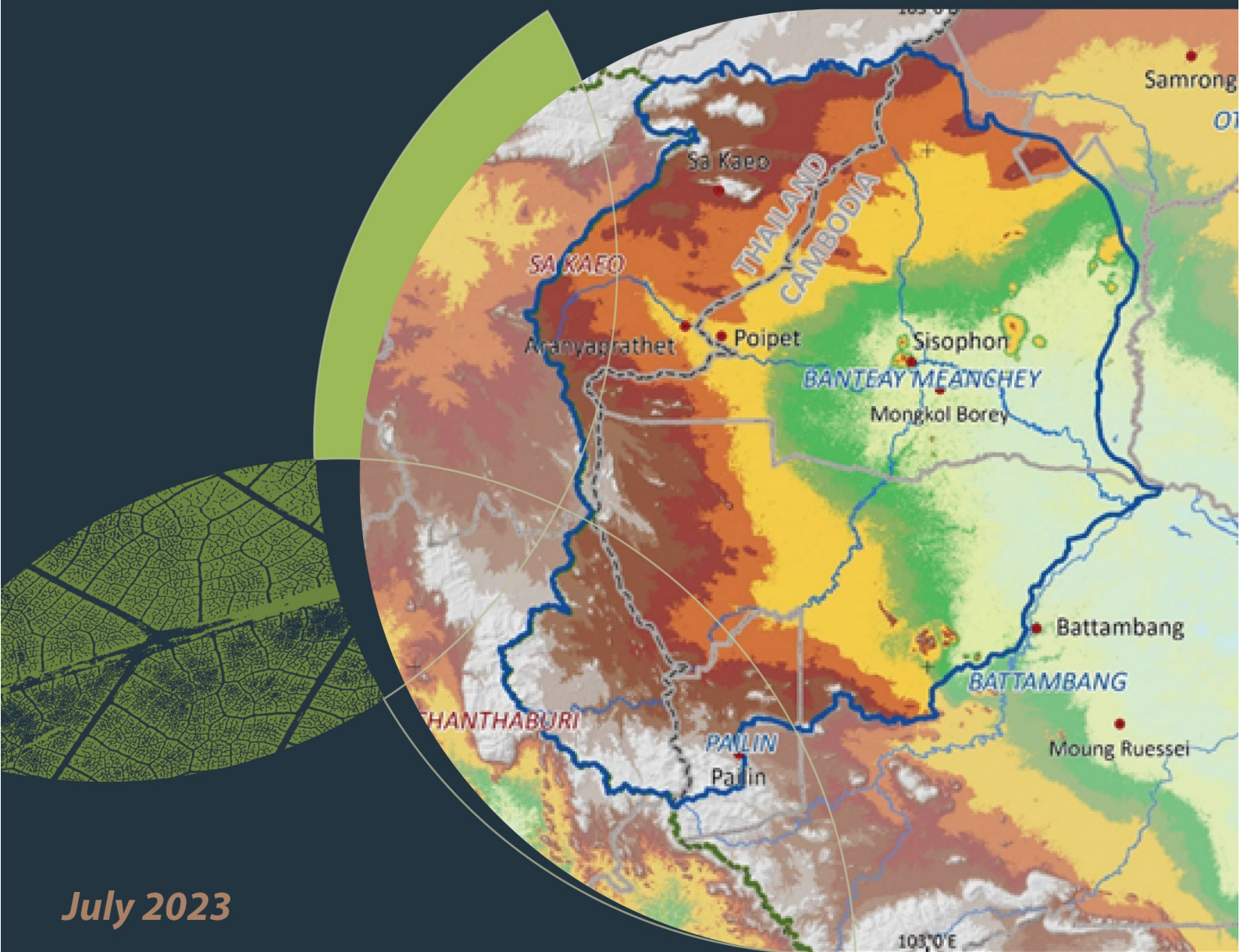


Final Report

TECHNICAL CONTRIBUTION FROM ICEM FOR PHASES II AND III (2020 - 2023) TO THE MEKONG RIVER COMMISSION - JOINT PROJECT ON FLOOD AND DROUGHT MANAGEMENT



July 2023



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This report, including maps and figures appearing therein, shall be without prejudice to Thailand's and Cambodia's rights with regard to land boundary under international law.

The views, conclusions and recommendations in the document are not to be taken to represent the views of the MRC.

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ABBREVIATIONS

CCDM	Commune Committees for Disaster Management
CNMC	Cambodia National Mekong Committee
COVID-19	Coronavirus disease 2019
DCDM	District Committees for Disaster Management
DDPM	Department of Disaster Prevention and Mitigation
DOM	Department of Meteorology
DRR	Disaster Risk Reduction
DWR	Department of Water Resources
EWS	Early Warning System
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
IW	International Waters
IWRM	Integrated Water Resources Management
LMB	Lower Mekong Basin
MAFF	Ministry of Agriculture, Forestry and Fisheries
MOE	Ministry of Environment
MOWRAM	Ministry of Water Resources and Meteorology
MRC	Mekong River Commission
NGO	Non-Governmental Organisation
NMCs	National Mekong Committees
NWFPC	National Water Resources and Flood Policy Committee
NWG	National Working Group
ONWR	Office of National Water Resources
PMU	Project Management Unit
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
WPs	Five Work Packages
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH

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1 INTRODUCTION

1.1 Overview of the 9C-9T Joint Project

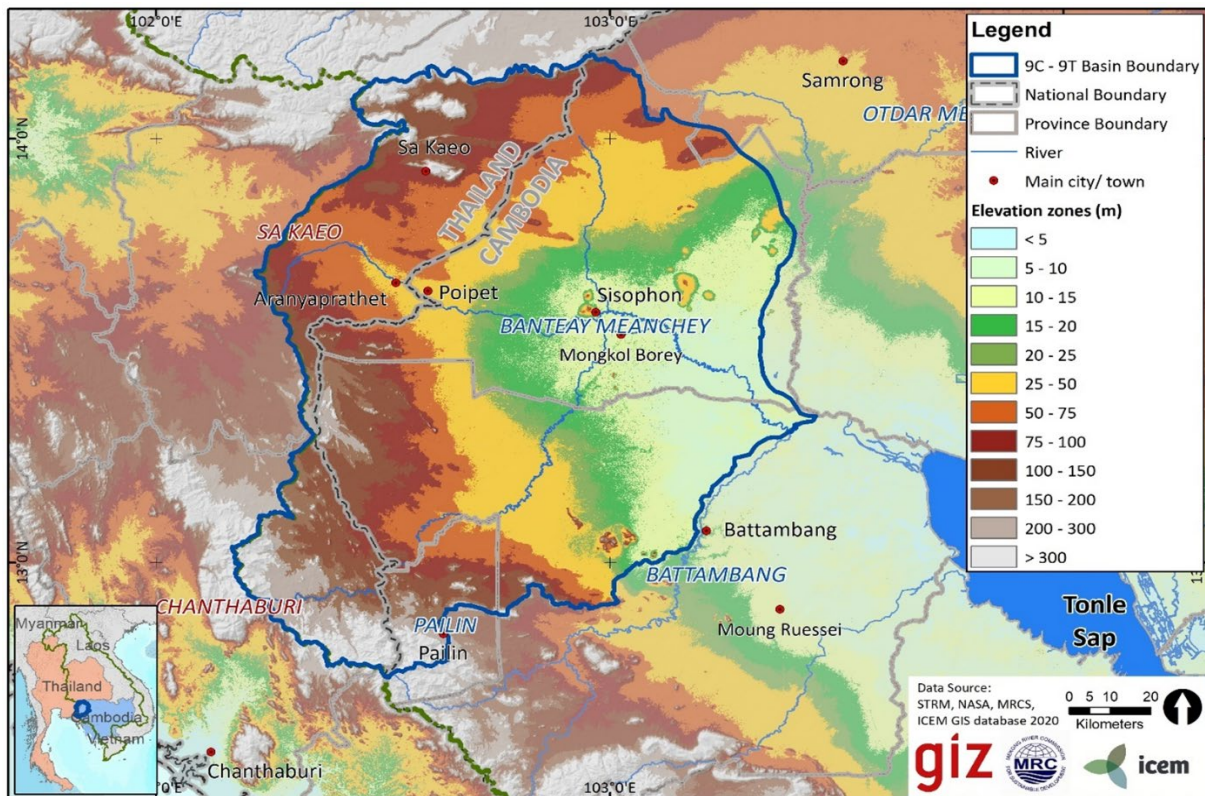
MRC member countries have given priority to Joint Projects for cooperation in their National Indicative Plans (NIPs). Joint Projects involve two or more countries in addressing shared constraints and opportunities. Since 2018, Cambodia and Thailand have been working together to implement the Joint Project on transboundary cooperation for flood and drought management in the 9C-9T sub-basin. The Joint Project is funded by the German government and implemented through GIZ in cooperation with the MRC. It is the first bilateral cooperation for joint management of a shared sub basin within the Mekong River system.

The Joint Project is implemented through the cross-sectoral National Working Groups established in both countries, chaired by the Cambodian Ministry of Water Resources and Meteorology (MOWRAM) and the Thai Office of National Water Resources (ONWR). The Joint Project is managed by the Mekong River Commission Secretariat (MRCS) with support from GIZ. It is a part of the National Indicative Plans of Cambodia and Thailand for implementing the Mekong Basin Development Strategy – a cooperative plan to address national, cross-border and regional needs.

The 9C-9T sub-basin is an important tributary of the Mekong River system. It flows down from Thailand as the Tonle Sap River, through Northwest Cambodia as the Mongkol Borey river into the Tonle Sap Lake (Figure 1). The sub-basin covers 14,952 km² and is home to 1.4 million people. About 27% of the basin is in Thailand across two administrative areas – Sa Kaeo Province to the north and Chanthaburi Province to the south. The greater part of the sub-basin is in Cambodia, covering an area of 73%, and home to 1.05 million residents in the provinces Banteay Meanchey, Battambang and Palin. Headwaters of the Tonle Sap 9C-9T sub-basin in Thailand and Cambodia feed multiple rivers that flow into important farmland and towns including the Cambodian ‘rice bowl’.

Both parts of the sub-basin, and hence the two countries, are bound together in their shared management challenges and solutions. Mitigating flood and drought is the overarching objective because of their far-reaching impacts on every aspect of life in the sub-basin, with the threat to become more severe as climate changes take hold.

