRC. Examples of such information include basin dimensions such as population and population breakdown by age, by gender, by rural/urban, life expectancy, urbanisation rates, national GDP and breakdown by sector, national GHG emissions and the like. These contextual data are specified separately as part of the Indicator Framework (Figure 2) and reported upon separately in the SOBR.

2. Indicators and Monitoring Parameters

2.1 Strategic and Assessment Indicators

There are 15 Strategic Indicators and 53 Assessment Indicators. The scope of the Assessment Indicators and the matters covered by them relate directly to the Strategic Indicators and are aligned with relevant Sustainable Development Goals.

Social Dimension Strategic Indicators	Assessment Indicators
1. Living Conditions and Wellbeing	1. Food security
	2. Water security
	3. Water-related health security
	4. Access to electricity
2. Livelihoods and employment in LMB water-related sectors	5. Employment in LMB water-related sectors
	6. Economic security
	7. Gender equality in employment and economic engagement
3. Overall social conditions	-

Environment Dimension Strategic Indicators	Assessment Indicators
4. Water flow conditions	8. Compliance of dry season flows with the PMFM
	9. Compliance of flood season peak flows with the PMFM
	10. Compliance of Tonle Sap reverse flows with the PMFM
	11. Change in the timing of onset of wet season flows
5. Water quality and sediment conditions	12. Ecological health, and compliance of water quality with the PWQ
	13. Changes in sediment transport
	14. Extent of salinity intrusion in the delta
6. Status of environmental assets	15. Extent of wetland area
	16. Condition of riverine, estuarine and coastal habitats
	17. Condition and status of fisheries and other aquatic resources
	18. Condition and status of ecologically significant areas
7. Overall environmental condition	-

Economic Dimension Strategic Indicators	Assessment Indicators
8. Economic performance of MRC sectors	19. Economic value of agriculture
	20. Economic value of hydropower
	21. Economic value of navigation
	22. Economic value of sand mining
	23. Economic value of wetlands
	24. Economic value of capture fisheries
	25. Economic value of aquaculture
	26. Economic value of forestry
	27. Economic value of tourism and recreation
	28. Economic cost of riverbank and coastal erosion
	29. Economic cost of flood
	30. Economic cost of drought
9. Contribution to basin economy	31. Contribution of LMB water-related sectors to basin, national and regional GDP
	32. Contribution to food grain supply
	33. Contribution to protein supply
	34. Contribution to power supply

Climate Change Strategic Indicators	Assessment Indicators
10. Greenhouse gas emissions	35. Greenhouse gas emissions from LMB water-related sectors
	36. Relative contribution to global emissions
11. Climate change trends and extremes	37. Changes in tropical storm frequency, intensity and storm surge risk
	38. Changes in temperature
	39. Changes in precipitation
	40. Extent and severity of flooding
	41. Extent and severity of drought
12. Adaptation to climate change	42. Institutional response to the effects of climate change
	43. Flood protection measures
	44. Drought protection measures
	45. Vulnerability to floods, droughts and storms

Cooperation Dimension Strategic Indicators	Assessment Indicators
13. Equity of benefits derived from the Mekong River system	46. Overall social benefits derived in each country's part of the basin
	47. Overall environment benefits derived in each country's part of the basin
	48. Aggregate economic benefits derived in each water-related sector in each country's part of the basin
14. Benefits derived from cooperation	49. Joint efforts on projects of basin-wide significance and with potential trans-boundary impacts
	50. Extent of knowledge sharing activities
	51. Partnerships between the MRC and other parties
	52. Proportion of benefits derived from cooperation to total economic value of all LMB water-related sectors
15. Self-finance of the MRC	53. Proportion of MRC budget funded by national contributions during current period

2.2 Alignment with the Sustainable Development Goals

The selection of Assessment Indicators seeks to achieve three things: strong alignment to the Strategic Indicators, clarity of meaning, and minimal duplication between different indicators. The Assessment Indicators are also aligned with key water-related aspects of the Sustainable Development Goals. This alignment will help support cost effective data generation in Member Countries where that data generation is already being undertaken for other purposes.

Alignment of the Assessment Indicators with the Sustainable Development Goals can be considered either a primary (Table 1) or secondary (Table 2) link depending on the strength of the relationship to water resource management. The primary links are those that relate directly to the LMB's key strategic resources of water (including wetlands), food (fish and agriculture) and power (from hydroelectric sources). The secondary links are those that are either enablers of (gender equality and cooperation), or derived from (poverty reduction, good health and well-being and economic growth), effective use and management of those strategic resources.

Overall, the link between the Indicator Framework and *SDG 6: to ensure the availability and sustainable management of water and sanitation for all* is the strongest. This goal emphasises a wide range of water related issues including improved water quality, increased water use efficiency, integrated water resource management, including through transboundary cooperation, protecting and restoring water-related ecosystems, expanding international cooperation and capacity building and supporting and strengthening the participation of local communities in improving water and sanitation management. These are all targets to which the MRC contributes through joint efforts and partnerships between Member Countries and also with a range of external actors, including dialogue partners, development partners, universities, and civil society. This contribution occurs through delivery of the MRC's five Core River Basin Management Functions to help address the needs, challenges and opportunities of the Basin Development Strategy.

For the social dimension, under the Strategic Indicator of *Living Conditions and Wellbeing*, the Assessment Indicators focus on four critical water-related domains at the heart of community wellbeing: *Food Security*, *Water Security, Water-related Health Security, and Access to Electricity. These indicators directly align with Sustainable Development Goals 2 (Zero Hunger), 3 (Good Health and Well-Being), 6 (Clean Water and Sanitation), and 7 (Affordable and Clean Energy)* and are clearly

identifiable as important matters people can relate to. Food Security was also identified in the Council Study as the social indicator which best reflects the impact of climate change. With the inclusion of access to electricity, the social dimension draws together the concept of the *food, water, and energy nexus*. This concept means that the three sectors – water security, food security and energy security are inextricably linked and that policy coherence between each sector should be a key objective in order to avoid unintended consequences. In relation to access to electricity, this is important because of the increasing use of Mekong water resources for the generation of electricity, even if that power is exported, and electricity supplied to people of the LMB is more cost effectively generated from sources other than hydropower.

Under the Strategic Indicator of *Livelihoods and employment in MRC sectors*, the Assessment Indicators are *Employment in MRC Sectors*; Economic Security (which would encompass poverty rate), and *Gender Equality in Employment and Economic Engagement*. These indicators directly align with Sustainable Development Goals 1 (*No Poverty*), 8 (*Decent Work and Economic Growth*), and 5 (*Gender Equality*). As noted in Bertule *et al.* (2018), women are particularly important stakeholders in the water sector, including their role and household responsibilities in providing clean water and sanitation, and the effect that the lack of this has on women's access to health and education (Seager, 2015)[4]. Consideration of gender equality is of course much broader in scope than livelihoods and employment and could also usefully be reflected under Living Conditions and Wellbeing in relation to water, food and health security, subject to the availability of gender disaggregated data.

For the environment dimension, the Assessment Indicators directly align with Sustainable Development Goals 6 (*Clean Water and Sanitation*) in relation to water quality and ecological health, and the condition of riverine habitats and ecologically significant areas, and 15 (*Life on Land*) in relation to wetlands and the condition of riverine habitats and ecologically significant areas.

For the economic dimension, the Assessment Indicators directly relate to Sustainable Development Goals 2 (*Zero Hunger*), 7 (*Affordable and Clean Energy*) and 14 (*Life Below Water*). Once again, reflecting the LMB's strategic resources of food, power and water. Under the *Contribution of Basin Economy* strategic indicator, the Assessment Indicators reflect the contribution of strategic basin resources to the basin, national and regional economy and directly align with Sustainable Development Goal 2 (Zero Hunger) and 8 (Decent Work and Economic Growth).

For the climate change dimension, the Assessment Indicators directly relate to Sustainable Development Goals 1 (No Poverty) in relation to vulnerability to floods, droughts and storms and 13 (*Climate Action*). Under the Strategic Indicator of *Adaptation to Climate Change*, the climate change adaptation assessment indicator relates to the *Institutional response to the effects of climate change*. This enables consideration not only of mainstreaming activities but also of a direct response to the effects of climate change including the mobilisation of resources.

For the cooperation dimension, the Assessment Indicators seek to capture cooperation both between Member Countries and through partnerships with others. Under *Equity of Benefits derived from the Mekong River system*, the Assessment Indicators reflect that this is assessed by evaluation of the social, economic and environment benefits that each country derives from the Mekong River. The Assessment Indicators relate to Sustainable Development Goal 17 (*Partnerships for the Goals*).

4 Seager, J. 2015. Sex-disaggregated indicators for water assessment, monitoring and reporting. Paris: UNESCO.

Table 1: Primary alignment of the proposed MRC Assessment Indicators with water-related aspects of relevant Sustainable Development Goals

6 CLEAN WATER AND SANITATION	2 ZERO HUNGER	7 AFFORDABLE AND CLEAN ENERGY	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND
Water security Water-related health security Ecological health, and compliance of water quality with the PWQ Condition of riverine, estuarine and coastal habitats Condition and status of ecologically significant areas Proportion of benefits derived from cooperation to total economic value of all LMB water-related sectors	Food Security Economic value of fisheries Economic value of agriculture Contribution to food grain supply Contribution to protein supply	Access to electricity Economic value of hydropower Contribution to power supply	Greenhouse gas emissions from LMB water-related sectors Relative contribution to global emissions Institutional response to the effects of climate change Flood protection measures Drought protection measures Coverage of disaster warning systems	Economic value of fisheries Cost of riverbank and coastal erosion	Extent of wetland area Condition of riverine, estuarine and coastal habitats Condition and status of fisheries and other aquatic resources Condition and status of ecologically significant areas

Table 2: Secondary alignment of the proposed MRC Assessment Indicators with water-related aspects of relevant Sustainable Development Goals

				
Economic security Vulnerability to floods, droughts and storms	Water-related health security	Gender equality in employment and economic engagement Employment rate in LMB water-related sectors Economic Security	Employment rate in LMB water-related Sectors Contribution of LMB water-related sectors to basin, national and regional GDP	Joint efforts on projects of basin-wide significance and with potential trans-boundary impacts Extent of knowledge sharing activities Partnerships between the MRC and other parties

2.3 Monitoring Parameters

The Monitoring Parameters are divided into two levels. At one level the basic data requirements and at the other level the processed (or calculated) data necessary for evaluating the relevant Assessment Indicator:

- *Monitoring Parameters:* being the processed (or calculated) data which is meaningful on its own but also directly contributes to the evaluation of the assessment indicator; and
- *Data requirements*: being the basic or raw data used to support evaluation of the indicators.

The data requirements are not specifically identified as part of the Framework itself but are fully specified in terms of type, units, spatial aggregation, temporal characteristics, source, etc., in the *MRC Data Acquisition and Generation Action Plan*. These requirements should be a central element of MRC data generation efforts as collecting this data is part of the MRC's core functions. Separating the Monitoring Parameters in this way will help clarify the specific data collection requirements necessary to implement the MRB-IF through the five year planning cycle.

The Monitoring Parameters (Table 2) were determined by prioritising an earlier draft list against the following five criteria:

- Strength of alignment between indicators and their respective Monitoring Parameters (*i.e. does the subsidiary indicator/parameter say something important/critical about what the indicator seeks to convey?*)
- Clarity of purpose and identifiable progress (*i.e. is it clear what an indicator value is signalling and what a change in the indicator means?*)
- Degree of overlap with other indicators/Monitoring Parameters (*i.e. does the indicator either partly or completely double-up on another?*)
- Data availability and quality, including geographic and temporal scope (e.g. basin vs national, time series) and consistency across Member Countries (i.e. *can the data be collected or acquired*

at a cost the Member Countries are willing to pay?)

- Potential influence of the MRC's work on changes in the indicator and monitoring parameter (*i.e. to what extent is the indicator or monitoring parameter potentially affected by the MRC's work in each of its sectors and aligned to the goals of the Basin Development Strategy*)

2.4 Data Requirements

Where possible, all data is required for the whole of the basin and for the mainstream corridor, and for each Member Country, to enable use for the twin purposes of the MRB-IF. Approximately 275 individual datasets are required across the five dimensions. These are described in the associated spreadsheet and include units, frequency of collection, scale, source, format and responsible division within MRC. For the State of the Basin report it is necessary to show both the current condition as well as recent trends in the Monitoring Parameters, and all data should allow presentation at both a country and basin scale.

Table 2: Assessment Indicators and related Monitoring Parameters

Strategic Indicators	Assessment Indicators	Monitoring P arameters
Social Dimension		
1. Living Conditions and wellbeing	*1. Food Security* *2. Water Security* *3. Water-related Health Security* *4. Access to electricity*	(i) Adequacy of dietary energy supply; (ii) Income per person; (iii) Prevalence of undernourishment; (iv) Prevalence of Infant malnutrition (i) Adequacy of domestic water supply; (ii) Sufficiency of water for farming (i) Access to safe water supplies; (ii) Prevalence of malnutrition; (iii) Access to sanitation; (iv) Incidence of water-borne disease (i) Urban household electrification rate; (ii) Rural household electrification rate
2. Livelihoods and employment in LMB water-related sectors	*5. Employment in LMB water-related sectors* *6. Economic Security* *7. Gender equality in employment and economic engagement*	(i) Proportion of working age population employed in LMB water-related sectors (i) Sufficiency of household income; (ii) Sufficiency of household assets (i) Female-male ratio of people employed in LMB water-related sectors; (ii) Gender equality in education; (iii) Gender equality in ownership of land
3. Overall social conditions	-	-
Environment Dimension		
4. Water flow conditions	*8. Compliance of dry season flows with the PMFM* *9. Compliance of flood season peak flows with the PMFM* *10. Compliance of Tonle Sap reverse flows with the PMFM* *11. Change in the timing of onset of wet season flows*	(i) Daily dry season water levels; (ii) discharge relative to 1:5, 1:10 and 1:20 ARI flows (at PMFM stations) (i) Daily flood season water levels; (ii) discharge relative to 1:2, 1:10 and 1:20 ARIs (at PMFM stations) (i) Accumulated reverse flow volumes (at relevant PMFM stations) (i) Daily discharge; (ii) Date
5. Water quality and sediment conditions	*12. Ecological health, and water quality compliance with the PWQ* *13. Changes in sediment transport* *14. Extent of salinity intrusion in the delta*	(i) DO; (ii) pH; (iii) COD; (iv) BOD; (v) NH3; (vi) NO2-3-N; (vii) TP; (viii) TN; (ix) TSS (x) Electrical Conductivity; (xi) Heavy Metals; (xii) Faecal coliforms; (xiii) Pesticides; (xiv) Oil and grease; (xv) Phenol; (xvi) Diatoms; (xvii) Benthic macroinvertebrates; (xviii) Littoral macroinvertebrates; (xix) Zooplankton (i) Suspended sediment load; (ii) Bed load; (iii) Grain-size distribution of suspended sediments; (iv) Grain-size distribution of bed load (i) Area of the delta affected by salinity >1 mg/l; (ii) Area of the delta affected by salinity >4 mg/l

6. Status of environmental assets	*15. Extent of wetland area* *16. Condition of riverine, estuarine and coastal habitats* *17. Condition and status of fisheries and other aquatic resources* *18. Condition and status of ecologically significant areas*	(i) Flooded forest area; (ii) Inundated grasslands area; (iii) Marshes and swamps area; (iv) Inundated rice fields area; (v) Mangrove area; (vi) Area of water bodies; (vii) Aquaculture area (i) Area of sandy habitats; (ii) Area of rocky habitats; (iii) Depth of deep pools; (iv) Area of vegetated riparian habitat; (v Mangrove area; (vi) Area of riverbank erosion; (vii) Area of coastal erosion (i) Fish abundance; (ii) Fishing effort; (iii) Fish size; (iv) Fish diversity; (v) OAA/P abundance; (vi) OAA/P harvest effort; (vii) OAA/P diversity; (viii) Diversity and abundance of introduced species; (ix) Diversity and abundance of other water-dependent biodiversity (i) Extent of natural land cover in ecologically significant areas; (ii) Protection status of ecologically significant areas; (iii) Forested land area (natural & plantation)
7. Overall environment conditions	-	-
Economic Dimension		
8. Economic performance of LMB water-related sectors	*19. Economic value of agriculture* *20. Economic value of hydropower* *21. Economic value of navigation* *22. Economic value of sand mining* *23. Economic value of wetlands* *24. Economic value of capture fisheries* *25. Economic value of aquaculture* *26. Economic value of forestry* *27. Economic value of tourism and recreation* *28. Economic cost of river bank and coastal erosion* *29. Economic cost of flood* *30. Economic cost of drought*	(i) Irrigated agricultural production; (ii) recession rice production; (iii) rain-fed cultivation production; (iv) Riverbank garden production; (v) Agricultural prices (i) Hydropower production for domestic consumption; (ii) Hydropower production for export; (iii) Hydropower prices (i) Volume of cargo transport; (ii) Passenger transport numbers; (iii) Transport prices (i) Sand mining production (ii) Sand mining prices (i) Flooded forest ecosystem services production; (ii) Inundated grasslands ecosystem services production; (iii) Marshes and swamps ecosystem services production; (iv) Mangrove ecosystem services production; (v) Water bodies ecosystem services production; (vi) Wetland ecosystem service prices (i) Fisheries production from rivers and major flood zones; (ii) Fisheries production from rain-fed zones; (iii) Fisheries production from large water bodies including reservoirs; (iv) Capture fisheries prices (i) Aquaculture production; (ii) Aquaculture prices (i) Forestry production (excluding flooded forests); (ii) Forestry prices (i) Tourism and recreation revenue (i) River bank erosion losses; (ii) Coastal erosion losses (i) Annual cost of flood damages (i) Annual cost of drought damages

9. Contribution to basin economy	*31. Contribution of LMB water-related sectors to basin, national and regional GDP* *32. Contribution to food grain supply* *33. Contribution to protein supply* *34. Contribution to power supply*	(i) Proportion of basin GDP from LMB water-related sectors; (ii) Proportion of national GDP from LMB water-related sectors; (iii) Proportion of regional GDP from LMB water-related sectors (i) Proportion of basin food grain demand met from basin resources; (ii) Proportion of national food grain demand met from basin resources; (iii) Proportion of regional food grain demand met from basin resources (i) Proportion of basin protein demand met from basin resources; (ii) Proportion of national protein demand met from basin resources; (iii) Proportion of regional protein demand met from basin resources (i) Proportion of basin power demand met from Basin hydroelectric resources; (ii) Proportion of national power demand met from Basin hydroelectric resources; (iii) Proportion of regional power demand met from Basin hydroelectric resources
Climate Change Dimension		
10. Greenhouse gas emissions	*35. Greenhouse gas emissions from LMB water-related sectors* *36. Relative contribution to global emissions*	(i) GHG emissions from energy; (ii) GHG emissions from agriculture; (iii) GHG emissions from other land use, land use change and forestry; (iv) Reduced GHG emissions from energy production due to hydropower (i) Emissions of CO2; (ii) Emissions of CH4; (iii) Emissions of N2O
11. Climate change trends and extremes	*37. Changes in tropical storm frequency and intensity, and storm surge risk* *38. Changes in temperatures* *39. Changes in precipitation* *40. Extent and severity of flooding* *41. Extent and severity of droughts*	(i) No. and wind strength of severe tropical storms; (ii) No. and wind strength of tropical storms; (iii) No. and wind strength of typhoons; (iv) Sea-level rise (i) Daily maximum temperature; (ii) Daily minimum temperature; (iii) Number of hot days; (iv) Number of cold nights; (v) Number of cold days; (vi) Number of warm nights (i) Daily total precipitation; (ii) 1-day maximum precipitation; (iii) 5-day maximum precipitation; (iv) Number of consecutive wet days; (v) Number of consecutive dry days (i) Annual maximum flooded area; (ii) Annual area of flooded forest; (iii) Average flood depth; (iv) Average flood duration; (v) Population affected by flood; (vi) Timing of onset of flood; (vii) Timing of offset of flood; (viii) Annual maximum flooded area at Tonle Sap (i) Annual area of meteorological drought (ii) Annual area of hydrological drought; (iii) Annual area of agricultural drought; (iv) Population affected by drought; (v) Timing of onset of drought; (vi) Timing of offset of drought; (vii) Annual drought severity at Tonle Sap

12. Adaptation to climate change	*42. Institutional response to the effects of climate change* *43. Flood protection measures* *44. Drought protection measures* *45. Vulnerability to floods, droughts and storms*	(i) Policies and strategies for climate change response; (ii) Budget for climate change response; (iii) Number of awareness-raising activities; (iv) Access to climate finance (i) Area of urban land protected by embankments/levees; (ii) Area of agricultural land protected by embankments (i) Proportion of irrigable land that is irrigated; (ii) Volume of available water storage (i) Exposure (impact zone); (ii) Sensitivity (damage/losses); (iii) Adaptive capacity (income/poverty); (iv) Disaster risk management planning at national and local level
Cooperation Dimension		
13. Equity of benefits derived from the Mekong River system	*46. Overall social benefits derived in each country's part of the basin* *47. Overall environment benefits derived in each country's part of the basin* *48. Aggregate economic benefits derived from each water-related sector in each country's part of the basin*	- - -
14. Benefits derived from cooperation	*49. Joint efforts on projects of basin-wide significance and with potential trans-boundary impacts* *50. Extent of knowledge sharing activities* *51. Partnerships between the MRC and other parties* *52. Proportion of benefits derived from cooperation to total net economic value of all LMB water-related sectors*	(i) Quantity of projects of basin-wide significance; (ii) Value of projects of basin-wide significance; (iii) Quantity of trans-boundary projects notified; (iv) Value of trans-boundary projects notified (i) Number of events (symposia; fora; training) held; (ii) Number of joint studies and assessments; (iii) Number of information products disseminated; (iv) Number of data downloads (i) Number of partnership and cooperation agreements in place; (ii) Number of joint projects with other parties; (iii) Value of joint projects with other parties (i) Value of joint projects, transboundary projects and projects of basin-wide significance; (ii) Aggregate economic value of LMB water-related sectors
15. Self-finance of the MRC	*53. Proportion of MRC budget funded by national contributions during current period*	(i) MRC budget; (ii) National contributions to MRC budget

3. Definitions of Strategic and Assessment Indicators

3.1 Definitions of Social Dimension Strategic and Assessment Indicators

Strategic Indicators	Indicator Definitions	Social Assessment Indicators	Indicator Definitions
1. Living conditions and wellbeing	The level of community resilience as derived from the key components of societal wellbeing that help reduce vulnerability: food, water, and water-related health security, and access to electricity	*1. Food Security*	The ability of basin communities to meet their food demands either through their own production of food grain and protein, or with sufficient income to purchase food; and as evident by a lack of undernourishment and infant malnutrition
		2. Water Security	The ability of basin communities to meet their safe water demands for both domestic and agricultural uses
		3. Water-related health security	The ability of basin communities to minimise the risk of water-related disease and other health issues through access to safe water supplies, adequate nutrition, and sanitation; and as evident by a lack of communicable water-borne disease in the community
		4. Access to electricity	The ability of basin communities to access electricity from all sources, including from hydro-electric power
2. Livelihoods and employment in LMB water-related sectors	The level of community resilience as derived from the key components of sustainable livelihoods that help reduce vulnerability: employment, economic security and gender equality	*5. Employment in LMB water-related sectors*	The proportion of the working age population employed in LMB water-related sectors and the change in productivity of those employees over time
		6. Economic Security	The ability of basin communities to provide for their own economic needs now and into the future
		7. Gender equality in employment and economic engagement	The ability for both men and women to provide for their own needs and improve their potential for future economic gain
3. Overall social condition	The overall social conditions in the Lower Mekong Basin reflecting living conditions, wellbeing, livelihoods and employment		

3.2 Definitions of Environment Dimension Strategic and Assessment Indicators

Strategic Indicators	Indicator Definitions	Environment Assessment Indicators	Indicator Definitions
4. Water flow conditions	The extent to which water flow conditions have departed from agreed reference points considered necessary for a sustainable environment	*8. Compliance of dry season flows with the PMFM*	The extent to which dry season flows on the mainstream comply with the Procedures for the Maintenance of Flows on the Mainstream (PMFM)
		9. Compliance of flood season peak flows with the PMFM	The extent to which flood season peak flows on the mainstream comply with the Procedures for the Maintenance of Flows on the Mainstream (PMFM)
		10. Compliance of Tonle Sap reverse flows with the PMFM	The extent to which wet season flows on the mainstream comply with the Procedures for the Maintenance of Flows on the Mainstream (PMFM)
		11. Change in the timing of onset of wet season flows	The number of days earlier or later than the long-term average date when the daily discharge is first above the long-term annual average daily discharge in a given year
5. Water quality and sediment conditions	The extent to which water quality and sediment conditions have departed from agreed reference points considered necessary for a sustainable environment	*12. Ecological health, and water quality compliance with the PWQ*	The water quality and ecological health of aquatic environments as fit for the protection of human and aquatic life, for agricultural use, and in relation to water quality emergencies as defined by the Procedures for Water Quality (PWQ)
		13. Changes in sediment transport	The extent to which the recent average suspended sediment load and bed load varies from the long-term average
		14. Extent of salinity intrusion in the delta	The extent to which the recent average area of land affected by salinity concentration greater than 1 mg/L and 4 mg/L varies from the long-term average area
6. Status of environmental assets	The state of the most important environmental assets and aquatic resources of the Lower Mekong Basin	*15. Extent of wetland area*	The extent of natural wetland as habitat for biota and the provision of ecosystem services
		16. Condition of riverine, estuarine and coastal habitats	The extent and condition of important channel, riparian and coastal habitats for fish and other aquatic organisms
		17. Condition and status of fisheries and other aquatic resources	The effort to catch, size, diversity and abundance of fish, OAA/Ps, and other important wetland-dependent biodiversity in the Basin
		18. Condition and status of ecologically significant areas	The condition of important terrestrial and aquatic ecosystems as demonstrated by the extent of natural land cover, forested area and protected status
7. Overall environment condition	The overall environmental conditions in the Lower Mekong Basin reflecting water flow, water quality, sediment and environmental assets		