Figure 1. The 9C-9T Sub-basin with elevation zones



1.2 Project objectives and significance

The objective of the Joint Project is transboundary flood and drought management through enhanced cooperation to restore and build ecosystem and community resilience in the shared 9C-9T sub-basin. The Project applies nature-based solutions to reverse serious watershed degradation, improve water security and livelihoods, and enhance the health of ecosystems in the face of the increasing frequency, intensity and impacts of flood and drought under climate change.

The Project is strengthening joint planning, management, monitoring and investment in a linked network of measures across the 9C-9T to mitigate the effects of floods and droughts. It is unique in its cross-sectoral transboundary nature and strategic focus on ecosystem resilience and flood and drought risk management, with the support of the MRC.

The 9C-9T Master Plan is catalysing significant investments in its implementation by the Cambodian and Thai governments, with support of national and international funding. The Master Plan is a permanent international agreement which will be reviewed and revised every five years. The objective is to progressively internalise regular national budget commitments by the two governments through their cyclical planning and budgeting processes. The Joint Project and its policy framework and tools is a model for transformative change within the LMB, as the approach is replicated with MRC facilitation in other shared river basins in the Mekong region, such as the three basins in the 3S system (Sekon, Sesan and Srepok).

1.3 Project scope and priority work areas

The Joint Project has been implemented by MRC with GIZ support over three phases, from 2018 to 2024. ICEM was contracted to provide technical support in implementing Phases II and Phase III, from 2020 to mid-2023. This report covers that period with the Work Packages (WP) for each phase detailed in Chapters 2 to 9.

The core focus areas of the three Joint Project phases comprise:

1. **Phase I (2018-2019)** – an assessment of flood and drought risk and identifying five strategic priority areas for action to mitigate flood and drought;

2. **Phase II (2020-2021)** – transboundary planning, modelling and the development of technical support tools, used to identify hotspot areas for restoration; and
3. **Phase III (2022-June 2023)** – implementation of the Flood and Drought Master Plan, including technical assessments, the design of projects for piloting nature-based solutions for flood and drought management and seeking financing from national and international sources.

The joint assessment and planning process undertaken in Phase I set out a 15-year implementation timeline for 18 proposed projects across five priority areas:

1. River Basin Master Plan
2. Regional capacity building
3. Urban flood and drought study
4. Database of knowledge and information
5. Hydromet and flood warning improvements

Building on these five priority areas, the endorsed 9C-9T Flood and Drought Master Plan was a key output of Phase II. The Plan sets out a set of principles used to guide implementation of all activities under the Joint Project:

- Seek integration of the various flood and drought management priorities identified by countries to show essential working linkages and mutually reinforcing benefits
- Demonstrate the benefits of transboundary cooperation in flood and drought management
- Seek ecological sustainability and maintenance of ecosystem services
- Apply hybrid green-grey development options and stand-alone nature-based solutions
- Promote gender equity and social inclusion
- Build resilience to climate change by mainstreaming adaptation

In support of Master Plan implementation, outputs delivered in Phases II and III include:

- The joint institutional framework and collaboration mechanisms expanded to engage broader sector and local government representatives
- Transboundary baseline assessments
- Designing and deploying decision support tools
- A series of technical papers and manuals
- Nature-based solution (NbS) demonstration projects designed for six degraded landscapes and linked infrastructure and rural and urban areas
- Identifying international funding sources and developing a funding strategy and proposal
- Facilitating multi-stakeholder capacity-building events
- Facilitating national and transboundary coordination and consultation, via working groups and events

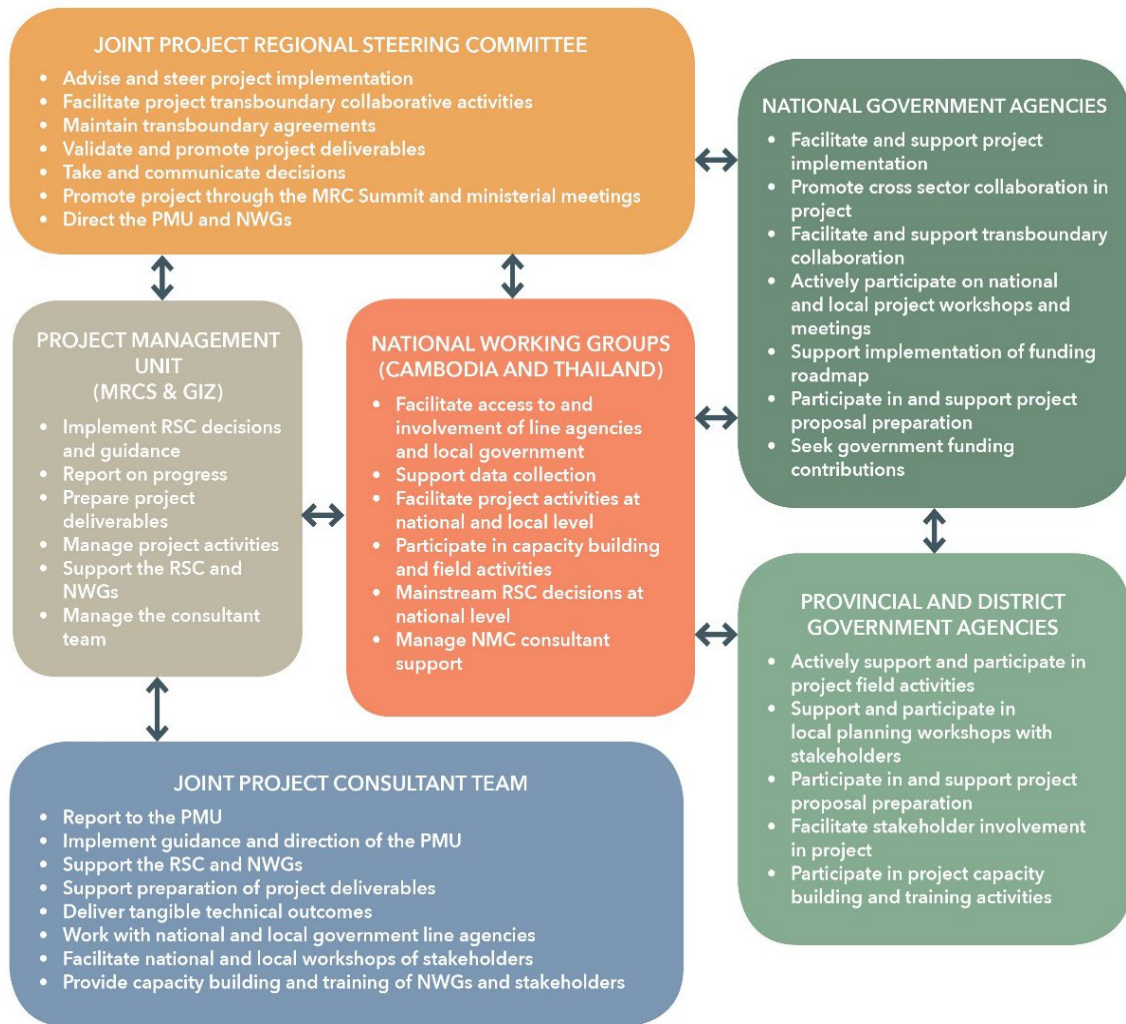
Those and other outputs are described in the following chapters.

1.4 Project governance and key stakeholders

The Cambodian and Thai National Mekong Committees supervise the Joint Project through the Regional Steering Committee (RSC) and National Working Groups (NWGs), which coordinate with the Project Management Unit (PMU) made up of senior staff of MRCS Basin Planning Division and the GIZ Mekong Region Technical Team. The governance structure for the Joint Project is illustrated in (Figure 2).

The ICEM team worked through the PMU in support of the RSC and NWGs. It coordinated with the NMCs and worked closely with the MRC contracted national consultants on project activities, as approved and facilitated by the PMU. The RSC provides overall guidance and direction for the Joint Project and its NWGs and PMU on how to progress with the implementation of the project.

Figure 2: Governance structure for the Joint Project



The NWGs are made up of representatives of line agencies at national and local level. A key role of the RSC and the NWGs is to promote and facilitate the involvement of a broad range of relevant national and local government agencies in the project. Through the RSC, NWGs and National Mekong Committees (NMCs), the following national agencies played a key role in implementing the work areas (Figure 3):

Thailand

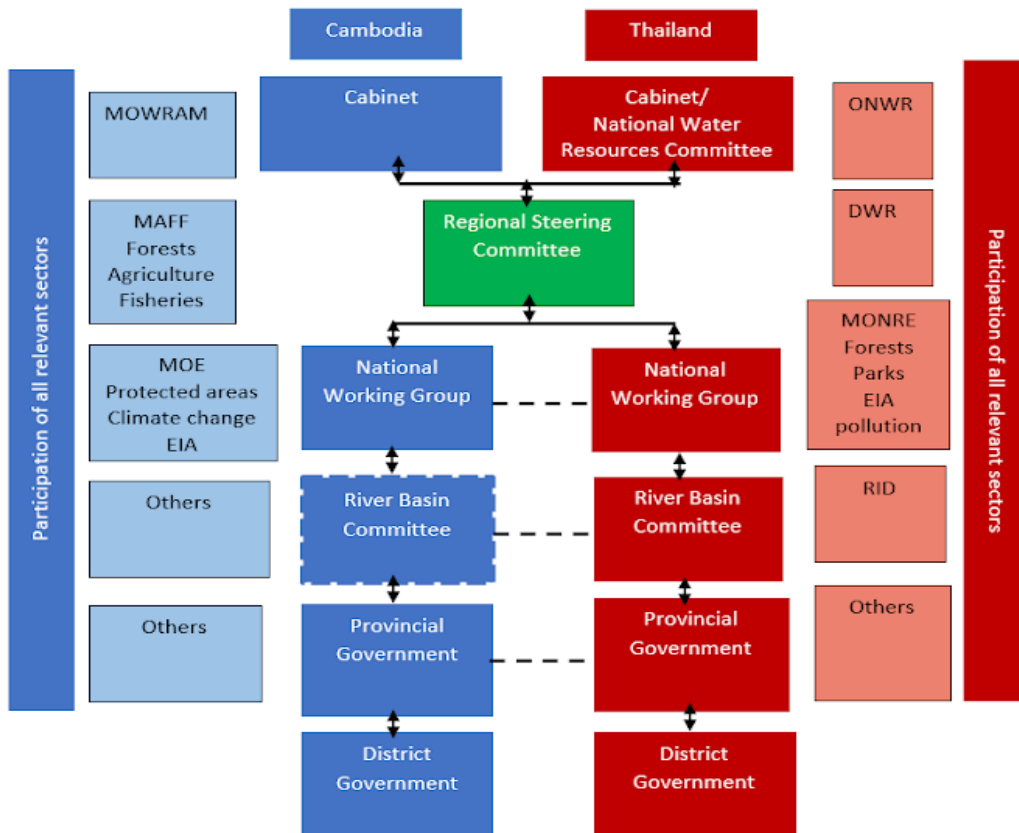
- National Economic and Social Development Council (NESDC)
- The Office of National Water Resources (ONWR)
- Royal Irrigation Department (RID), Ministry of Agriculture and Cooperatives (MAC)
- Department of Agriculture (DoA), Ministry of Agriculture and Cooperatives
- Department of Water Resources (DWR), Ministry of Natural Resources and Environment (MONRE)
- Department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior
- Thai Meteorological Department, Ministry of Digital Economy and Society
- Department of National Park, Wildlife and Plant Conservation

Cambodia

- Ministry of Water Resources and Meteorology (MOWRAM)
- Ministry of Agriculture, Forestry and Fisheries (MAFF)
- Ministry of Environment (MOE)

- Ministry of Economic and Finance (MoEF)
- Ministry of Rural Development (MRD)
- Ministry of Planning (MoP)

Figure 3. Key Project stakeholders



2 OVERVIEW OF JOINT PROJECT PHASES II AND III

The WPs delivered in Phases II and III are outlined below. Chapters 3-9 provide an overview of each WP, including activities undertaken during Phases II (2020-2021) and III (2022-2023), and describing individual outputs developed under each WP. The corresponding project phase is presented in parenthesis.

A Joint Project Interim Report¹ was developed in June 2022 summarizing the key outputs delivered under Phase II for each of the five WPs. This final report builds on the Interim Report, adding the main outputs delivered under Phase III.

2.1 Phase II project initiation and inception

During Phase I of the Joint Project, Cambodia and Thailand worked together to define priorities for consideration and investment in addressing shared flood and drought challenges in the 9C-9T sub-basin, with a suggested 15-year implementation timeline for 18 proposed projects across five priority areas:

1. River Basin Master Plan
2. Regional capacity building
3. Urban flood and drought study
4. Database of knowledge and info
5. Hydromet and flood warning improvements

The Phase II WPs contribute activities and outputs across all five of the Phase I priority areas. The Phase II project initiation stage was conducted during early 2020, with the key deliverable being an inception report submitted to MRCS-GIZ in July 2020.²

2.2 Joint Project Phase II

In Phase I of the Joint Project, during 2018-2019, an initial assessment of flood and drought risk was completed. Phase II, from January 2020 to December 2021, focused on transboundary planning, hydrological and climate change modelling and the development of technical support tools, used to identify degraded landscapes across the basin requiring restoration of ecosystem services and building of resilience in infrastructure assets, communities and rural and urban areas. Concepts for flood and drought management projects emphasising application of Nature-Based Solutions (NbS) and hybrid measures were defined, and funding sources for implementation were explored with a GEF project concept prepared.

Phase II, conducted a comprehensive joint assessment and planning process to deliver on three core objectives:

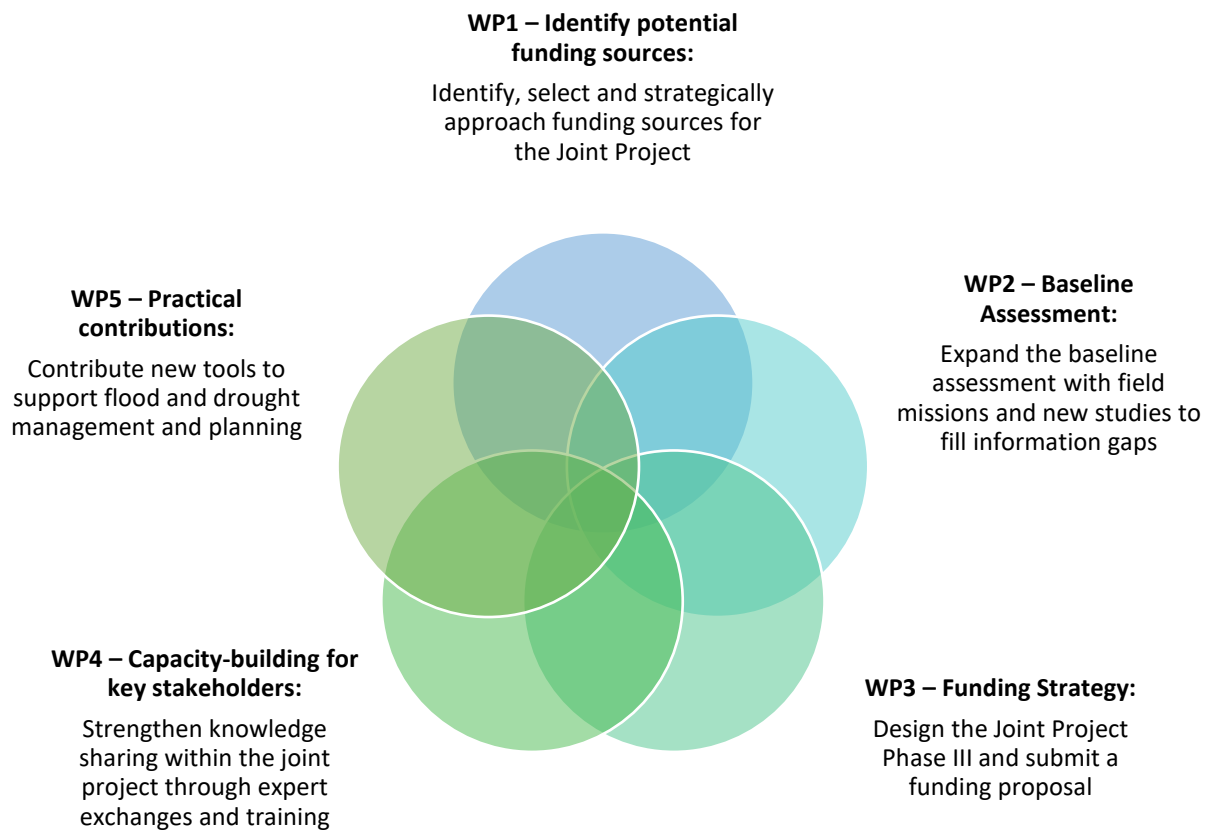
1. Develop at least one funding proposal for the implementation of flood and drought mitigation measures within the 9C-9T sub-basin;
2. Undertake feasibility assessments to inform design of the funding proposals; and
3. Make tangible contributions to develop priority flood and drought management tools.

These three objectives were achieved through five WPs, which are grouped according to activities and associated outputs (Figure 4).

¹ MRC. 2022. Interim Report. *Joint Project on Flood and Drought Management. Mekong River Commission*. Vientiane, Lao PDR

² MRC. 2020. Inception Report. *Joint Project on Flood and Drought Management. Mekong River Commission*. Vientiane, Lao PDR

Figure 4: Overview of the five Joint Project work packages



The Phase II output included the development of an agreed funding roadmap prepared under WP1 and a GEF funding proposal (as a PIF) under WP3 for implementing the 9C-9T Flood and Drought Master Plan. The expanded situation analysis (WP2) played an important role in filling data and analysis gaps building on the baseline assessment of Phase I, and in providing a foundation for defining the detailed approach to Phase III. The expanded baseline was also the foundation for initiating a river basin planning process for the 9C-9T sub-basin which culminated in the adoption by the two countries of the 9C-9T Flood and Drought Master Plan in December 2021. Several tools were developed and applied (WP5) such as the 9C-9T hydrological model and basin atlas to drive that process, and to generate the necessary technical information to inform the preparation of the Master Plan. Capacity building activities (WP4) were delivered linked to the application of the tools and in support of the basin planning, the funding proposal development, and for regional knowledge-sharing on flood and drought planning and management.

The Master Plan promotes the restoration of the 9C-9T sub-basin through nature based and hybrid measures to address the key drivers of flood and drought risk including land degradation, forest loss, infrastructure development and population pressure.

An overview of Phase II activities and outputs is presented in Table 1. Outputs are presented as **blue** for reports (with corresponding submission dates) and **green** for events (dates presented in Table 3). All project documents are contained on the GIZ server, in the 'ICEM Joint Project' folder.

Table 1: Phase II activities and outputs

Activity	Output
Inception phase	Inception report (June 2020)
WP1: Funding strategy	
Identify potential multilateral, bilateral and national funding sources relevant for the targeted measures and approach possible sources. Development of a roadmap to strategically approach several funding sources in parallel	<ul style="list-style-type: none"> • Funding Roadmap report (May 2020) • Decision Briefing Note #1 (June 2020)
WP2: Feasibility studies	
Conduct expanded situation analysis to build on the Phase I joint assessment and provide additional data and baseline profiles for the 9C and 9T sub-basins (needed for the development of the funding proposals)	<ul style="list-style-type: none"> • Datasets and maps presented on the 9C-9T Basin Atlas • River Basin Planning technical paper • Ten project concept papers
Prepare and transfer the web-based 9C-9T Basin Atlas to MRC, a shared database of information and maps as a planning tool and foundation for a future transboundary river basin master planning process	<ul style="list-style-type: none"> • 9C-9T Basin Atlas online tool • Briefing Note on Basin Atlas Hosting (February 2021) • 9C-9T Basin Atlas training workshop
Prepare an expanded situation analysis of flood and drought resilience and risk drivers across the 9C-9T watershed using remote sensing analysis and an updated hydrological model	<ul style="list-style-type: none"> • Expanded baseline assessment • Datasets and maps presented on the 9C-9T Basin Atlas • Detailed in the 9C-9T Flood and Drought Master Plan document and the Initial NbS Concepts report
Building on the flood and drought hotspots identified by Phase I, apply a set of criteria to identify a detailed network of locations for future implementation of NbS to build watershed resilience to flood and drought	<ul style="list-style-type: none"> • Watershed assessment and ranking (detailed in the 9C-9T Flood and Drought Master Plan document and the Initial NbS Concepts report) • Identification of degraded landscapes within the basin as priorities for restoration • NbS factsheets
WP3: Funding proposal	
Based on the proposed projects in the joint assessment reports, on the priorities agreed by Cambodia and Thailand and on the identification of funding sources, develop 2 full gender-sensitive funding proposals	<ul style="list-style-type: none"> • Decision Briefing Note #2 (June 2020) • GEF-7 concept note (May 2021)
Prepare a set of demonstration project concept briefs for NbS related to each location in the network of priority geographic areas (6-8 projects per country)	<ul style="list-style-type: none"> • Initial NbS project concepts report (December 2021)
Prepare a short 9C-9T Flood and Drought Master Plan, including indicative budgeting where possible and recommended institutional stakeholders	<ul style="list-style-type: none"> • Roadmap for 9C-9T River Basin Master Planning (November 2020) • The 9C-9T Master Plan report • 9C-9T Flood and Drought Master Plan (November 2021)
WP4: Capacity building program	
Assess the capacity needs of key stakeholders and design several options (3 or 4 options) for a capacity building program	Decision Briefing Note #4 (June 2020)