3.3 Definitions of Economic Dimension Strategic and Assessment Indicators

Strategic Indicators	Indicator Definitions	Economic Assessment Indicators	Indicator Definitions
8. Economic performance of LMB water-related sectors	The gross economic output of water-related economic sectors in the Lower Mekong Basin	*19. Economic value of agriculture*	The gross annual economic performance of agriculture in the Lower Mekong Basin
		20.Economic value of hydropower	The gross annual economic performance of hydropower in the Lower Mekong Basin
		21. Economic value of navigation	The gross annual economic performance of navigation in the Lower Mekong Basin
		22. Economic value of sand mining	The gross annual economic performance of the sand mining in the Lower Mekong Basin
		23. Economic value of wetlands	The gross economic performance of wetlands in the Lower Mekong Basin
		24. Economic value of capture fisheries	The gross annual economic performance of capture fisheries in the Lower Mekong Basin
		25. Economic value of aquaculture	The gross annual economic performance of aquaculture in the Lower Mekong Basin
		26. Economic value of forestry	The gross annual economic performance of forestry in the Lower Mekong Basin
		27. Economic value of tourism and recreation	The gross annual economic performance of tourism and recreation in the Lower Mekong Basin
		28. Economic cost of river bank and coastal erosion	The gross annual economic cost of river bank and coastal erosion in the Lower Mekong Basin
		29. Economic cost of flood	The gross annual economic cost of flood damage in the Lower Mekong Basin
		30. Economic cost of drought	The gross annual economic cost of drought damage in the Lower Mekong Basin

9. Contribution to basin economy	The contribution of the Lower Mekong Basin water-related economic sectors to overall economic, food and energy security within the Basin and beyond	*31. Contribution of LMB water-related sectors to basin, national and regional GDP*	The contribution of MRC sectors within the basin to the overall basin, national and regional economies
		32. Contribution to food grain supply	The contribution of food grain production from the basin to overall basin, national and regional food security
		33. Contribution to protein supply	The contribution of protein production from the basin to overall basin, national and regional food security
		34. Contribution to power supply	The contribution of power production from the basin to overall basin, national and regional energy security

3.4 Definitions of Climate Change Dimension Strategic and Assessment Indicators

Strategic Indicators	Indicator Definitions	Climate Change Assessment Indicators	Indicator Definitions
10. Greenhouse gas emissions	The contribution of Lower Mekong Basin water-related economic sectors to global climate change	*35. Greenhouse gas emissions from LMB water-related sectors*	The net greenhouse gas emissions from LMB-water-related sectors relative to Member Country commitments under the UNFCCC
		36. Relative contribution to global emissions	The proportion of global CO2, CH4, and N2O emissions contributed by Member Countries relative to their commitments under the UNFCCC
11. Climate change trends and extremes	The effects of global climate change on regional climatic trends and extreme events with the potential to adversely affect the Basin population	*37. Changes in tropical storm frequency and intensity, and storm-surge risk*	The long-term trend in the frequency and intensity of storms, severe tropical storms and typhoons and the increased storm surge risk posed by sea-level rise
		38. Changes in temperature	The long-term trend in daily maximum and minimum temperatures
		39. Changes in precipitation	The long-term trend in rainfall patterns
		40. Extent and severity of flooding	The long-term trends in the area, depth, timing and duration of annual flooding, including at Tonle Sap; acknowledging the beneficial impacts of flooding and the need to live with floods
		41. Extent and severity of droughts	The long-term trends in the extent and severity of droughts and their timing, including at Tonle Sap

12. Adaptation to climate change	The extent to which the Basin community is taking action to prepare and live with the effects of climate change	*42. Institutional response to the effects of climate change*	The number of endorsed climate change policies and strategies within and across MRC sectors at national and provincial level; and the growth in the budget available to respond to the effects of climate change
		43. Flood protection measures	The total area of floodplain land protected by constructed embankments
		44. Drought protection measures	The capacity to protect domestic and agricultural water users from water shortages through the availability of water storage capacity and irrigation during the dry season
		45. Vulnerability to floods, droughts and storms	The combination of exposure, sensitivity and adaptive capacity of people to floods, droughts and storms as evident by population in the impact zone, losses due to floods and droughts and poverty levels

3.5 Definitions of Cooperation Dimension Strategic and Assessment Indicators

Strategic Indicators	Indicator Definitions	Cooperation Assessment Indicators	Indicator Definitions
13. Equity of benefits derived from the Mekong River System	The extent to which the benefits of the Mekong River system are shared between member countries	*46. Overall social benefits derived in each country's part of the basin*	The overall social benefits derived in each country's part of the basin as considered using the social dimension indicators for each member country
		47. Overall environment benefits derived in each country's part of the basin	The overall environment benefits derived from each country's part of the basin as considered using the environment dimension indicators for each member country
		48. Aggregate economic benefits derived from each water-related sector in each country's part of the basin	The individual and aggregate economic performance of LMB water-related sectors derived in each country's part of the basin

14. Benefits derived from cooperation	The extent of cooperation between member countries and through partnerships with others, and the value of benefits derived from knowledge sharing, and joint projects with basin-wide significance or trans-boundary impacts	*49. Joint efforts on projects of basin-wide significance and with potential trans-boundary impacts*	The total number and value of projects identified as being of basin-wide significance and with potential trans-boundary impacts
		50. Extent of knowledge sharing activities	The extent of activities to promote knowledge sharing between Member Countries and beyond, including through events, joint studies and assessments, dissemination of information products and data
		51. Partnerships between the MRC and other parties	The extent of partnerships and other cooperation between the MRC and others including dialogue partners, international and regional organisations, other river basin organisations, universities and research institutes, non-governmental organisations
		52. Proportion of benefits derived from cooperation to total gross economic value of all MRC sectors	The total value of joint projects and projects of basin-wide significance as a proportion of total gross economic value of all MRC sectors as calculated from economic dimension indicators
15. Self-finance of the MRC	The extent to which the activities of the MRC are self-financed through national contributions, in-line with the organisation's 2030 objective	*53. Proportion of MRC budget funded by national contributions during current period*	The proportion of the total MRC budget funded by national contributions during the current period

4. Implementation Approach

The working draft MRB-IF presented herein has refined the Assessment Indicators, defined the Strategic and Assessment Indicators, and prioritised the Monitoring Parameters, taking into account the difference between outcome oriented parameters and the raw monitoring data required to enable their elicitation. To implement the MRB-IF, a separate technical document will describe the methodology for applying the indicators, as well as the *Data Acquisition and Generation Action Plan* (DAGAP), which describes the roles and responsibilities, processes and arrangements for ensuring the data is available to assess the status and trends in conditions across the Lower Mekong Basin in accordance with the MRB-IF.

The methodology for calculating the Monitoring Parameters and evaluating both Strategic and Assessment Indicators is being developed to allow an auditable line-of-sight from the Strategic Indicators through the Assessment Indicators to the Monitoring Parameters and the underlying data. This line-of sight ensures a coherent narrative can be presented on the condition and potential impacts across each of the five dimensions. In essence, the approach allows:

- The Strategic Indicators to help answer the question "*What is the problem?*"
- The Assessment Indicators to then help answer the question "*Why is it a problem?*" and
- The Monitoring Parameters, the question "*What is the cause of the problem*?

Collectively the response to these questions allows a targeting of remedial actions to address the cause of any problems as precisely as possible. As illustrated in Figure 3, the draft evaluation approach to the Strategic Indicators produces action-oriented results consistent with the approach taken for the *Procedures for the Maintenance of Flows on the Mainstream* where particular thresholds point to the need to take action to address an issue when one emerges. The draft evaluation approach to the Assessment Indicators is based on a set of criteria being met or not met, drawing on the Monitoring Parameters to frame the criteria. The Monitoring Parameters are presented as both point-in-time and as time series data to illustrate current condition and trends. The general approach for each level of the framework is described in more detail below.

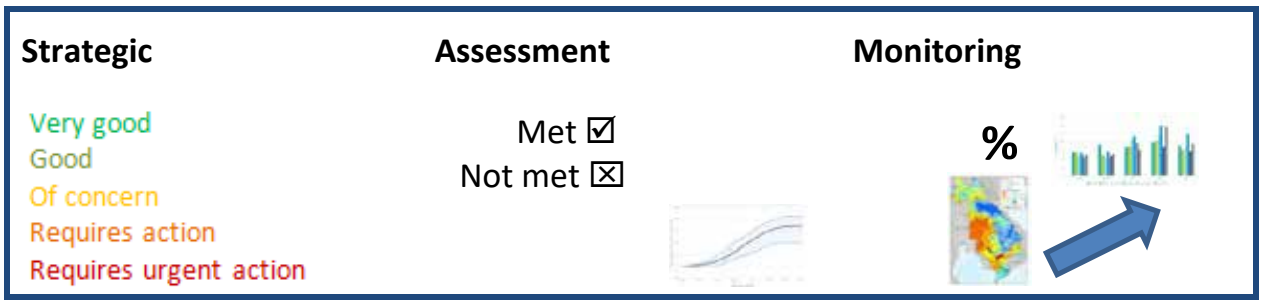


Figure 3: Overall framework for illustration of results at each level of the MRC Indicator Framework

This approach avoids the use of complicated calculations and weightings to arrive at a single score for each indicator. With such a large number of indicators and Monitoring Parameters, taking a calculation approach through several hierarchical levels would not be very transparent and would detract from the core value of a hierarchical framework, which is the progressive elaboration of issues down to their root cause. It is important the framework provides this auditable line-of-sight through each level so that a comprehensive narrative of basin condition and potential impacts can be established

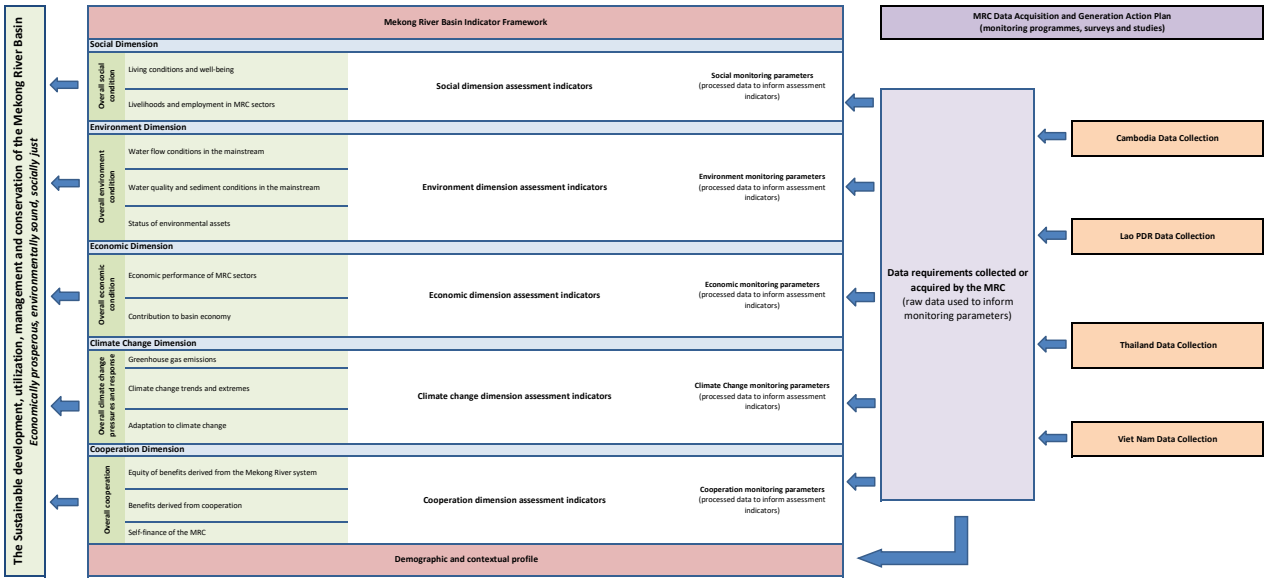
The DAGAP will identify whether the data required to implement the MRB-IF is to be collected by MRC monitoring programs or periodic surveys and studies, by the Secretariat or in a decentralised way through Member Countries, how it is to be processed and by whom, or whether it needs to be acquired from third parties at a cost or through freely available databases.