Activity	Output
Develop training concepts and host four technical intensive training events for stakeholders (four in Cambodia and four in Thailand)	Four technical intensive training workshops
WP5: Practical contributions	
Development of flood and drought management tools	<ul style="list-style-type: none"> Joint Project Concept Sheets (April 2020) Decision Briefing Note #3 (June 2020) Phase III Project Concept report (February 2021)
Consultation	
Four Regional Steering Committee Meetings for Cambodia and for Thailand	<ul style="list-style-type: none"> Four RSC meetings Four RSC meeting reports
Eleven NWG meetings (virtual and hybrid format) (five meetings in Cambodia and six meetings in Thailand) held every 3 months	<ul style="list-style-type: none"> Eleven NWG meetings (five in Cambodia and six in Thailand) Eleven NWG meeting reports
Missions	
Four field missions to the 9C area in Cambodia and the 9T area in Thailand by national experts	Four NbS missions in Cambodia and Thailand (9C and 9T)

2.2.1 Team composition for Phase II

The Phase II project team including the following MRCS and GIZ team members:

- Thim Ly, Chief River Basin Planner, MRCS
- Bertrand Meinier, Programme Director, MRC-GIZ
- Set Sopagna, Regional Technical Advisor, MRC-GIZ
- Nike Hestermann, Development Advisor, MRC-GIZ

The MRCS engaged national consultants with specific terms of reference to provide technical support to the National Mekong Committees (NMCs) in each country in fulfilling their functions under the Joint Project. Dr Oeurng Chantha was contracted as the national consultant to the Cambodia National Mekong Committee (CNMC) and Dr Sompong Boonprasert, as the national consultant for Thailand National Mekong Committee (TNMC).

The ICEM team working in support of the PMU consisted of the following specialists:

- Jeremy Carew-Reid, Team Leader
- Hubert Lohr, International Expert
- Richard Cooper, International Decision Support System Specialist
- Khan Ra, National Expert for Cambodia
- Attapol Chamnanvejchakij, National Expert for Thailand

The Joint Project Phase II was further supported by an ICEM management and operations team consisting of:

- Leila Macadam, Project Manager
- Nguyen Thi Phuong Thao, Project Coordinator
- Toy Monireth, Administrative Officer for Cambodia
- Wannee Lattitawanich, Administrative Officer for Thailand

2.3 Joint Project Phase III

From January 2022, the Joint Project moved into Phase III, focusing on implementation of the Master Plan under the five work package. Activities and outputs delivered include the development of the GEF project identification framework, the elaboration of an action plan for implementing the 9C-9T Flood and Drought Master Plan, the updating and translation of the 9C-9T Basin Atlas into Thai and Khmer, and the development of detailed NbS projects for six degraded landscapes and infrastructure – all supported by capacity building events.

Key activities for each WP are summarised in Table 2. Outputs for each activity are presented, with **blue** for reports (with corresponding submission dates) and **green** for events (dates presented in Table 3). All Phase III documents are located on the GIZ server.

Table 2: Phase III activities and outputs

Activity	Output
WP1: Funding strategy	
Further exploration, identification, and analysis of the funding requirements from the potential funding sources	<ul style="list-style-type: none"> • Detailed budget for the 9C-9T Action Plan • Definition of GEF STAR funding options for four LMB countries
WP2: Expanded baseline assessment	
Addition of a high-level gender and social vulnerability assessment	<ul style="list-style-type: none"> • Gender and Social Vulnerability Assessment and Action Plan report (January, 2023)
Support the MRCS IT to update the Basin Atlas	<ul style="list-style-type: none"> • 9C-9T Basin Atlas deployment manual (November, 2022) • Basin Atlas training and transfer workshop (June 2023 MRCS)
Liaise with and include results of relevant GIZ initiatives, such as the Economics of Land Degradation	Economic analyses of NbS validation report (ongoing)
Transfer and support for hosting of the Phase II hydrological model to the MRCS	9C-9T hydrological modelling guidance document (June, 2023)
WP3: Funding proposal	
Develop 12 detailed project concepts for NbS for flood and drought management	NbS project concepts report (June, 2023)
Prepare, update and revise concept notes for funding proposals and submit to the identified funding agencies ³	<ul style="list-style-type: none"> • GEF-8 PIF document (February, 2023) • GEF round table meetings (Cambodia, Thailand, Lao PDR and Viet Nam)
Action Plan for implementing the 9C-9T Flood and Drought Master Plan	<ul style="list-style-type: none"> • 9C-9T Action Plan (November 2022) • Action plan round table meetings (Cambodia and Thailand)
WP4: Capacity building	
One two-day Modelling Intensive with a small group of regional modelling experts	<ul style="list-style-type: none"> • Hydrological modelling training and transfer workshop (MRCS)

³ Due to the in-depth process for establishing the GEF-8 review process with countries and developing the PIF, this task focused largely on the GEF-8 PIF, with GIZ leading the GCF project conceptualisation.

Activity	Output
Two NbS training events per country in Cambodia and Thailand for national and sub-national level stakeholders for flood and drought management in the Tonle Sap sub-basin	<ul style="list-style-type: none"> Four NbS training missions (Poipet, Aranyaprathet, Sompoi and Ang Trapeang Thmor) NbS training mission reports (December, 2022 and April, 2023)
<ul style="list-style-type: none"> Consultation 	
Two RSC Meetings for Cambodia and for Thailand	<ul style="list-style-type: none"> RSC meeting in Siem Reap, February 2023 (second RSC meeting transferred to an additional round of NWGs, making 4 NWG meetings per countries) RSC meeting report (March, 2023)
Three rounds of NWG meetings (Hybrid format) for each country (three meetings in Cambodia and three meetings in Thailand)	<ul style="list-style-type: none"> Eight NWG meetings (four in Cambodia and four in Thailand) Eight NWG meeting reports (four in Cambodia and four in Thailand)
Missions	
Two 5-day missions to the 9C area in Cambodia, and two 5-day missions to the 9T area in Thailand by national and international experts.	<ul style="list-style-type: none"> Four NbS missions (Kamping Puoy, Ang Trapeang Thmor, Sompoi, Pong Nam Ron) Four NbS mission reports (June and September, 2022)

Additional activities found to be necessary as the Phase progressed were not foreseen as part of initial contract agreements or variations including:

- Preparation, facilitation and follow up to the hybrid GEF round table meetings (Cambodia, Thailand, Lao PDR and Viet Nam)
- Meetings with GEF Focal Points and line agencies concerning GEF STAR funding options (Cambodia, Lao PDR, Vietnam and Thailand)
- Preparation, facilitation and follow up to the hybrid action plan round table meetings (Cambodia and Thailand)
- Development of a working paper and ToRs for proposed Joint Commission and Joint Task Force (see Section 8.2).

Two core deliverables under the 9C-9T Joint Project were covered under different project contracts:

- Economic Analysis of Nature-based Solutions for Flood and Drought Resilience of the 9C-9T Sub-basin
- Translation, configuration and updating of the 9C-9T Basin Atlas.

The activities and deliverables achieved under these projects are not detailed in this report in full, however are referenced where relevant.

2.3.1 Team composition for Phase III

The PMU for the Joint Project Phases III consisted of the following MRCS and GIZ team members:

- Thim Ly, Chief River Basin Planner, MRCS
- Sophearin Chea, Chief River Basin Planner, MRCS
- Barbara Schweiger, Project Director, MRC-GIZ
- Benjamin Hodick, Project Director, MRC-GIZ
- Nittana Southiseng, Deputy Project Director, MRC-GIZ
- Richard Mueller, Development Advisor, MRC-GIZ
- Yia Yang, Technical Advisor, MRC-GIZ
- Nike Hestermann, Development Advisor, MRC-GIZ

Dr Oeurng Chantha continued to support the Cambodia National Mekong Committee (CNMC) and Dr Sompong Boonprasert, the Thailand National Mekong Committee (TNMC) under special contracts with MRC.

The ICEM team working with the PMU consisted of the following specialists:

- Jeremy Carew-Reid, Team Leader
- Hubert Lohr, International Expert
- Richard Cooper, International Decision Support System Specialist
- Nguyen Huy Trung, International Spatial Data Analyst
- William James Hope Ramsay, International Nature-based Solutions Specialist
- Le Song Ha, International Environmental Engineer
- Chhit Kimhor, National Expert for Cambodia
- Sanidda Tiewtoy, National Expert for Thailand

The ICEM management and operational team consisting of:

- Harvey Rich, Project Manager
- Nguyen Thi Phuong Thao, Project Coordinator
- Toy Monireth, Administrative Officer for Cambodia
- Wannee Lattitawanich, Administrative Officer for Thailand

2.4 Joint Project Events

This section lists the events held during Phase II (2019-2021) and Phase III (2022 to June 2023) of the Joint Project (Table 3), including NWG meetings, RSC meetings, technical intensive trainings, field missions, nature-based solutions training missions, 9C-9T Basin Atlas training and 9C-9T Hydrological Modelling training. The events involved a diverse range of stakeholders across the 9C-9T sub-basin, including national line agencies, provincial and other local government departments, regional collaborators (such as NGOs), local communities, universities and research institutes and private sector representatives.

This list is also presented on the 9C-9T Basin Atlas, under the 'Documents' page. Sections 6, 8 and 9 in particular provide more details on these events.

Table 3: List of Joint Project events in Phases II and III

Phase II	Phase III
Regional Steering Committee meetings	
1 st RSC meeting, 04 Sep 2020 2 nd RSC meeting, 03 Nov 2020 3 rd RSC meeting, 17 Aug 2021 4 th RSC meeting, 21 Dec 2021	1 st RSC meeting, 28 Feb 2023
National Working Group meetings	
1 st Cambodia NWG meeting, 4 Sep 2020 1 st Thailand NWG meeting, 10 Sep 2020 2 nd Cambodia NWG meeting, 5 Jan 2021 2 nd Thailand NWG meeting, 14 Dec 2020 3 rd Cambodia NWG meeting, 30 Jun 2021 3 rd Thailand NWG meeting, 24 Feb 2021 4 th Cambodia NWG meeting, 21 Sep 2021 4 th Thailand NWG meeting, 29 Jun 2021 5 th Cambodia NWG meeting, 22 Nov 2021 5 th Thailand NWG meeting, 28 Sep 2021 6 th Thailand NWG meeting, 8 Dec 2021	1 st Cambodia NWG meeting, 28 Mar 2022 1 st Thailand NWG meeting, 20 Apr 2022 2 nd Thailand NWG meeting, 17 Jun 2022 2 nd Cambodia NWG meeting, 01 Jul 2022 3 rd Cambodia NWG meeting, 8 Dec 2022 3 rd Thailand NWG meeting, 14 Dec 2022 4 th Cambodia NWG meeting, 26 May 2023 4 th Thailand NWG meeting, 31 May 2023
Technical Intensive training	
1 st Thailand Technical Intensive, 15 Dec 2020 1 st Cambodia Technical Intensive, 06 Jan 2021 2 nd Thailand Technical Intensive, 25 Feb 2021 2 nd Cambodia Technical Intensive, 01 Jul 2021 3 rd Cambodia Technical Intensive, 22 Sep 2021 3 rd Thailand Technical Intensive, 29 Sep 2021 4 th Cambodia Technical Intensive, 23 Nov 2021 4 th Thailand Technical Intensive, 23 Dec 2021	(one six day training in hydrological modelling)
Field missions	
1 st Cambodia field mission, 20-24 Dec 2020 1 st Thailand field mission, 30 Nov – 3 Dec 2020 2 nd Thailand field mission, 01 – 05 Nov 2021 2 nd Cambodia field mission, 01 – 05 Nov 2021?	1 st Thailand field mission, 6 - 10 Jun 2022 1 st Cambodia field mission, 6 – 10 Jun 2022 2 nd Cambodia field mission, 28 Aug – 2 Sep 2022 2 nd Thailand field mission, 5 – 9 Sep 2022
9C-9T Basin Atlas training	
9C-9T Basin Atlas training (MRC), 9-10, 15-16 and 17 Dec 2021	9C-9T Basin Atlas training (MRC), 20 and 21 June 2023
9C-9T Hydrological Modelling training	
Hydrological Modelling training (MRC, Thailand and Cambodia), 4-5, 16-17 Nov 2021	9C-9T Hydrological Model training (MRC), 1, 16, 21, 23, 24, 25 Nov 2022
NbS training missions	
(many presentations and discussions on NbS as key agenda items in NWG meetings)	1 st Thailand NbS training, 3-16 Nov 2022 1 st Cambodia NbS training, 16-19 Nov 2022 2 nd Thailand NbS training, 21–25 Feb 2023 2 nd Cambodia NbS training, 1-4 Mar 2023

3 WORK PACKAGE 1: FUNDING STRATEGY

A Funding Roadmap⁴ was prepared in June 2020 under Phase II to identify, select and strategically approach funding sources for the Joint Project in consultation with target agencies in Cambodia and Thailand, with prospective donors and with the MRCS/GIZ team. The Funding Roadmap was endorsed by the first Steering Committee meeting in July 2020.

The funding strategy distills an approach to obtaining funding based on the assessment of timelines, processes and priorities of the various national, bilateral, multilateral and global funders. This strategy is based on the goal of commencing implementation of a first phase 5-year project in 2022/23. A set of principles was defined to guide development of a sustainable, phased and comprehensive funding strategy and integrated project (Figure 5).

The importance of funding from the two national governments was emphasized at the NWG and RSC meetings as an essential strategy for sustainability of the joint project activities under the 9C-9T Master Plan.

In summary, the assessment of funding opportunities concluded that:

- There was good potential to attract cash and in-kind contributions from the Cambodian and Thai governments if there is strong backing for a collaborative project from bilateral and international donors.
- There was limited opportunity for major contributions from the existing funding envelopes of bilateral donors working in Cambodia and Thailand, and the COVID-19 situation constrains future contributions in the short term.
- Similarly, the uncertainties relating to the COVID-19 situation meant that major funding commitments from bilateral running regional programs are unlikely in the short term.
- Multi-lateral avenues for funding through the ADB or the World Bank for example, are complex and not easy to pursue through the current MRC Joint Project.

Based on this assessment of opportunities, the recommended approach was to target global funds that could provide a regional project investment framework for host government and bilateral donor contributions. The Global Environment Facility’s International Waters (GEF-IW) funding window, as well as the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) via the International Climate Initiative (IKI) were identified as having the potential to provide such a framework. In particular, GEF would provide the vehicle for governments and donors to buy into a single umbrella transboundary project that manages upstream-downstream influences and facilitates close cooperation between the two countries, facilitated by MRCS.

Figure 5: Nine overarching principles guiding implementation of the funding strategy



⁴ MRC, 2020. Funding Roadmap. Mekong River Commission – Joint Project on Flood and Drought Management.

4 WORK PACKAGE 2: EXPANDED BASELINE ASSESSMENT

WP2 focused on the expanded situation analysis to build on the Phase I baseline assessment with field missions and new studies to fill information gaps. Key activities undertaken included the development of the Phase II hydrological model, a watershed assessment and ranking, completion of field missions, preparation of a situation analysis as part of 9C-9T Master Plan development, and the identification of concepts for a network of nature-based solutions.

4.1 Watershed Assessment and Ranking (Phase II)

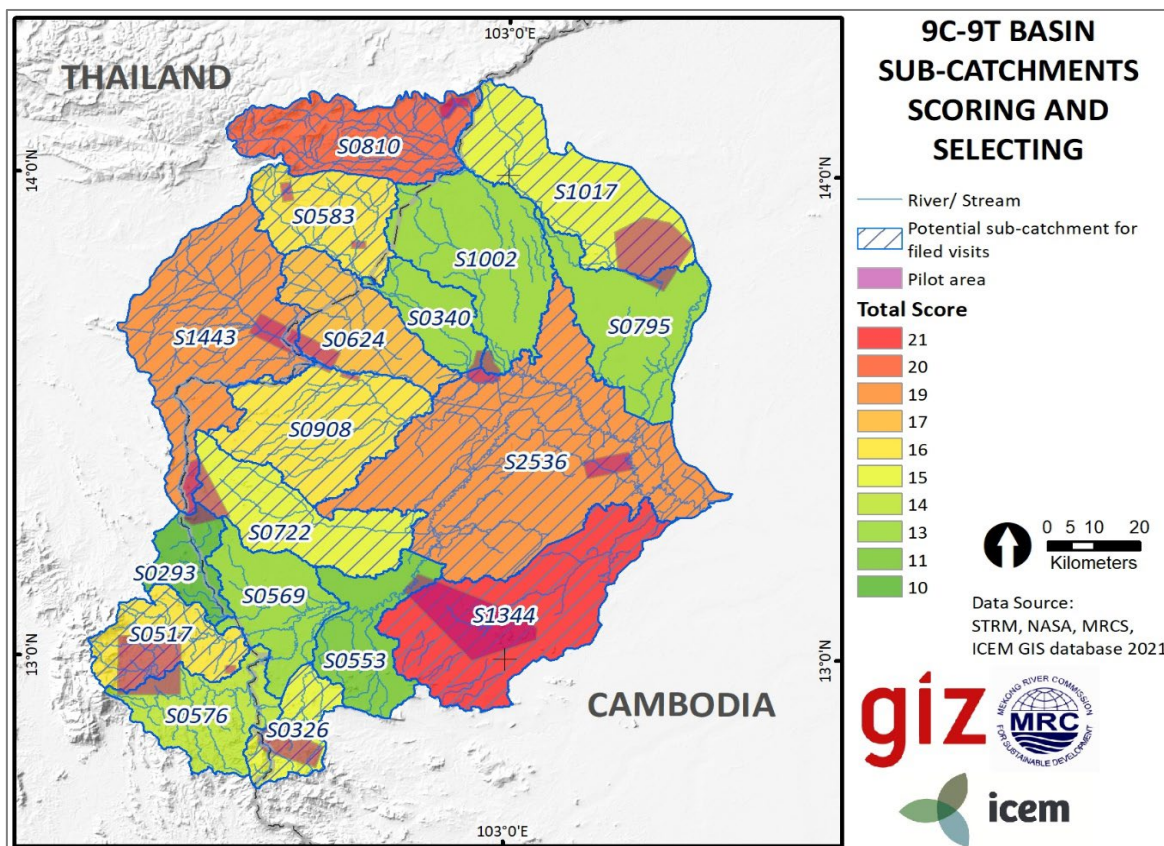
During Phase II, a comprehensive watershed assessment was conducted to identify hotspot areas for priority flood and drought management within the basin. Key assessment steps and results are summarized in the Interim Report, as well as the 9C-9T Master Plan report.

The basin was delineated into 18 sub-catchments and then priority areas were identified by ranking sub-catchments according to rehabilitation needs. Five key composite indexes made up of several relevant parameters were defined as follows.

1. **Drought risk:** A composite score based on sub-catchment soil and water characteristic (Total Available Water, Interception, Exfiltration, Evapotranspiration), evidence of historical drought events and trends, and projected dry season precipitation.
2. **Flood risk:** A composite score based on average flood depth, flood area, and evidence of historical flash floods.
3. **Soil erosion risk:** A composite score based on historical soil loss and local knowledge on soil erosion.
4. **Biodiversity and forest loss risk:** A composite score based on forest coverage, recent forest loss, and biodiversity importance (i.e., Protected Areas, Multiple Use Areas).
5. **Socio-economic importance:** A composite score based on population density and economic importance of the area.

These were combined to develop a composite score (Figure 6). Most of the sub-catchments were defined as flood or drought hotspots.