This action plan will be developed in accordance with the implementation of the *MRC Procedures for Data and Information Exchange and Sharing* and underpinned by data generation and transmission agreements with each Member Country covering all the specific datasets necessary to implement the Indicator Framework. It will be integrated into existing MRC data and information systems, supporting the organisation's role as a regional knowledge hub. The action plan will seek to identify and describe at least the following:

- All of the specific data items outlined in the Indicator Framework spreadsheet, which are required to calculate the Monitoring Parameters and therefore evaluate the Strategic and Assessment Indicators
- The categories, units, source, frequency, and scale for which the data should be collected and over what time period. The information on data source should include who is collecting it, for what purpose, and whether any particular standards are used
- The nature of any assumptions or caveats that apply to the data
- Quality control and quality assurance processes to be applied
- Any cleaning and pre-processing requirements to get the data in a usable format
- The file format for transmission and storage
- The transmission or exchange arrangements between Member Countries and the MRC secretariat including frequency of updates
- The accessibility of data to Member Countries and the general public
- Who is responsible at each step of the process

Annexes

Annexe 1. Proposed IF Structure



Annexe 2. Indicators and Parameters

Strategic Indicators		Assessment Indicators	Monitoring Parameters
Social Dimension	**Definitions**		
1. Living conditions and well-being	The level of community resilience as derived from the key water-related components of societal wellbeing that help reduce vulnerability: food, water and health security and access to electricity	1. Food Security	(i) Adequacy of dietary energy supply; (ii) Income per person; (iii) Prevalence of undernourishment; (iv) Prevalence of Infant malnutrition
		2. Water Security	(i) Adequacy of domestic water supply; (ii) Sufficiency of water for farming
		3. Water-related Health Security	(i) Access to safe water supplies; (ii) Prevelance of malnutrition; (iii) Access to sanitation; (iv) Incidence of water-borne disease
		4. Access to electricity	(i) Urban household electrification rate; (ii) Rural household electrification rate
2. Livelihoods and employment in LMB water-related sectors	The level of community resilience as derived from the key components of sustainable livelihoods that help reduce vulnerability: employment, economic security and gender equality	5. Employment in LMB water-related sectors	(i) Proportion of working age population employed in LMB water-related sectors
		6. Economic Security	(i) Sufficiency of household incomes; (ii) Sufficiency of household assets
		7. Gender equality in employment and economic engagement	(i) Female-male ratio of people employed in LMB water-related sectors; (ii) Gender equality in education; (iii) Gender equality in ownership of land
3. Overall social condition		-	-
Environmental Dimension			
4. Water flow conditions	The extent to which water flow conditions have complied with agreed reference points considered necessary for a sustainable environment	8. Compliance of dry season flows with the PMFM	(i) Daily dry season water levels; (ii) discharge [for 1:5, 1:10 and 1:20 ARI flows (at PMFM stations)]
		9. Compliance of flood season peak flows with the PMFM	(i) Daily flood season water levels; (ii) discharge [for 1:2, 1:10 and 1:20 ARI flows (at PMFM stations)]
		10. Compliance of Tonle Sap reverse flows with the PMFM	(i) Accumulated reverse flow volumes (at relevant PMFM stations)
		11. Change in the timing of onset of wet season flows	(i) Daily discharge; (ii) Date
5. Water quality and sediment conditions	The extent to which water quality and sediment conditions have complied with agreed reference points considered necessary for a sustainable environment	12. Ecological health, and compliance of water quality with the PWQ	(i) DO; (ii) pH; (iii) COD; (iv) BOD; (v) NH3; (vi) NO2-3-N; (vii) TP; (viii) TN; (ix) TSS (x) Electrical Conductivity; (xi) Heavy Metals; (xii) Faecal coliforms; (xiii) Pesticides; (xiv) Oil and grease; (xv) Phenol; (xvi) Diatoms; (xvii) Benthic macroinvertebrates; (xviii) Littoral macroinvertebrates; (xix) Zooplankton
		13. Changes in sediment transport	(i) Suspended sediment load; (ii) Bed load; (iii) Grain-size distribution of bed load; (iv) Grain-size distribution of suspended sediment load
		14. Extent of salinity intrusion in the delta	(i) Area of the delta affected by salinity >1mg/l; (ii) Area of the delta affected by salinity >4 mg/l

Strategic Indicators		Assessment Indicators	Monitoring Parameters
Social Dimension	**Definitions**		
6. Status of environmental assets	The state of the most important environmental assets and aquatic resources of the Lower Mekong Basin	15. Extent of wetland area	(i) Flooded forest area; (ii) Inundated grasslands area; (iii) Marshes and swamps area; (iv) Inundated rice fields area; (v) Mangrove area; (vi) Area of water bodies; (vii) Aquaculture area
		16. Condition of riverine, estuarine and coastal habitats	(i) Area of sand bars; (ii) Area of rocky habitats; (iii) Depth of deep pools; (iv) Area of vegetated riparian habitat; (v) Area of mangrove forest; (vi) Area of riverbank erosion; (vii) Area of coastal erosion
		17. Condition and status of fisheries and other aquatic resources	(i) Fish abundance; (ii) Fishing effort; (iii) Fish size; (iv) Fish diversity; (v) OAA/P abundance; (vi) OAA/P harvest effort; (vii) OAA/P diversity; (viii) Diversity and abundance of introduced species; (ix) Abundance of other wetland-dependent biodiversity
		18. Condition and status of ecologically significant areas	(i) Extent of natural land cover in ecologically significant areas; (ii) Protection status of ecologically significant areas; (iii) Forested land area (natural & plantation)
7. Overall environment condition		-	-
Economic Dimension			
8. Economic performance of LMB water-related sectors	The gross economic output of water-related economic sectors in the Lower Mekong Basin	19. Economic value of agriculture	(i) Irrigated agricultural production; (ii) recession rice production; (iii) rain-fed cultivation production; (iv) Riverbank garden production; (v) Agricultural prices
		20. Economic value of hydropower	(i) Hydropower production for domestic consumption; (ii) Hydropower production for export; (iii) Hydropower prices
		21. Economic value of navigation	(i) Cargo transport; (ii) Passenger transport; (iii) Transport prices
		22. Economic value of sand mining	(i) Sand mining production (ii) Sand mining prices
		23. Economic value of wetlands	(i) Flooded forest eco-services production; (ii) Inundated grasslands eco-services production; (iii) Marshes and swamps eco-services production; (iv) Mangrove eco-services production; (v) Water bodies eco-services production; (vi) Wetland eco-services prices
		24. Economic value of capture fisheries	(i) Fisheries production from rivers and major flood zones; (ii) Fisheries production from rain-fed zones; (iii) Fisheries production from large water bodies including reservoirs; (iv) Capture fisheries prices
		25. Economic value of aquaculture	(i) Aquaculture production; (ii) Aquaculture prices
		26. Economic value of forestry	(i) Forestry production (excluding flooded forests); (ii) Forestry prices
		27. Economic value of tourism and recreation	(i) Tourism and recreation revenue
		28. Economic cost of river bank and coastal erosion	(i) Riverbank erosion losses; (ii) Coastal erosion losses
		29. Economic cost of flood	(i) Annual cost of flood damages
		30. Economic cost of drought	(i) Annual cost of drought damages

Strategic Indicators		Assessment Indicators	Monitoring Parameters
Social Dimension	**Definitions**		
9. Contribution to basin economy	The contribution of the Lower Mekong Basin water-related economic sectors to overall economic, food and energy security within the Basin and beyond	31. Contribution of LMB water-related sectors to basin, national and regional GDP	(i) Proportion of basin GDP from LMB water-related sectors; (ii) Proportion of national GDP from LMB water-related sectors; (iii) Proportion of regional GDP from LMB water-related sectors
		32. Contribution to food grain supply	(i) Proportion of basin food grain demand met from basin resources; (ii) Proportion of national food grain demand met from basin resources; (iii) Proportion of regional food grain demand met from basin resources
		33. Contribution to protein supply	(i) Proportion of basin protein demand met from basin resources; (ii) Proportion of national protein demand met from basin resources; (iii) Proportion of regional protein demand met from basin resources
		34. Contribution to power supply	(i) Proportion of basin power demand met from Basin hydroelectric resources; (ii) Proportion of national power demand met from Basin hydroelectric resources; (iii) Proportion of regional power demand met from Basin hydroelectric resources
Climate Change Dimension			
10. Greenhouse gas emissions	The contribution of Lower Mekong Basin water-related economic sectors to global climate change	35. Greenhouse gas emissions from LMB water-related sectors	(i) GHG emissions from energy; (ii) GHG emissions from agriculture; (iii) GHG emissions from other land use, land use change and forestry; (iv) Reduced GHG gas emissions from energy production due to hydropower
		36. Relative contribution to global emissions	(i) Emissions of CO2; (ii) Emissions of CH4; (iii) Emissions of N2O
11. Climate change trends and extremes	The effects of global climate change on regional climatic trends and extreme events with the potential to adversely affect the Basin population	37. Changes in tropical storm frequency and intensity, and storm surge risk	(i) No. and wind strength of severe tropical storms; (ii) No. and wind strength of tropical storms; (iii) No. and wind strength of typhoons; (iv) Sea-level rise
		38. Changes in temperatures	(i) Daily maximum temperature; (ii) Daily minimum temperature; (iii) Number of hot days; (iv) Number of cold nights; (v) Number of cold days; (vi) Number of warm nights
		39. Changes in precipitation	(i) Daily total precipitation; (ii) 1-day maximum precipitation; (iii) 5-day maximum precipitation; (iv) Number of consecutive wet days; (v) Number of consecutive dry days
		40. Extent and severity of flooding	(i) Annual flooded area; (ii) Average flood depth; (iii) Average flood duration; (iv) Population affected by flood; (v) Timing of onset of flood; (vi) Timing of offset of flood; (vii) Annual maximum flooded area at Tonle Sap
		41. Extent and severity of drought	(i) Annual area of meteorological drought (ii) Annual area of hydrological drought; (iii) Annual area of agricultural drought; (iv) Population affected by drought (v) Timing of onset of drought; (vi) Timing of offset of drought; (vii) Annual drought severity at Tonle Sap

Strategic Indicators		Assessment Indicators	Monitoring Parameters
Social Dimension	**Definitions**		
12. Adaptation to climate change	The extent to which the Basin community is taking action to prepare and live with the effects of climate change	42. Institutional response to the effects of climate change	(i) Policies and strategies for climate change response; (ii) Budget for climate change response; (iii) Number of awareness-raising activities; (iv) International climate finance
		43. Flood protection measures	(i) Area of urban land protected by embankments/levees; (ii) Area of agricultural land protected by embankments/levees
		44. Drought protection measures	(i) Proportion of irrigable land that is irrigated; (ii) Volume of available water storage
		45. Vulnerability to floods, droughts and storms	(i) Exposure (impact zone); (ii) Sensitivity (damage/losses); (iii) Adaptive capacity (income/poverty); (iv) Disaster risk management planning at national and local level
Cooperation Dimension			
13. Equity of benefits derived from the Mekong River system	The extent to which the benefits derived from the Mekong River system are shared between member countries	46. Overall social benefits derived in each country's part of the basin	-
		47. Overall environment benefits derived in each country's part of the basin	-
		48. Aggregate economic benefits derived from each water-related sector in each country's part of the basin	-
14. Benefits derived from cooperation	The extent of cooperation between member countries and through partnerships with others, and the value of benefits derived from knowledge sharing, and joint projects with basin-wide significance or trans-boundary impacts	49. Joint efforts on projects of basin-wide significance and with potential trans-boundary impacts	(i) Quantity of projects of basin-wide significance; (ii) Value of projects of basin-wide significance; (iii) Quantity of trans-boundary projects notified; (iv) Value of trans-boundary projects notified
		50. Extent of knowledge sharing activities	(i) Number of events (symposia; fora; training) held; (ii) Number of joint studies and assessments; (iii) Number of information products disseminated; (iv) Number of data downloads
		51. Partnerships between the MRC and other parties	(i) Number of partnership and cooperation agreements in place; (ii) Number of joint projects with other parties; (iii) Value of joint projects with other parties
		52. Proportion of benefits derived from cooperation to total net economic value of all LMB water-related sectors	(i) Value of joint projects, transboundary projects and projects of basin-wide significance; (ii) Aggregate economic value of LMB water-related sectors

Strategic Indicators		Assessment Indicators	Monitoring Parameters
Social Dimension	**Definitions**		
15. Self-finance of the MRC	The extent to which the activities of the MRC are self-financed through national contributions, in-line with the organisation's 2030 objective	53. Proportion of MRC budget funded by national contributions during current period	(i) MRC budget; (ii) National contributions to MRC budget
Basin demographic and contextual profile			