Figure 6: Sub-catchment scoring and ranking in 9C-9T basin



Eleven catchments were subsequently identified as high priorities for investment for flood and drought management. Specific locations within each of the selected priority sub-catchments were detailed, for further investigation. These informed the initial long list of NbS project concepts (see Section 5.3).

4.2 Remote sensing work (Phase II)

During the Joint Project Phase II, remote sensing technology, which provides comprehensive, continuous, synoptic and multi temporal earth observation satellite coverage of large areas, was used for some important baseline assessments including:

- Forest dynamics across space and time – a spatial and temporal analysis of forest change (forest health and disturbance) in the 9C-9T sub-basin was conducted using advanced remote sensing methods;
- Land use land cover (LULC) change – Landsat data and Land Use Land Cover (LULC) maps were created for the 10-year intervals from 1990-2020 (1990, 2000, 2010 and 2020); and
- Drought hotspot analysis – a remote sensing-based approach for mapping drought hot-spots and trends in the 9C-9T sub-basin.

The 9C-9T Basin Atlas Map Viewer and Map Gallery present the datasets mapped and analyzed as part of these outputs.

4.3 Gender and Social Vulnerability Assessment and Action Plan (Phase III)

Promoting gender equity and social inclusion within project activities and outcomes is crucial to flood and drought management and mitigation activities. Gender and social vulnerability are key considerations of the Joint Project and a core component of the 9C-9T Flood and Drought Master Plan. The Master Plan, Action Plan and Basin Atlas require inclusion of women and vulnerable persons into the project implementation. These populations are most likely to be most impacted by, and least resilient to, flood and drought.

The 9C-9T Gender and Social Vulnerability Assessment specifically supports Output 1.2.5 of the Master Plan to “...prepare and implement a gender and vulnerable communities’ strategy and action plan for mainstreaming within flood and drought resilience sector plans and measures....”.

The Purpose of the Gender and Vulnerability Assessment is to assess how gender and vulnerability considerations may be incorporated into the Joint Project, specifically through its guiding Master Plan and Action Plan. This assessment aims to define how the action plan for the 9C-9T Master Plan implementation can be designed for sensitivity and for the inclusion of women and socially vulnerable populations. The document presents the result of a high-level Gender and Vulnerability Assessment and a Gender and Vulnerability Action Plan (G-VAP). The objectives of the assessment are to:

- Define Gender and Vulnerability, including identifying their sub-groups and sub-components, relevant to the 9C-9T Joint Project
- Identify gaps and recommend enhancements to gather additional information on gender and vulnerability issues, to inform the 9C-9T Master Plan, Action Plan and Basin Atlas
- Undertake a high-level review of the legal framework that relates to Gender and Vulnerability in Cambodia and Thailand
- Outline the relevant international and national policy frameworks applicable for the 9C-9T Joint Project, including relevant international agencies
- Identify a list of key gender and vulnerability-focused actions and activities for implementation in the 9C-9T sub-basin

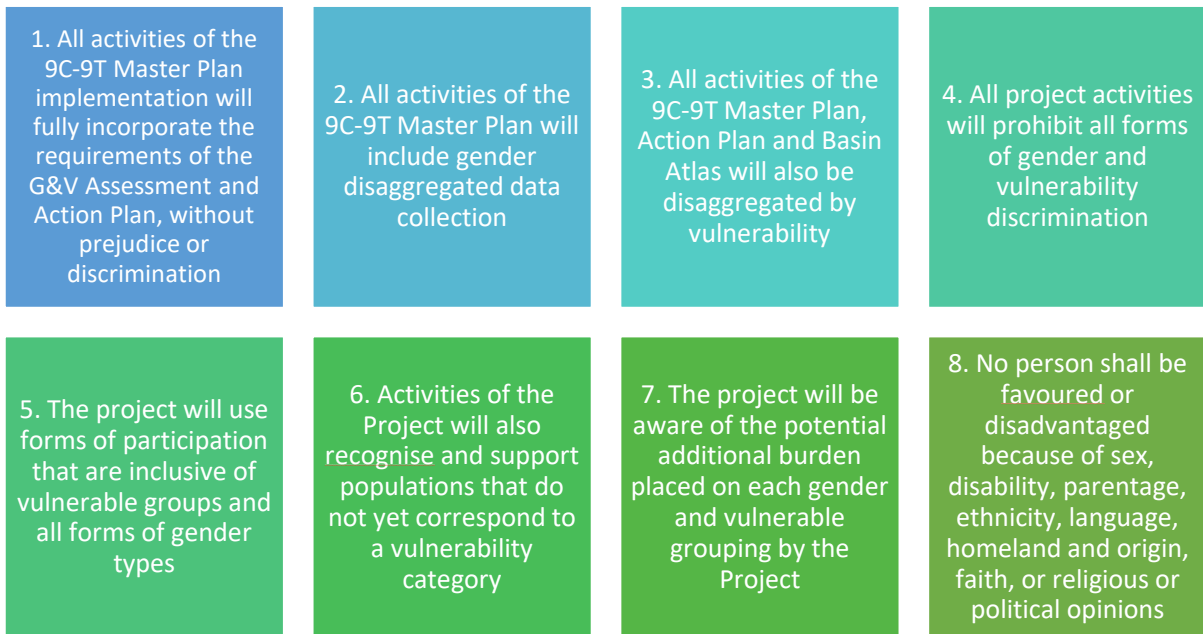
Specific gender and vulnerability components and sub-components for flood and drought management and resilience are defined in the report. The report also defines overarching terms for gender and vulnerability, as follows:

- **Gender** is a social term, linked to societal expectations, including roles and responsibilities, activities and actions, access and control and decision-making. It refers to both female (women and girls) and male (men and boys). Furthermore, it can also refer those that comfortably self-identify themselves as “male” or as “female” and/or also in the general “non-binary” category and/or identify as (lesbian, gay, bisexual, transgender, and queer (LGBTQ)).
- **Vulnerability** refers to marginalized populations and those that are potentially at risk of negative impacts due to minor changes in their development situation. More specifically, it is the characteristics and situation influencing their capacity to anticipate, cope with, mitigate and recover from the impacts of flood and drought risks. Vulnerability may also have differing definitions in Cambodia and Thailand.

Relevant gender and vulnerability policy and legal frameworks for Cambodia, Thailand, MRC, GIZ and the 9C-9T are reviewed. These include the Mekong Basin Development Strategy (BDS), MRC’s review of Gender and Vulnerability related to water resources in the LMB in 2021 and the Handbook for Gender Mainstreaming into MRC Core Functions and Activities. Also included is the GIZ Gender Strategy and GIZ Guidelines on Gender and Vulnerability.

Eight overarching principles are defined and recommended for application during 9C-9T Master Plan implementation (Figure 7).

Figure 7: Gender and vulnerability principles applied to Master Plan implementation



A review was undertaken of salient information from the 9C-9T Master Plan and Action Plan, in relation to gender and vulnerability, to inform the 9C-9T Gender and Vulnerability Assessment and Action Plan. The Master Plan analysis contributed to the development of a G-VAP for the 9C-9T. A thirteen-point action plan has been identified, as presented in Figure 8, which also provides a brief explanation of some of the key G-VAP features, designed specifically for the 9C-9T sub-basin. These comprise suggested actions for the project to support the implementation of the Master Plan, setting out next steps for (i) specific activities, (ii) indicators, (iii) who is responsible and (iv) the timing of activities.

Post Phase III, the G-VAP should be further reviewed by countries and integrated into the 9C-9T Master Plan during future planning cycles.

Figure 8: Thirteen activities under the Gender and Vulnerability Action Plan

Activity 1: Enhancing the gender and vulnerability data for the 9C-9T sub-basin	<ul style="list-style-type: none"> • <i>Enhance the Joint Project database</i>
Activity 2: Increase focus on causal relationships – gender and vulnerability linked to climate change drivers and impacts	<ul style="list-style-type: none"> • <i>Recommend additional site-specific mitigation measures for climate and vulnerability</i>
Activity 3: Enhancement of community-based flood and drought risk management to increase inclusivity of existing vulnerable people, non-binary and women, as well as men and to prevent increases in vulnerability	<ul style="list-style-type: none"> • <i>Prepare or upgrade community plans to integrate G&V</i>
Activity 4: Generate greater inclusivity of women, non-binary and vulnerable people in addition to men, in flood/drought resilience planning	<ul style="list-style-type: none"> • <i>Foster G&V involvement in decision making process</i>
Activity 5: Develop gender and vulnerability inclusiveness in safeguards and consultation processes	<i>Inclusion in the Joint Project development and consultation process</i>
Activity 6: Prepare a community-based enabling strategy for strengthening resilience of vulnerable households located within high-risk areas	<i>Contribution of those residing in hazard-prone areas to decision making and resilience building measures</i>
Activity 7: Provide community-based flood, drought and climate change training	<i>Plan and implement a community-based pilot training program</i>
Activity 8: Provide training of government line agencies for gender and vulnerability, including strengthening institutional arrangements	<i>Plan and implement a training program for government line agencies</i>
Activity 9: Preparing and implementing monitoring systems including disaggregation by gender and vulnerability	<i>Establish a G&V-based Project Performance Management / Monitoring System</i>
Activity 10: Extension and cross-border training on successes and failures of interventions in gender and vulnerable-inclusive practices	<i>Share of successes and failures of G&V based activities</i>
Activity 11: Integration of gender and vulnerability into Priority 2 – landscape area interventions	<i>NbS and hybrid interventions focused on supporting G&V</i>
Activity 12: Assistance in building capacity in employment and employability of marginalized and vulnerable groups in implementation activities	<i>Provision of skills training and assistance for employment and livelihood opportunities to the vulnerable</i>
Activity 13: Gender and vulnerability role in financing-based mechanisms	<i>Financing to prioritise G&V activities</i>

4.4 Economic Analyses of Nature-based Solutions (Phase III)

As a key activity in development of the network of NbS demonstration projects for degraded landscapes, an assessment of the economic performance of NbS measures was conducted to establish the economic case for investment in nature-based approaches. The economic analyses were developed with support of the Economics of Land Degradation (ELD) Initiative⁵ implemented by GIZ.

The study is conducted under a separate contract between ELD and ICEM and runs to end August 2023.⁶ It aims to evaluate the performance of proposed NbS strategies for restoration of three landscapes in the 9C-9T sub-basin - two rural landscapes – Ang Trapeang Thmor (ATT) Reservoir, Cambodia and Sompoi Reservoir, Thailand – and a transboundary urban landscape – with a drainage corridor linking Poipet, Cambodia and Aranyaprathet, Thailand. It is being undertaken in response to the 9C-9T Masterplan's output 1.3.1 *“to conduct economic valuation of ecosystem services to assess benefits of climate-sensitive gender-sensitive, ecosystem-based adaptation for flood and drought resilience measures”*.

The study is estimating the economic performance of conceptual designs for networks of NbS across each landscape which will reduce the risk of flooding, soil erosion and sedimentation of reservoirs and drainage corridors and enhance the performance and resilience of infrastructure. The NbS development scenarios are compared to business-as-usual scenarios for each of the landscapes.

This analysis leads to benefit cost ratios which make the economic case for investment in NbS to help convince relevant policy makers and planners operating within the 9C-9T subbasin and at the wider national scale of the advantages of NbS. In addition, the analysis presents workable methodologies for the economic assessment of NbS that are applicable through the 9C-9T subbasin and elsewhere in the region.

4.5 Development, transfer and hosting of the 9C-9T Basin Atlas on MRCS server (Phases II and III)

The 9C-9T Basin Atlas is an important output from Phases II and III. From late 2022, the Atlas has been hosted by the MRCS for use by Member Countries and partners to support the planning and implementation of the 9C-9T Master Plan.⁷

The objective of the 9C-9T Basin Atlas is to support the Governments of Cambodia and Thailand in managing transboundary flood and drought risk through a web-based interactive platform to facilitate integrating, accessing, visualizing and exploring national flood and drought-related datasets and information. It is a central resource for open sharing of information and data to inform transboundary, national, and sub-national 9C-9T planning, management, and investment in building resilience to flood and drought.

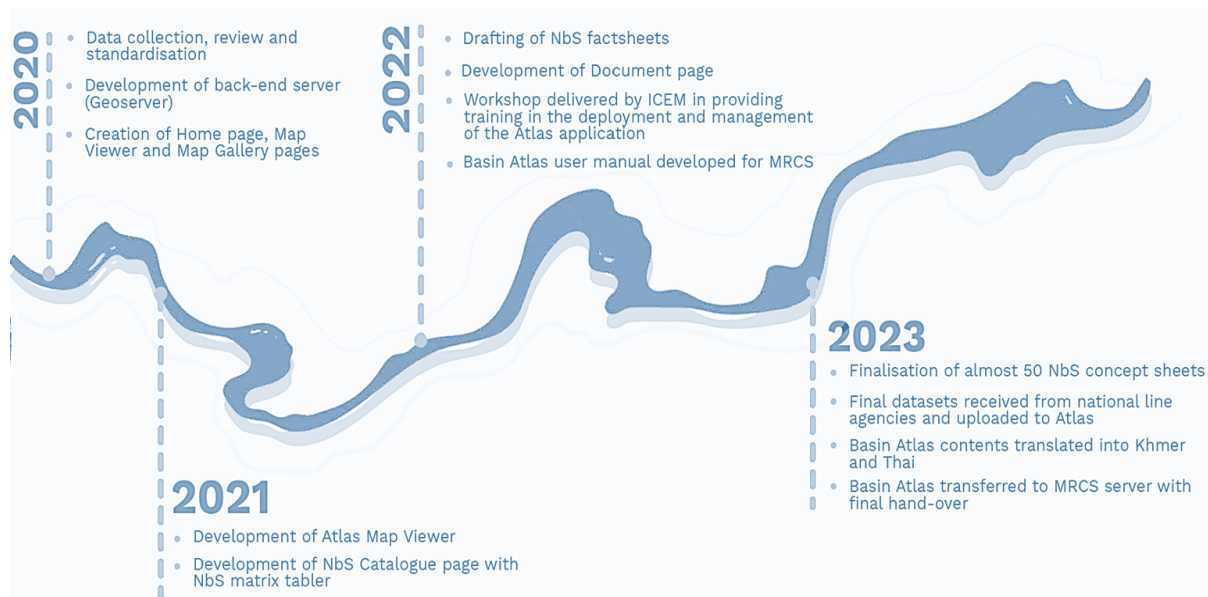
During implementation of the Joint Project, the 9C-9T Basin Atlas development process included regular close working sessions between MRC-GIZ, the NWGs and the RSC with technical support from ICEM as illustrated in Figure 9. An initial Briefing Note on Basin Atlas Hosting was developed in February 2021. Regular training workshops and consultations have taken place throughout the development process to build capacity in its use and to inform the structure and content of the Atlas. The program has included training for MRCS IT officers and relevant specialists on the configuration, deployment, and management of the Atlas (December 2021, September 2022, and June 2023). In addition, a manual for deploying and managing the Atlas was developed and shared with MRCS as part of the capacity building process.

⁵ A global initiative established in 2011 by the United Nations Convention to Combat Desertification (UNCCD), the German Federal Ministry for Economic Cooperation and Development (BMZ), and the European Commission.

⁶ Studies and Experts Fund Asia Regional (Project No. 81284969/19.2207.9-025.00)

⁷ The 9C-9T Basin Atlas is accessible to users on the MRC website: <https://9c9t.mrcmekong.org/>

Figure 9: 9C-9T Basin Atlas development



The final 9C-9T Basin Atlas interface comprises four main components (illustrated in Figure 10):

1. **Atlas Map Viewer:** The Map Viewer is an interactive geospatial mapping tool drawing from a wide range of datasets, that allows users to select, overlay and share spatial layers associated with five areas of importance to flood and drought management in the 9C-9T – (i) environment and biodiversity, (ii) demographics, (iii) economics, (iv) climate change, and (v) opportunities for applying nature-based solutions (NbS) and hybrid measures. The Map Viewer forms the frontend of the Basin Atlas and enables users to interrogate data resources relevant to the flood and drought management. The primary function of the viewer is to overlay and visualize selected data layers, to provide valuable insights for integrated development planning in the shared 9C-9T river basin. The Map Viewer can be viewed in English, Khmer or Thai.
2. **Atlas Map Gallery:** The Map Gallery includes an extensive collection of high-quality and innovative maps on flood and drought issues and spatial layers of concern to basin management. Map categories include (i) base maps, (ii) natural resources, (iii) land use – land cover, (iv) drought, (v) flood, (vi) climate change, and (vii) Nature based solutions (NbS) demonstration landscapes. Users can view the maps and search by keyword.
3. **Nature-based Solutions Catalogue:** The Nature-based Solutions (NbS) catalogue presents a range of NbS and hybrid measures with potential to build flood and drought resilience in the 9C-9T sub-basin. Concise good practice summary sheets are provided for over 50 measures applicable to the 9C-9T. Measures are categorized according to their application in headwaters, agriculture, and urban landscapes. Information is displayed in an interactive factsheet that can be downloaded for offline use and reference.
4. **Document:** The Atlas document page provides users with links to a User Manual and project technical reports, all available for download. A list of project events is also included on this page.

Several training tools have also been developed under the Joint Project and these are accessible from the Basin Atlas home page:

1. **Urban surface runoff model:** The 9C-9T Basin Atlas includes a practical tool for modelling urban surface runoff developed on MS Excel, making it available for urban managers and development planners. It is for training purposes only.
2. **Tool for 9C-9T sub-basin drought vulnerability ranking:** The 9C-9T Basin Atlas includes a practical tool for drought vulnerability assessment developed on MS Excel, making it available for basin and infrastructure planners and managers. It is for training purposes only.

The addition of other tools to the Atlas is an option for the second half of 2023 and 2024. For example, the detailed guidance manual for conducting climate change vulnerability assessments and adaptation planning developed by ICEM and applied to the 9C-9T as part of the expanded baseline assessment. I

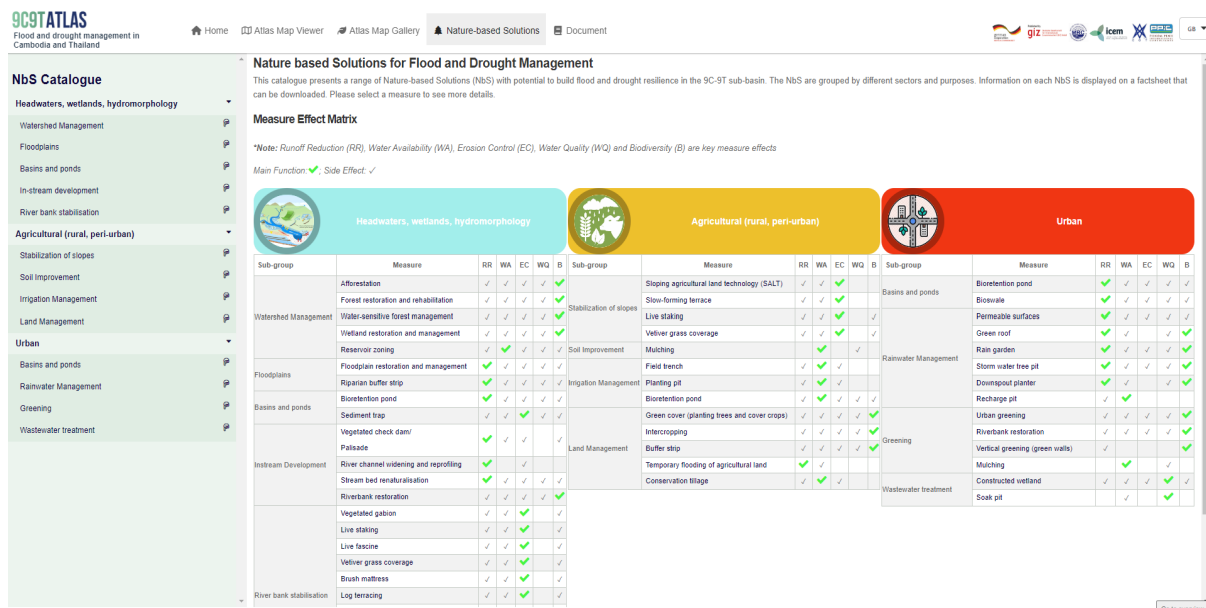
Figure 10: 9C-9T Basin Atlas home page interface



Nature-based Solutions Catalogue: the catalogue presents some 50 Nature-based Solutions (NbS) with potential to build flood and drought resilience in the 9C-9T sub-basin. The NbS are grouped by sectors and purposes. Information on each NbS is displayed on a factsheet that can be downloaded. Three core categories of measures are provided. The NbS categories and sub-categories are presented below:

1. **Headwaters, wetlands and hydromorphology:** Watershed management, floodplains, basins and ponds, in-stream development and riverbank stabilization;
2. **Agricultural (rural, peri-urban):** Stabilization of slopes, land management, soil improvement, irrigation management and land management; and
3. **Urban:** Basins and ponds, rainwater management, greening and wastewater treatment.