Annexe 3. Data requirements

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Social	Living Conditions and Wellbeing	Food Security	Adequacy of dietary energy supply	Population	Rural average	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Food Security	Adequacy of dietary energy supply	Quantity of rice produced for food	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Social	Living Conditions and Wellbeing	Food Security	Adequacy of dietary energy supply	Proportion of dietary energy coming from rice	-	%	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Food Security	Income per person	Household income/ expenditure	-	US$/day/ HH	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Food Security	Income per person	Household size	-	No./HH	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Food Security	Prevalence of undernourishment	Proportion of population undernourished	-	%	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Food Security	Prevalence of infant malnutrition	Proportion of children <5 yrs old exhibiting stunting	-	%	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Food Security	Prevalence of infant malnutrition	Proportion of children <5 yrs old exhibiting wasting	-	%	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water Security	Adequacy of domestic water supply	Households with access to water supplies from an improved source	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Social	Living Conditions and Wellbeing	Water Security	Adequacy of domestic water supply	Total number of households within each spatial unit	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water Security	Sufficiency of water for farming	Irrigation area within each spatial unit	All crops	km2	Five yearly	Five yearly	Smallest unit possible (at least province)	MRC Irrigation Database	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water Security	Sufficiency of water for farming	Area with moderate/high risk of drought within each spatial unit	-	km2	Five yearly	Five yearly	Smallest unit possible (at least province)	MRC Drought Database	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Access to safe water supplies	Households with access to water supplies that meet drinking water standards	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Access to safe water supplies	Total number of households within each spatial unit	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Prevalence of malnutrition	Proportion of population suffering malnutrition	-	%	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Access to sanitation	Households with access to sanitation facilities	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Access to sanitation	Total number of households within each spatial unit	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Incidence of water-borne disease	Population	Rural average	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Incidence of water-borne disease	No. of reported cases of malaria	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Incidence of water-borne disease	No. of reported cases of dengue	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Water-related Health Security	Incidence of water-borne disease	No. of reported outbreaks of cholera	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Social	Living Conditions and Wellbeing	Access to electricity	Urban household electrification rate	Urban households with access to electricity supply	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Access to electricity	Urban household electrification rate	Total number of urban households within each spatial unit	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Access to electricity	Rural household electrification rate	Rural households with access to electricity supply	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Living Conditions and Wellbeing	Access to electricity	Rural household electrification rate	Total number of rural households within each spatial unit	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Employment in LMB water-related sectors sectors	Proportion of working age population employed in water related sectors	Working age population	15-64 yrs	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Employment in LMB water-related sectors sectors	Proportion of working age population employed in water related sectors	No. of people primarily employed in each LMB water-related sector	All sectors	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Employment in LMB water-related sectors sectors	Proportion of working age population employed in water related sectors	Employment rate across the basin	-	%	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Employment in LMB water-related sectors sectors	Proportion of working age population employed in water related sectors	Gross annual economic value of each sector	All sectors	US$/ annum	Five yearly	Five yearly	Smallest unit possible (at least province)	Calculated by MRC	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Economic Security	Sufficiency of household income	Household income/ expenditure	-	US$/day/ HH	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Economic Security	Sufficiency of household income	Household size	Rural average	No./HH	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Economic Security	Sufficiency of household assets	Household asset value	-	US$/HH	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Social	Livelihoods and employment in LMB water-related sectors	Economic Security	Sufficiency of household assets	No. of rural households owning land	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Economic Security	Sufficiency of household assets	Total number of rural households within each spatial unit	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Gender equality in employment and economic engagement	Female-male ratio of people employed in LMB water-related sectors	Number of jobs in each LMB water-related sector	All sectors	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Gender equality in employment and economic engagement	Female-male ratio of people employed in LMB water-related sectors	Number of jobs in each LMB water-related sector occupied by females	All sectors	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Gender equality in employment and economic engagement	Gender equality in education	Number of girls and boys attending primary education	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Gender equality in employment and economic engagement	Gender equality in education	Number of primary age girls and boys in the community	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Gender equality in employment and economic engagement	Gender equality in ownership of land	Number of agricultural households headed by males	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Gender equality in employment and economic engagement	Gender equality in ownership of land	Number of agricultural households headed by females	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Social	Livelihoods and employment in LMB water-related sectors	Gender equality in employment and economic engagement	Gender equality in ownership of land	Number of agricultural households headed by males that own land	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Social	Livelihoods and employment in LMB water-related sectors	Gender equality in employment and economic engagement	Gender equality in ownership of land	Number of agricultural households headed by females that own land	-	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic national survey
Environment	Water flow conditions in the mainstream	Compliance of dry season flows with the PMFM	Dry season water levels	Daily water levels	-	m	Daily	Monthly	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of dry season flows with the PMFM	Discharge	Stage	-	m	Daily	Monthly	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of dry season flows with the PMFM	Discharge	Channel cross-sectional area	-	m2	Annual	Annual	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of dry season flows with the PMFM	Discharge	Flow	-	m3/s	Annual	Annual	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of flood season peak flows with the PMFM	Flood season water levels	Daily water levels	-	m	Daily	Monthly	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of flood season peak flows with the PMFM	Discharge	Stage	-	m	Daily	Monthly	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of flood season peak flows with the PMFM	Discharge	Channel cross-sectional area	-	m2	Annual	Annual	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of flood season peak flows with the PMFM	Discharge	Flow	-	m3/s	Annual	Annual	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of Tonle Sap Reverse Flow with the PMFM	Accumulated reverse flow volume	Daily water levels	-	m	Daily	Monthly	Prek Kdam monitoring station	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Compliance of Tonle Sap Reverse Flow with the PMFM	Accumulated reverse flow volume	Channel cross-sectional area	-	m2	Annual	Annual	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Water flow conditions in the mainstream	Compliance of Tonle Sap Reverse Flow with the PMFM	Accumulated reverse flow volume	Flow	-	m3/s	Annual	Annual	PMFM Stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Change in the timing of onset of wet season flows	Discharge	Daily water levels	-	m	Daily	Monthly	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Change in the timing of onset of wet season flows	Discharge	Channel cross-sectional area	-	m2	Annual	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Change in the timing of onset of wet season flows	Discharge	Flow	-	m3/s	Annual	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Change in the timing of onset of wet season flows	Discharge	Date of onset	-	day	Annual	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water flow conditions in the mainstream	Change in the timing of onset of wet season flows	Discharge	Date of offset	-	day	Annual	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	DO	DO	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	pH	pH	-	-	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	COD	COD	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	BOD	BOD	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	NH3	NH4-N	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	NH3	Temp	-	˚C	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	NH3	pH	-	-	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	NO2-3-N	NO2-3-N	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Total Phosphorous	Total Phosphorous	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Total Nitrogen	Total Nitrogen	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Total Suspended Solids	Total Suspended Solids	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Electrical Conductivity	Electrical Conductivity	-	mS/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Heavy Metals	Arsenic	-	mg/L	Five yearly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Heavy Metals	Lead	-	mg/L	Five yearly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Periodic MRC study
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Heavy Metals	Cadmium	-	mg/L	Five yearly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Periodic MRC study
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Heavy Metals	Mercury	-	mg/L	Five yearly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Periodic MRC study
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Heavy Metals	Cyanide	-	mg/L	Five yearly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Periodic MRC study
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Heavy Metals	Chromium Hexavalent	-	mg/L	Five yearly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Periodic MRC study
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Faecal coliforms	Faecal coliforms	-	mg/L	Monthly	Annual	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Pesticides	Pesticides	-	mg/L	Monthly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Periodic MRC study
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Oil and grease	Oil and grease	-	mg/L	Monthly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Phenol	Phenol	-	mg/L	Monthly	Five yearly	Water Quality monitoring stations	MRC Water Quality records	Excel Table	Environment Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Diatoms	No. of diatoms	-	No.	Biennial	Biennial	EHM monitoring stations	MRC EHM records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Benthic macroinvertebrates	No. of benthic invertebrates	-	No.	Biennial	Biennial	EHM monitoring stations	MRC EHM records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Littoral macroinvertebrates	No. of littoral invertebrates	-	No.	Biennial	Biennial	EHM monitoring stations	MRC EHM records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Ecological health, and water quality compliance with the PWQ	Zooplankton	No. of zooplankton	-	No.	Biennial	Biennial	EHM monitoring stations	MRC EHM records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Suspended sediment load	Concentration of suspended sediments	-	mg/L	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Suspended sediment load	Stage	-	m	Daily	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Suspended sediment load	Channel cross-sectional area	-	m2	Annual	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Suspended sediment load	Flow	-	m3/s	Annual	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Bed load	Volume of bed material	-	Ton	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Grain-size distribution of suspended sediment load	Quantity of sand in suspended sample	-	g	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Grain-size distribution of suspended sediment load	Quantity of silt in suspended sample	-	g	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Grain-size distribution of suspended sediment load	Quantity of clay in suspended sample	-	g	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Grain-size distribution of bed load	Quantity of sand in bed sample	-	g	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Grain-size distribution of bed load	Quantity of silt in bed sample	-	g	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Grain-size distribution of bed load	Quantity of clay in bed sample	-	g	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Changes in sediment transport	Grain-size distribution of bed load	Quantity of gravel in bed sample	-	g	Monthly	Annual	Mainstream monitoring stations	MRC Hydrological database	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Extent of salinity intrusion in the Delta	Area affected by salinity >1 mg/L	Salinity concentration at Delta monitoring stations	-	mg/L	Monthly	Annual	Mekong Delta monitoring stations	MRC Water Quality records	Excel Table	Technical Division	Routine MRC monitoring
Environment	Water quality and sediment conditions in the mainstream	Extent of salinity intrusion in the Delta	Area affected by salinity >4 mg/L	Salinity concentration at Delta monitoring stations	-	mg/L	Monthly	Annual	Mekong Delta monitoring stations	MRC Water Quality records	Excel Table	Technical Division	Routine MRC monitoring
Environment	Status of environmental assets	Extent of wetland area	Flooded forest area	Polygons of FAO land cover class type FF	Basin	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Extent of wetland area	Flooded forest area	Polygons of FAO land cover class type FF	Tonle Sap	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Extent of wetland area	Inundated grassland area	Polygons of FAO land cover class type GR	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Extent of wetland area	Marsh or swamp area	Polygons of FAO land cover class type M/S	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Extent of wetland area	Inundated rice field area	Polygons of FAO land cover class type PR	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Extent of wetland area	Mangrove area	Polygons of FAO land cover class type Mn	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Status of environmental assets	Extent of wetland area	Water body area	Polygons of FAO land cover class type WA	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Extent of wetland area	Aquaculture area	Polygons of FAO land cover class type AQ	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of sandy habitat	Area of exposed sandy habitat	-	km2	Five yearly	Five yearly	Mainstream channel; Each country	RS analysis; National Data	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of sandy habitat	Area of inundated sandy habitat	-	km2	Five yearly	Five yearly	Mainstream channel; Each country	RS analysis; National Data	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of sandy habitat	Daily maximum water level	-	m	Daily	Five yearly	Mainstream stations; Each country	MRC Hydrological database	Excel Table	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of sandy habitat	Daily minimum water level	-	m	Daily	Five yearly	Mainstream stations; Each country	MRC Hydrological database	Excel Table	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of rocky habitat	Area of rocky habitats	-	km2	Five yearly	Five yearly	Mainstream channel; Each country	RS analysis; National Data	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of rocky habitat	Daily maximum water level	-	m	Daily	Five yearly	Mainstream stations; Each country	MRC Hydrological database	Excel Table	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of rocky habitat	Daily minimum water level	-	m	Daily	Five yearly	Mainstream stations; Each country	MRC Hydrological database	Excel Table	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Average depth of deep pools	Location of deep pools	-	lat. Long.	Five yearly	Five yearly	Mainstream channel; Each country	Basin surveys; National Data	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Average depth of deep pools	Daily maximum water level	-	m	Daily	Five yearly	Mainstream stations; Each country	MRC Hydrological database	Excel Table	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Average depth of deep pools	Daily minimum water level	-	m	Daily	Five yearly	Mainstream stations; Each country	MRC Hydrological database	Excel Table	Technical Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of vegetated riparian habitat	Area of riparian zone containing vegetation	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	RS analysis; National Data	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of vegetated riparian habitat	Total area of riparian zone	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	RS analysis; National Data	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Mangrove area	Polygons of FAO land cover class type Mn	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of riverbank erosion	Net area of land lost to riverbank erosion	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	RS analysis; National Data	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition of riverine, estuarine and coastal habitat	Area of coastal erosion	Net area of land lost to coastal erosion	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	RS analysis; National Data	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish abundance	Biomass of migratory fish landed	-	tonnes	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish abundance	Biomass of non-migratory fish landed	-	tonnes	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fishing effort	Time spent fishing per gear (gillnets)	-	hours	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fishing effort	Total amount of gear used (gillnets)	-	m2	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish size	Average length of fish caught	-	cm	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of catch by species	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of white fish	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of grey fish	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of black fish	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of generalists	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of estuarine residents	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of anadromous fish	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Compositiong of catadromous fish	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of marine visitors	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Fish diversity	Composition of exotic species	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	OAA/P abundance	Biomass of OAA/P harvested	-	tonnes	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine National monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	OAA/P harvest effort	Time spent harvesting OAA/P	-	hours	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine National monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	OAA/P diversity	Harvest of Crabs	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine National monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	OAA/P diversity	Harvest of Shrimp	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine National monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	OAA/P diversity	Harvest of Water Snakes	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine National monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	OAA/P diversity	Harvest of Other OAA/P	-	kg and %	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine National monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Diversity and abundance of introduced species	Biomass of introduced species caught	-	tonnes	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Diversity and abundance of introduced species	Number of different introduced species caught	-	No.	Annual	Annual	Whole-of-basin; Each country	MRC Fisheries records	Excel Table	Environment Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Abundance of other wetland-dependent biodiversity	No. of Dolphins	-	No.	Biennial	Biennial	Whole-of-basin; Each country	Basin surveys; National Data	Excel Table	Environment Division	Routine national monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Abundance of other wetland-dependent biodiversity	No. of water-birds	-	No.	Biennial	Biennial	Whole-of-basin; Each country	Basin surveys; National Data	Excel Table	Environment Division	Routine national monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Abundance of other wetland-dependent biodiversity	No. of water-bird species	-	No.	Biennial	Biennial	Whole-of-basin; Each country	Basin surveys; National Data	Excel Table	Environment Division	Routine national monitoring
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Abundance of other wetland-dependent biodiversity	No. of threatened aquatic species extinct	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	IUCN Red List	Excel Table	Environment Division	Periodic MRC review
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Abundance of other wetland-dependent biodiversity	No. of threatened aquatic species critically endangered	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	IUCN Red List	Excel Table	Environment Division	Periodic MRC review
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Abundance of other wetland-dependent biodiversity	No. ofthreatened aquatic species endangered	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	IUCN Red List	Excel Table	Environment Division	Periodic MRC review
Environment	Status of environmental assets	Condition and status of fisheries and other aquatic resources	Abundance of other wetland-dependent biodiversity	No. of threatened aquatic species vulnerable	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	IUCN Red List	Excel Table	Environment Division	Periodic MRC review
Environment	Status of environmental assets	Condition and status of ecological significant areas	Extent of natural land cover in ecologically significant areas	Area of natural land cover within environmentally significant areas	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Extent of natural land cover in ecologically significant areas	Total area of environmentally significant areas	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Environment Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Status of environmental assets	Condition and status of ecological significant areas	Protection status of ecologically significant areas	Area of each environmentally significant area covered by IUCN protection category	1a (SNR)	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National Data	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Protection status of ecologically significant areas	Area of each environmentally significant area covered by IUCN protection category	1b (Wilderness Area)	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National Data	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Protection status of ecologically significant areas	Area of each environmentally significant area covered by IUCN protection category	II (National Park)	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National Data	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Protection status of ecologically significant areas	Area of each environmentally significant area covered by IUCN protection category	III (NMF)	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National Data	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Protection status of ecologically significant areas	Area of each environmentally significant area covered by IUCN protection category	IV (H/SMA)	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National Data	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Protection status of ecologically significant areas	Area of each environmentally significant area covered by IUCN protection category	V (PL/S)	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National Data	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Protection status of ecologically significant areas	Area of each environmentally significant area covered by IUCN protection category	VI (PA-SU)	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National Data	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Forested land area	Area of broadleaved deciduous	Natural	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Environment Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Environment	Status of environmental assets	Condition and status of ecological significant areas	Forested land area	Area of broadleaved evergreen	Natural	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Forested land area	Area of industrial plantation	Plantation	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Forested land area	Area of forest plantation	Plantation	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Forested land area	Area of bamboo forest	Natural	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Environment	Status of environmental assets	Condition and status of ecological significant areas	Forested land area	Area of coniferous forest	Natural	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Landcover database	Excel Table; GIS Shape File	Environment Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of agriculture	Irrigated agriculture production	Total cropped area for each crop	Wet season rice; dry season rice; maize; vegetables and fruit	km2	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Irrigated agriculture production	Annual yield for each crop	Wet season rice; dry season rice; maize; vegetables and fruit	Tons/ha	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Recession rice production	Total cropped area	Recession rice	km2	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Recession rice production	Annual yield	Recession rice	Tons/ha	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Riverbank gardens	Total cropped area for each crop	Main garden crops	km2	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Economic performance of MRC sectors	Economic value of agriculture	Riverbank gardens	Annual yield for each crop	Main garden crops	Tons/ha	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Rain fed cultivation	Total cropped area for each crop	Rain fed rice; maize; vegetables and other upland and lowland crops	km2	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Rain fed cultivation	Annual yield for each crop	Rain fed rice; maize; vegetables and other upland and lowland crops	Tons/ha	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Agricultural prices	Average farm gate price for each irrigated crop	Wet season rice; dry season rice; maize; vegetables and fruit	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Agricultural prices	Average farm gate price for recession rice	Recession rice	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Agricultural prices	Average farm gate price for each riverbank garden crop	Main garden crops	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of agriculture	Agricultural prices	Average farm gate price for each rain-fed crop	Rain fed rice; maize; vegetables and other upland and lowland crops	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of hydropower	Hydropower production for domestic consumption	Total production of hydropower for domestic consumption	All applicable hydropower plants	MWh	Annual	Five yearly	Smallest unit possible (at least province)	MRC Hydropower database; National Data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of hydropower	Hydropower production for export	Total production of hydropower exported	All applicable hydropower plants	MWh	Annual	Five yearly	Smallest unit possible (at least province)	MRC Hydropower database; National Data	Excel Table	Planning Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Economic performance of MRC sectors	Economic value of hydropower	Hydropower prices	Average unit price of power in domestic consumption	-	US$/ MWh	Annual	Five yearly	Smallest unit possible (at least province)	MRC Hydropower database; National Data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of hydropower	Hydropower prices	Average unit price of power in import countries	-	US$/ MWh	Annual	Five yearly	Smallest unit possible (at least province)	MRC Hydropower database; National Data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of navigation	Volume of cargo transport	Annual total quantity of ITW cargo transported along the mainstream	For all applicable boats	Tons/ha	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of navigation	Passenger transport numbers	Annual total number of passenger trips made along the mainstream	For all applicable boats	Trips	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of navigation	Navigation prices	Average price of transporting cargo	For all applicable cargo types	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of navigation	Navigation prices	Average price of each passenger trip	For all trips	US$/trip	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of sand mining	Sand mining production	Annual total quantity of aggregates, sands and sediments abstracted for commercial purposes	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of sand mining	Sand mining prices	Average selling price of aggregates, sands and sediments	-	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of wetlands	Flooded forest ecosystem services production	Total area of flooded forest	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Wetland database	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of wetlands	Wetland ecosystem services prices	Unit area productive value of flooded forests	-	US$/ha	Five yearly	Five yearly	Whole-of-basin; Each country	Basin and national reports	Excel Table	Planning Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Economic performance of MRC sectors	Economic value of wetlands	Inundated grassland ecosystem services production	Total area of inundated grassland	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Wetland database	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of wetlands	Wetland ecosystem services prices	Unit area productive value of inundated grassland	-	US$/ha	Five yearly	Five yearly	Whole-of-basin; Each country	Basin and national reports	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of wetlands	Marshes and swamps ecosystem services production	Total area of marshes and swamps	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Wetland database	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of wetlands	Wetland ecosystem services prices	Unit area productive value of marshes and swamps	-	US$/ha	Five yearly	Five yearly	Whole-of-basin; Each country	Basin and national reports	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of wetlands	Mangrove ecosystem services production	Total area of mangrove	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Wetland database	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of wetlands	Wetland ecosystem services prices	Unit area productive value of mangroves	-	US$/ha	Five yearly	Five yearly	Whole-of-basin; Each country	Basin and national reports	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of wetlands	Water bodies ecosystem services production	Total area of water bodies	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Wetland database	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of wetlands	Wetland ecosystem services prices	Unit area productive value of water bodies	-	US$/ha	Five yearly	Five yearly	Whole-of-basin; Each country	Basin and national reports	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of capture fisheries	Fisheries production from rivers and major flood zones	Total annual production for each of the main fish species and OAAs	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of capture fisheries	Fisheries production from rain-fed zones	Total annual production for each of the main fish species and OAAs	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of capture fisheries	Fisheries production from large water bodies including reservoirs	Total annual production for each of the main fish species and OAAs	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic value of capture fisheries	Capture fisheries prices	Average price of fish species and OAAs at landing site	-	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Economic performance of MRC sectors	Economic value of aquaculture	Aquaculture production	Total annual production for each of the main fish species and OAAs	Fish	Ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of aquaculture	Aquaculture production	Total annual production for each of the main fish species and OAAs	Shrimp	Ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of aquaculture	Aquaculture production	Total annual production for each of the main fish species and OAAs	Other	Ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of aquaculture	Aquaculture prices	Average price of fish species and OAAs at farm gate	Fish	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of aquaculture	Aquaculture prices	Average price of fish species and OAAs at farm gate	Shrimp	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of aquaculture	Aquaculture prices	Average price of fish species and OAAs at farm gate	Other	US$/ton	Annual	Five yearly	Smallest unit possible (at least province)	MRC Fisheries records; National data	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of forestry	Forestry production	Total area of forestry	For each main species	km2	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of forestry	Forestry production	Average unit timber log production	For each main species	m3/ha	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of forestry	Forestry production	Average timber log unit price	For each main species	US$/m3	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of forestry	Forestry production	Average value of other non-timber forest products	Each main product (e.g. rattan)	US$	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of tourism and recreation	Tourism and recreation revenue	No. of tourists visiting the basin	Domestic	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Economic performance of MRC sectors	Economic value of tourism and recreation	Tourism and recreation revenue	No. of tourists visiting the basin	International	No.	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of tourism and recreation	Tourism and recreation revenue	Average length of trip	Domestic	days	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of tourism and recreation	Tourism and recreation revenue	Average length of trip	International	days	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of tourism and recreation	Tourism and recreation revenue	Average spend per trip-day	Domestic	US$/day	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic value of tourism and recreation	Tourism and recreation revenue	Average spend per trip-day	International	US$/day	Five yearly	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Economic performance of MRC sectors	Economic cost of riverbank and coastal erosion	River bank erosion losses	Annual area lost to river bank erosion	All land types	km2	Annual	Five yearly	Smallest unit possible (at least province)	Basin surveys; National Data	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic cost of riverbank and coastal erosion	River bank erosion losses	Average value of land lost to bank erosion	All land types	US$/ha	Annual	Five yearly	Smallest unit possible (at least province)	Basin surveys; National Data	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic cost of riverbank and coastal erosion	Coastal erosion losses	Annual area lost to coastal erosion	All land types	km2	Annual	Five yearly	Smallest unit possible (at least province)	Basin surveys; National Data	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic cost of riverbank and coastal erosion	Coastal erosion losses	Average value of land lost to coastal erosion	All land types	US$/ha	Annual	Five yearly	Smallest unit possible (at least province)	Basin surveys; National Data	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic cost of flood	Annual cost of flood damages	Annual cost of lost production for each crop type due to flooding	In each country	ton/ha	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic MRC study
Economic	Economic performance of MRC sectors	Economic cost of flood	Annual cost of flood damages	Government reported costs of flood damage to public and private infrastructure	In each country	US$/ annum	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Economic performance of MRC sectors	Economic cost of drought	Annual cost of drought damages	Government reported costs of drought damage	In each country	US$/ annum	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution of LMB water-related sectors to basin, national and regional GDP	Proportion of basin GDP from LMB water-related sectors	Aggregate gross value of production of each LMB water-related sector	In each country	US$/ annum	Annual	Five yearly	Smallest unit possible (at least province)	Calculated by MRC	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution of LMB water-related sectors to basin, national and regional GDP	Proportion of basin GDP from LMB water-related sectors	Aggregate gross value of production in the basin	In each country	US$/ annum	Annual	Five yearly	Smallest unit possible (at least province)	Calculated by MRC	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution of LMB water-related sectors to basin, national and regional GDP	Proportion of national GDP from LMB water-related sectors	Aggregate gross value of production of each LMB water-related sector	In each country	US$/ annum	Annual	Five yearly	Smallest unit possible (at least province)	Calculated by MRC	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution of LMB water-related sectors to basin, national and regional GDP	Proportion of national GDP from LMB water-related sectors	National GDP	In each country	US$/ annum	Annual	Five yearly	Smallest unit possible (at least province)	Calculated by MRC	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution of LMB water-related sectors to basin, national and regional GDP	Proportion of regional GDP from LMB water-related sectors	Aggregate gross value of production of each LMB water-related sector	In each country	US$/ annum	Annual	Five yearly	Smallest unit possible (at least province)	Calculated by MRC	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution of LMB water-related sectors to basin, national and regional GDP	Proportion of regional GDP from LMB water-related sectors	National GDP	In each country	US$/ annum	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to food grain supply	Proportion of basin food grain demand met from basin resources	Basin food grain demand (total produced + imported)	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to food grain supply	Proportion of basin food grain demand met from basin resources	Annual basin food grain production	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Contribution to basin economy	Contribution to food grain supply	Proportion of national food grain demand met from basin resources	National food grain demand (total produced + imported	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to food grain supply	Proportion of national food grain demand met from basin resources	Annual basin food grain production	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to food grain supply	Proportion of regional food grain demand met from basin resources	National food grain demand (total produced + imported)	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to food grain supply	Proportion of regional food grain demand met from basin resources	Annual basin food grain production	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of basin protein demand met form basin resources	Basin protein demand (total produced + imported)	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of basin protein demand met form basin resources	Annual basin protein production	Capture fisheries	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of basin protein demand met form basin resources	Annual basin protein production	Aquaculture	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of basin protein demand met form basin resources	Annual basin protein production	Livestock meat	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of national protein demand met form basin resources	National protein demand (total produced + imported)	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of national protein demand met form basin resources	Annual basin protein production	Capture fisheries	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of national protein demand met form basin resources	Annual basin protein production	Aquaculture	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of national protein demand met form basin resources	Annual basin protein production	Livestock meat	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of regional protein demand met form basin resources	National protein demand (total produced + imported)	-	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of regional protein demand met form basin resources	Annual basin protein production	Capture fisheries	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of regional protein demand met form basin resources	Annual basin protein production	Aquaculture	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to protein suppy	Proportion of regional protein demand met form basin resources	Annual basin protein production	Livestock meat	Ton	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to power supply	Proportion of basin power demand met from basin hydroelectric resources	Basin electric power demand (total produced + imported - exported)	-	kWh	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to power supply	Proportion of basin power demand met from basin hydroelectric resources	Annual basin hydroelectric generation	-	kWh	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to power supply	Proportion of national power demand met from basin hydroelectric resources	National electric power demand (total produced + imported - exported)	-	kWh	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to power supply	Proportion of national power demand met from basin hydroelectric resources	Annual basin hydroelectric generation	-	kWh	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Economic	Contribution to basin economy	Contribution to power supply	Proportion of regional power demand met from basin hydroelectric resources	National electric power demand (total produced + imported - exported)	-	kWh	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Economic	Contribution to basin economy	Contribution to power supply	Proportion of regional power demand met from basin hydroelectric resources	Annual basin hydroelectric generation	-	kWh	Annual	Five yearly	Smallest unit possible (at least province)	National Statistics	Excel Table	Planning Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Greenhouse gas emissions from LMB water-related sectors	Greenhouse gas emissions from energy	Emissions from energy generation	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Greenhouse gas emissions from LMB water-related sectors	Greenhouse gas emissions from agriculture	Emissions from agriculture	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Greenhouse gas emissions from LMB water-related sectors	Greenhouse gas emissions from other land use, land use change and forestry	Emissions from land use, land use change and forestry	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Greenhouse gas emissions from LMB water-related sectors	Reduced greenhouse gas emissions from energy due to hydropower	Emissions from hydropower relative to power produced	-	Tonnes CO2-e / kWh	Annual	Five yearly	Regional; Each country	National Statistics	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Greenhouse gas emissions from LMB water-related sectors	Reduced greenhouse gas emissions from energy due to hydropower	Emissions from other power sources relative to power produced	-	Tonnes CO2-e / kWh	Annual	Five yearly	Regional; Each country	National Statistics	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Greenhouse gas emissions from LMB water-related sectors	Reduced greenhouse gas emissions from energy due to hydropower	Total amount of hydropower generated	-	kWh	Annual	Five yearly	Regional; Each country	National Statistics	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Relative contribution to global emissions	Emissions of carbon dioxide	Annual basin emissions of CO2	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Relative contribution to global emissions	Emissions of carbon dioxide	Annual global emissions of CO2	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Climate Change	Greenhouse gas emissions	Relative contribution to global emissions	Emissions of methane	Annual basin emissions of CH4	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Relative contribution to global emissions	Emissions of methane	Annual global emissions of CH4	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Relative contribution to global emissions	Emissions of nitrous oxide	Annnual basin emissions of N2O	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring
Climate Change	Greenhouse gas emissions	Relative contribution to global emissions	Emissions of nitrous oxide	Annual global emissions of N2O	-	Tonnes CO2-e	Annual	Five yearly	Regional; Each country	National Statistics; UNFCCC; CAIT Climate Data	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in tropical storm frequency and intensity and storm surge risk	Number and wind strength of tropical storms	Annual number of tropical storms	-	No.	Annual	Five yearly	Whole-of-basin; Each country	Joint Typhoon Warning Center (Western North Pacific)	Excel Table	Technical Division	International Organisation
Climate Change	Climate change trends and extremes	Changes in tropical storm frequency and intensity and storm surge risk	Number and wind strength of tropical storms	Intensity (wind speed) of each tropical storm	-	km/hour	Annual	Five yearly	Whole-of-basin; Each country	Joint Typhoon Warning Center (Western North Pacific)	Excel Table	Technical Division	International Organisation
Climate Change	Climate change trends and extremes	Changes in tropical storm frequency and intensity and storm surge risk	Number and wind strength of severe tropical storms	Annual number of severe tropical storms	-	No.	Annual	Five yearly	Whole-of-basin; Each country	Joint Typhoon Warning Center (Western North Pacific)	Excel Table	Technical Division	International Organisation
Climate Change	Climate change trends and extremes	Changes in tropical storm frequency and intensity and storm surge risk	Number and wind strength of severe tropical storms	Intensity (wind speed) of each severe tropical storm	-	km/hour	Annual	Five yearly	Whole-of-basin; Each country	Joint Typhoon Warning Center (Western North Pacific)	Excel Table	Technical Division	International Organisation

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Climate Change	Climate change trends and extremes	Changes in tropical storm frequency and intensity and storm surge risk	Number and wind strength of typhoons	Annual number of typhoons	-	No.	Annual	Five yearly	Whole-of-basin; Each country	Joint Typhoon Warning Center (Western North Pacific)	Excel Table	Technical Division	International Organisation
Climate Change	Climate change trends and extremes	Changes in tropical storm frequency and intensity and storm surge risk	Number and wind strength of typhoons	Intensity (wind speed) of each typhoon	-	km/hour	Annual	Five yearly	Whole-of-basin; Each country	Joint Typhoon Warning Center (Western North Pacific)	Excel Table	Technical Division	International Organisation
Climate Change	Climate change trends and extremes	Changes in tropical storm frequency and intensity and storm surge risk	Sea-level rise	Mean sea-level at the Delta coast	-	m	Annual	Five yearly	Whole-of-basin; Each country	National Records (Viet Nam)	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in temperature	Daily maximum temperature	Daily maximum temperature	-	˚C	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in temperature	Daily minimum temperature	Daily minimum temperature	-	˚C	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in temperature	Number of hot days	Daily maximum temperature	>35˚C	˚C	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in temperature	Number of cold nights	Daily minimum temperature	<25˚C	˚C	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in temperature	Number of cold days	Daily maximum temperature	<35˚C	˚C	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in temperature	Number of warm nights	Daily minimum temperature	>25˚C	˚C	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in precipitation	Daily total rainfall	Daily rainfall	-	mm	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in precipitation	1-day maximum	Daily rainfall	-	mm	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in precipitation	5-day maximum	Daily rainfall	-	mm	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Climate Change	Climate change trends and extremes	Changes in precipitation	Consecutive wet days	Daily rainfall	-	mm	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Changes in precipitation	Consecutive dry days	Daily rainfall	-	mm	Daily	Five yearly	Whole-of-basin; Each country	MRC hydroclimatic database	Excel Table	Technical Division	Routine national monitoring
Climate Change	Climate change trends and extremes	Extent and severity of flooding	Annual maximum flooded area	Daily water levels	-	m	Daily	Five yearly	Whole-of-basin; Each country	MRC Hydrological database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of flooding	Average flood depth	Daily water levels	-	m	Daily	Five yearly	Whole-of-basin; Each country	MRC Hydrological database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of flooding	Average flood duration	Daily water levels	-	m	Daily	Five yearly	Whole-of-basin; Each country	MRC Hydrological database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of flooding	Population affected by flood	Population in flood affected areas	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	Periodic national survey
Climate Change	Climate change trends and extremes	Extent and severity of flooding	Timing of onset of flood	Date of onset of flood	-	day	Daily	Five yearly	Whole-of-basin; Each country	MRC Hydrological database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of flooding	Timing of offset of flood	Date of offset of flood	-	day	Daily	Five yearly	Whole-of-basin; Each country	MRC Hydrological database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of flooding	Annual maximum flooded area at Tonle Sap	Daily water levels	-	m	Daily	Five yearly	Prek Kdam monitoring station	MRC Hydrological database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of flooding	Annual maximum flooded area at Tonle Sap	Flooded forest around Tonle Sap	-	km2	Five yearly	Five yearly	Prek Kdam monitoring station	MRC Hydrological database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of meteorological drought	Standardised Precipitation Index	Very severe	Index	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of meteorological drought	Standardised Precipitation Index	Severe	Index	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of meteorological drought	Standardised Precipitation Index	Moderate	Index	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Routine MRC monitoring
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of hydrological drought	Total Runoff	Very severe	km3	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of hydrological drought	Total Runoff	Severe	km3	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of hydrological drought	Total Runoff	Moderate	km3	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of agricultural drought	Soil Moisture	Very severe	Index	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of agricultural drought	Soil Moisture	Severe	Index	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual area of agricultural drought	Soil Moisture	Moderate	Index	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Timing of onset of drought	Date of onset of drought	-	day	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Timing of offset of drought	Date of offset of drought	-	day	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Annual drought severity at Tonle Sap	Soil Moisture	-	Index	Annual	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Climate change trends and extremes	Extent and severity of drought	Population affected by drought	Population in drought affected areas	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	Periodic national survey
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Policies and strategies for climate change response	Basin climate change strategies	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Records	Excel Table	Planning Division	Periodic MRC study
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Policies and strategies for climate change response	National climate change strategies	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Periodic national survey
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Policies and strategies for climate change response	Provincial climate change strategies	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Periodic national survey
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Policies and strategies for climate change response	Sectoral climate change strategies	Forestry	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Periodic national survey
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Policies and strategies for climate change response	Sectoral climate change strategies	Agriculture	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Periodic national survey

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Policies and strategies for climate change response	Sectoral climate change strategies	Energy	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Periodic national survey
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Budget for climate change response	National climate change budgets	-	US$	Annual	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Periodic national survey
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Budget for climate change response	Provincial climate change budgets	-	US$	Annual	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Routine national monitoring
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Budget for climate change response	Sectoral climate change budgets	Forestry	US$	Annual	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Routine national monitoring
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Budget for climate change response	Sectoral climate change budgets	Agriculture	US$	Annual	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Routine national monitoring
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Budget for climate change response	Sectoral climate change budgets	Energy	US$	Annual	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Routine national monitoring
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Number of awareness-raising activities	Awareness-raising activities	-	No.	Annual	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Routine national monitoring
Climate Change	Adaptation to climate change	Institutional response to the effects of climate change	Access to climate finance	Receipt of international climate finance	-	US$	Annual	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	Routine national monitoring
Climate Change	Adaptation to climate change	Flood protection measures	Area of urban land protected by embankments/ levees	Land classification as urban land	-	Class	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Flood protection measures	Area of urban land protected by embankments/ levees	Digital elevation model with flood mapping	-	DEM	Once	Five yearly	Whole-of-basin; Each country	National records	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Flood protection measures	Area of urban land protected by embankments/ levees	Location, height and length of embankments	-	lat; long; m	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table; GIS Shape File	Technical Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Climate Change	Adaptation to climate change	Flood protection measures	Area of agricultural land protected by embankments/ levees	Land classification as agricultural land	-	Class	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Flood protection measures	Area of agricultural land protected by embankments/ levees	Digital elevation model with flood mapping	-	DEM	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Flood protection measures	Area of agricultural land protected by embankments/ levees	Location, height and length of embankments	-	lat; long; m	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Drought protection measures	Proportion of irrigable land that is irrigated	Area of irrigated land	All crops	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Drought protection measures	Proportion of irrigable land that is irrigated	Area of irrigable land	All crops	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table; GIS Shape File	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Drought protection measures	Volume of available water storage	Total volume of water reservoirs for agricultural use	-	m3	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Drought protection measures	Volume of available water storage	Total volume of water reservoirs for urban use	-	m3	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Drought protection measures	Volume of available water storage	Domestic water use demands over the dry season	-	m3	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Drought protection measures	Volume of available water storage	Agricultural water use demands over the dry season	-	m3	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Technical Division	Periodic MRC study
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to floods	Total flood affected area	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Flood records	Excel Table; GIS Shape File	Technical Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to floods	Time households affected by flood	-	days	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to floods	Population in flood affected areas	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to droughts	Total drought affected area	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	MRC Drought database	Excel Table	Technical Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to droughts	Time households affected by drought	-	days	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to droughts	Population in drought affected areas	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to storms	Total storm affected area	-	km2	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to storms	Time households affected by storm	-	days	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Exposure to storms	Population in storm affected areas	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Sensitivity to floods	Asset damage due to floods	-	US$	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Sensitivity to droughts	Cost of lost production due to droughts	-	US$	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Sensitivity to storms	Asset damage and lost production due to storms	-	US$	Five yearly	Five yearly	Whole-of-basin; Each country	National records	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Adaptive capacity to floods	Population below the national poverty line in flood affected areas	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Adaptive capacity to droughts	Population below the national poverty line in drought affected areas	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Adaptive capacity to storms	Population below the national poverty line in storm affected areas	-	No.	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Disaster risk management planning at national and local levels	Existence of national disaster risk management plans for floods, droughts and storms	-	Yes/No	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	
Climate Change	Adaptation to climate change	Vulnerability to floods, droughts and storms	Disaster risk management planning at national and local levels	Existence of local disaster risk management plans for floods, droughts and storms	-	Yes/No	Five yearly	Five yearly	Whole-of-basin; Each country	National Statistics	Excel Table	Planning Division	
Cooperation	Equity of benefits derived from the Mekong River system	Overall social benefits derived in each country's part of the basin	-	-	-	-	-	Five yearly	Each country	-	Excel Table	Planning Division	-
Cooperation	Equity of benefits derived from the Mekong River system	Overall environmental benefits derived in each country's part of the basin	-	-	-	-	-	Five yearly	Each country	-	Excel Table	Planning Division	-
Cooperation	Equity of benefits derived from the Mekong River system	Aggregate economic benefits derived from each water-related sector in each country's part of the basin	-	-	-	-	-	Five yearly	Each country	-	Excel Table	Planning Division	-
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Quantity of projects of basin-wide significance	Number of projects of basin-wide signifiance	-	No.	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Value of projects of basin-wide signifiance	Cost of initial project investment	-	US$	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Value of projects of basin-wide signifiance	Expected future cash flow from the project	-	US$/ annum	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine national monitoring
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Value of projects of basin-wide signifiance	Discount rate	-	%	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine national monitoring
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Value of projects of basin-wide signifiance	Time period over which the project is expected to generate returns	-	years	Annual	Five yearly	Whole-of-basin	National Statistics	Excel Table	Planning Division	Routine national monitoring
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Quantity of trans-boundary projects notified	Number of trans-boundary projects notified	-	No.	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Value of trans-boundary projects notified	Cost of initial project investment	-	US$	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Value of trans-boundary projects notified	Expected future cash flow from the project	-	US$/ annum	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Value of trans-boundary projects notified	Discount rate	-	%	Annual	Five yearly	Whole-of-basin	National Statistics	Excel Table	Planning Division	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Joint efforts on projects of basin-wide signficance and with potential trans-boundary impacts	Value of trans-boundary projects notified	Time period over which the project is expected to generate returns	-	years	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Extent of knowledge sharing activities	Number of events (symposia; fora; training)	Events (symposia; fora; training) held	-	No.	Annual	Five yearly	Whole-of-basin	MRC statistics	Excel Table	Office of the CEO	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Extent of knowledge sharing activities	Number of joint studies and assessments undertaken	Joint studies and assessments undertaken	-	No.	Annual	Five yearly	Whole-of-basin	MRC statistics	Excel Table	Office of the CEO	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Extent of knowledge sharing activities	Number of information products disseminated	Information products disseminated	-	No.	Annual	Five yearly	Whole-of-basin	MRC statistics	Excel Table	Office of the CEO	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Extent of knowledge sharing activities	Number of data downloads	Data downloads from outside the MRCS	-	No.	Annual	Five yearly	Whole-of-basin	MRC statistics	Excel Table	Office of the CEO	Routine MRC monitoring
Cooperation	Benefits derived from cooperation	Partnerships between the MRC and other parties	Number of partnerships and agreements in place	Partnerships and cooperation agreements in place	International organisations; research institutions; RBOs; Dialogue Partners etc.	No.	Annual	Five yearly	Whole-of-basin	MRC statistics	Excel Table	Office of the CEO	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Cooperation	Benefits derived from cooperation	Partnerships between the MRC and other parties	Number of joint projects with other parties	Joint projects with other parties	International organisations; research institutions; RBOs; Dialogue Partners etc.	No.	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Periodic regional survey
Cooperation	Benefits derived from cooperation	Partnerships between the MRC and other parties	Value of joint projects with other parties	Cost of initial project investment	International organisations; research institutions; RBOs; Dialogue Partners etc.	US$	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Periodic regional survey
Cooperation	Benefits derived from cooperation	Partnerships between the MRC and other parties	Value of joint projects with other parties	Expected future cash flow from the project	International organisations; research institutions; RBOs; Dialogue Partners etc.	US$/ annum	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine national monitoring
Cooperation	Benefits derived from cooperation	Partnerships between the MRC and other parties	Value of joint projects with other parties	Discount rate	International organisations; research institutions; RBOs; Dialogue Partners etc.	%	Annual	Five yearly	Whole-of-basin	National Statistics	Excel Table	Planning Division	Routine national monitoring
Cooperation	Benefits derived from cooperation	Partnerships between the MRC and other parties	Value of joint projects with other parties	Time period over which the project is expected to generate returns	International organisations; research institutions; RBOs; Dialogue Partners etc.	years	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine national monitoring
Cooperation	Benefits derived from cooperation	Proportion of benefits derived from cooperation to total net economic value of all LMB water-related sectors	Value of both joint projects, transboundary projects and projects of basin-wide signifiance	Net Present Value of projects	-	US$	Annual	Five yearly	Whole-of-basin	MRC project database	Excel Table	Planning Division	Routine MRC monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Cooperation	Benefits derived from cooperation	Proportion of benefits derived from cooperation to total net economic value of all LMB water-related sectors	Aggregate economic value of LMB water-related sectors	Aggregate net annual economic value of MRC sectors	-	US$/ annum	Annual	Five yearly	Whole-of-basin	Calculated by MRC	Excel Table	Planning Division	Periodic national survey
Cooperation	Benefits derived from cooperation	Proportion of benefits derived from cooperation to total net economic value of all LMB water-related sectors	Aggregate economic value of LMB water-related sectors	Discount rate	-	%	Annual	Five yearly	Whole-of-basin	National Statistics	Excel Table	Planning Division	Routine national monitoring
Cooperation	Benefits derived from cooperation	Proportion of benefits derived from cooperation to total net economic value of all LMB water-related sectors	Aggregate economic value of LMB water-related sectors	Time period agreed for assessment	-	years	Annual	Five yearly	Whole-of-basin	As agreed by Member Countries	Excel Table	Planning Division	Routine national monitoring
Cooperation	Self-finance of the MRC	Proportion of MRC budget funded by national contributions during current period	MRC budget (basket and earmarked funds)	Total MRC budget (basket funds and earmarked funds) over the defined period	-	US$	Annual	Five yearly	Whole-of-basin	MRC budget documents	Excel Table	Administration Division	Routine MRC monitoring
Cooperation	Self-finance of the MRC	Proportion of MRC budget funded by national contributions during current period	Total of national contributions to MRC budget	National contributions to MRC budget over the defined period	-	US$	Annual	Five yearly	Whole-of-basin	MRC budget documents	Excel Table	Administration Division	Routine MRC monitoring
5	**13**	**53**	**185**	**275**									
Contextual	Basin description	n/a	Basin overview map	Basin boundary	Upper Mekong Basin	-	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Basin overview map	Basin boundary	Lower Mekong Basin	-	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Basin overview map	National boundaries	-	-	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Contextual	Basin description	n/a	Basin overview map	Mainstream water course	-	-	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Basin overview map	Key tributary water courses	-	-	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Basin overview map	Key topographic features	-	-	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Annual crop	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Paddy field	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Shifting cultivation	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Orchard	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Flooded forest	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Grass land	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Inundated grasslands	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Shrub land	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Urban area	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Bare land	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Industrial plantation	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Broadleaved deciduous forest	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Contextual	Basin description	n/a	Basin land cover map	Land cover	Broadleaved evergreen forest	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Forest plantation	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Bamboo forest	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Coniferous forest	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Mangrove	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Marshes/ swamp area	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Aquculture	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Basin land cover map	Land cover	Water body	km2	Five yearly	Five yearly	Whole-of-basin	MRC Landcover database	Excel Table and GIS Shape File	Environment Division	Periodic MRC study
Contextual	Basin description	n/a	Key attributes of the basin	Basin area	Upper Mekong Basin	km2	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Key attributes of the basin	Basin area	Lower Mekong Basin	km2	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Key attributes of the basin	Proportion of each country area in the basin to the total area of that country	-	-	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Key attributes of the basin	Mainstream length	Upper Mekong Basin	km	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Key attributes of the basin	Mainstream length	Lower Mekong Basin	km	Static	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Basin description	n/a	Key attributes of the basin	Mean annual runoff	-	m3	Five yearly	Five yearly	Whole-of-basin	MRC-IS	GIS Shape File	Technical Division	Periodic MRC study
Contextual	Population	n/a	Population overview	Total basin population by country	-	No.	Five yearly	Five yearly	Whole-of-basin	National Statistics	GIS Shape File	Planning Division	Periodic national survey
Contextual	Population	n/a	Population overview	Population by age group by country	-	No./age	Five yearly	Five yearly	Whole-of-basin	National Statistics	GIS Shape File	Planning Division	Periodic national survey

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Contextual	Population	n/a	Population overview	Urban and rural basin populations by country	-	No.	Five yearly	Five yearly	Whole-of-basin	National Statistics	GIS Shape File	Planning Division	Periodic national survey
Contextual	Population	n/a	Population overview	Migration rate rural to urban	-	No./ annum	Five yearly	Five yearly	Whole-of-basin	National Statistics	GIS Shape File	Planning Division	Periodic national survey
Contextual	Population	n/a	Population density	Population density by smallest spatial unit available	-	No./km2	Five yearly	Five yearly	Whole-of-basin	National Statistics	GIS Shape File	Planning Division	Periodic national survey
Contextual	Population	n/a	Food security for each country	Adequacy of dietary energy (dietary energy as a % of dietary requirements)	-	%	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Population	n/a	Food security for each country	Average dietary protein	-	gram/ capita/ day)	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Population	n/a	Food security for each country	Prevalence of under-nourishment	-	%	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Population	n/a	Food security for each country	Value of food imports as a percentage of total value of exported goods	-	%	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Population	n/a	Poverty levels	Percentage of population earning less than US$1.25/day	-	%	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Population	n/a	Poverty levels	Percentage of population earning less than US$ 2.00/day	-	%	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Population	n/a	Income distribution	Gini coefficient	-	Index	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Population	n/a	Population life expectancy	Life expectancy	Male	years	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Population	n/a	Population life expectancy	Life expectancy	Female	years	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Periodic national survey
Contextual	Economy	n/a	Gross Domestic Product	GDP by country	-	US$	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Routine national monitoring

Dimension	Strategic Indicator	Assessment Indicator	Monitoring Parameters	Data requirements	Categories	Units	Collection Frequency	Assessment Frequency	Scale	Source	Processed Format	MRCS Reponsibility	Generation method
Contextual	Economy	n/a	Gross Domestic Product	National GDP by MRC sector	-	US$	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Routine national monitoring
Contextual	Economy	n/a	Gross Domestic Product	GDP growth rate of each country	-	%/annum	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Routine national monitoring
Contextual	Economy	n/a	Gross Domestic Product	National GDP/ capita	-	US$/ person	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Routine national monitoring
Contextual	Economy	n/a	Gross Domestic Product	Basin GDP/ capita	-	US$/ person	Five yearly	Five yearly	Whole-of-basin	FAO food security data	Excel Table	Planning Division	Routine national monitoring

Annex 4: MRB IF Dimension and Scope.

Dimension	Dimension and scope	Strategic indicators
Social	Reflecting the intent to promote social development and the well-being of all riparian States As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by changes in flow and environmental conditions - for scenario assessment	Living conditions and well-being
Social	Reflecting the intent to promote social development and the well-being of all riparian States As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by changes in flow and environmental conditions - for scenario assessment	Livelihoods and employment in MRC sectors
Social	Reflecting the intent to promote social development and the well-being of all riparian States As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by changes in flow and environmental conditions - for scenario assessment	Overall social conditions
Environmental	Reflecting the need to protect, preserve, enhance and manage the environmental and aquatic conditions and maintenance of the ecological balance exceptional to this river basin As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by changes in flow and environmental conditions - for scenario assessment	Water flow conditions in mainstream
Environmental	Reflecting the need to protect, preserve, enhance and manage the environmental and aquatic conditions and maintenance of the ecological balance exceptional to this river basin As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by changes in flow and environmental conditions - for scenario assessment	Water quality and sediment conditions in mainstream
Environmental	Reflecting the need to protect, preserve, enhance and manage the environmental and aquatic conditions and maintenance of the ecological balance exceptional to this river basin As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by flow and environmental conditions - for scenario assessment	Status of environmental assets
Environmental	Reflecting the need to protect, preserve, enhance and manage the environmental and aquatic conditions and maintenance of the ecological balance exceptional to this river basin As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by flow and environmental conditions - for scenario assessment	Overall environmental conditions

Dimension	Dimension and scope	Strategic indicators
Economic	Reflecting the intent to promote economic development and the well-being of all riparian States As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by flow and environmental conditions - for scenario assessment	Economic performance of MRC sectors
Economic	Reflecting the intent to promote economic development and the well-being of all riparian States As measured in: As relevant to all MRC areas of cooperation within the limits of the Basin - for SOBR Areas influenced by flow and environmental conditions - for scenario assessment	Contribution to basin economy
Climate change	Recognising that this has great bearing on the long term sustainable development, utilization, conservation and management of the Mekong River Basin water and related resources for navigational and non-navigational purposes As relevant to all MRC areas of cooperation within the limits of the Basin	Greenhouse gas emissions
Climate change	Recognising that this has great bearing on the long term sustainable development, utilization, conservation and management of the Mekong River Basin water and related resources for navigational and non-navigational purposes As relevant to all MRC areas of cooperation within the limits of the Basin	Climate change trends and extremes
Climate change	Recognising that this has great bearing on the long term sustainable development, utilization, conservation and management of the Mekong River Basin water and related resources for navigational and non-navigational purposes As relevant to all MRC areas of cooperation within the limits of the Basin	Adaptation to climate change
Cooperation	Reflecting the intent to promote cooperation among the community of Mekong nations As relate to MRC areas of cooperation	Equity of benefits derived from the Mekong River system
Cooperation	Reflecting the intent to promote cooperation among the community of Mekong nations As relate to MRC areas of cooperation	Benefits derived from cooperation
Cooperation	Reflecting the intent to promote cooperation among the community of Mekong nations As relate to MRC areas of cooperation	Self-finance of the MRC

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Mekong River Commission Secretariat
P.O. Box 6101, 184 Fa Ngoum Road
Unit 18, Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR
Tel: +856 21 263 263. Fax: +856 21 263 264