Figure 11: NbS Catalogue interface (top); example of the wetland restoration and management factsheet interface (bottom)





The four components of the Basin Atlas were translated into Khmer and Thai between February and May 2023, prior to final deployment onto MRC server. The translation, transfer and deployment on MRC server was provided under a separate contract between GIZ and ICEM.⁸

The Basin Atlas is now an operational tool for use by countries. Any future updates of the Atlas, including the addition of new datasets, maps and reports, will be undertaken by MRC with GIZ support going forward.

4.6 Development, transfer and hosting of the 9C-9T hydrological model on MRCS server (Phases II and III)

The Joint Project has begun to address the need for shared information on flood and drought management via the development of flood maps for the 9C-9T sub-basin, the preparation of climate change projections and the development of a high-resolution hydrological/hydraulic model.

A key output of the 9C-9T Flood and Drought Master Plan is the development of a hydrological model for the 9C-9T sub-basin. The development of the model contributes to the following Master Plan elements:

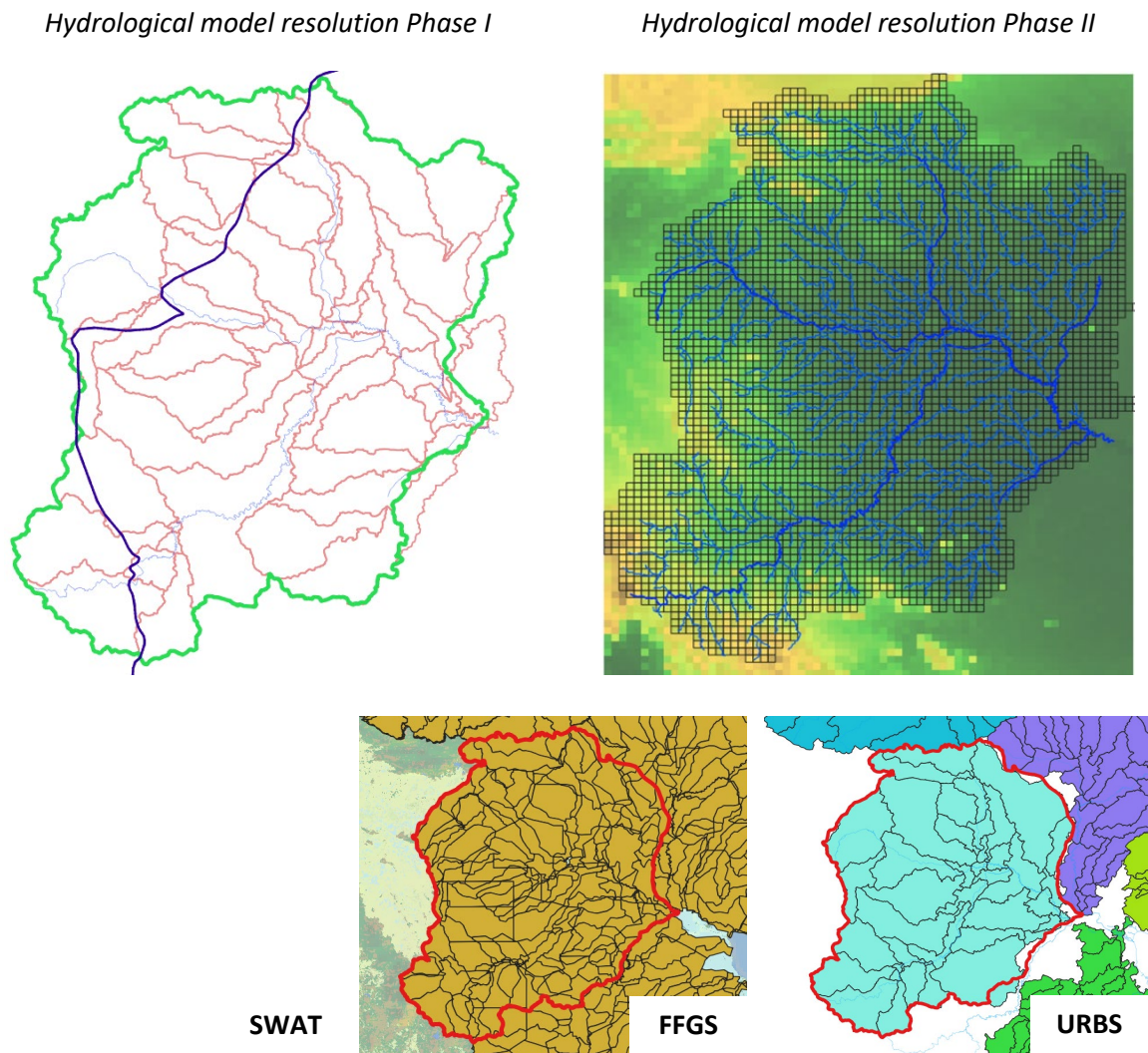
- Strategic Priority 4: activities will develop capacities in flood and drought modelling and communication of results to build on the models developed under the MRC-GIZ Joint Project, in partnership with the MRC Regional Flood and Drought Management Centre (RFDMC). This includes Output 4.1.2: *Establish joint mechanisms for exchange of real time hydrological monitoring data and early warning (national, provincial and local level at target communities).*
- Strategic Priority 5, Output 5.3.1: *Develop capacities at regional and national levels for flood modelling, interpretation, and communication of results, with involvement of the MRC Flood and Drought Management Centre.*

4.6.1. Development of hydrological model

The Talsim-NG 9C-9T model set up for the 9C-9T supports the assessment of basin conditions and hydrological scenario analysis for high flow and low flow conditions associated with flooding, important for drought assessment and management. Talsim-NG also supports drought assessment with in-built capability to represent crop water requirements, distinguish between soil layers and assess water deficits for a given season. These advantages of the Talsim-NG provide a highly credible model to support river basin master planning for the 9C-9T sub-basin as well as local government development planning and infrastructure design and management.

⁸ Configuration and Update of the 9C-9T Basin Atlas (Project No. 83424747/19.2207.9-004.00)

Figure 12: Hydrological model resolution in Phases I and II (top), comparison with other models (bottom)



Phase I of the 9C-9T Joint Project conducted broad based hydrological modelling with the purpose of obtaining an overview of the hydrological situation of the entire 9C-9T sub-basin. Phase II of the Joint Project built on the output and findings of Phase I and involved the establishment of a much higher resolution model. The hydrological assessment for Phase II required a more comprehensive, high-end hydrological modelling approach.

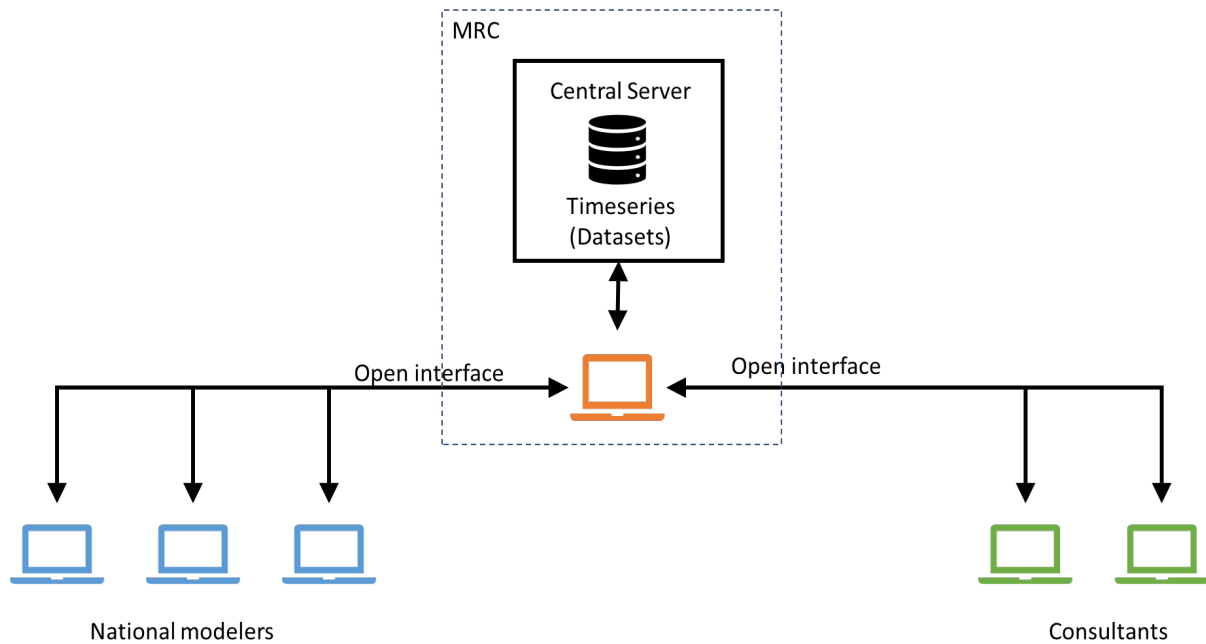
The sources of data used to set up the 9C-9T hydrological model, as well as the calibration process, are presented in the final Hydrological Modelling Guidance report (June 2023).⁹ Calibration was performed based on the flow time series obtained from MRC. The longest time series for calibration was available at the Sisophon station, where the temporal resolution was via a daily time step.

4.6.2. Deployment and transfer of the hydrological model

The 9C-9T hydrological model is now hosted on the MRCS server at the MRC Regional Flood and Drought Management Centre, transferred as part of a deployment and training intensive in November 2022. The installation process comprised the installation and deployment of two components: i) the server and ii) the client software. The server architecture is presented in Figure 13. The approach for updates, maintenance and support were reviewed and is presented in the final Hydrological Modelling Guidance report.

⁹ MRC, 2023. Mongkol Borey – Tonle Sap (9C-9T) Sub-basin, Hydrological Modelling Guidance

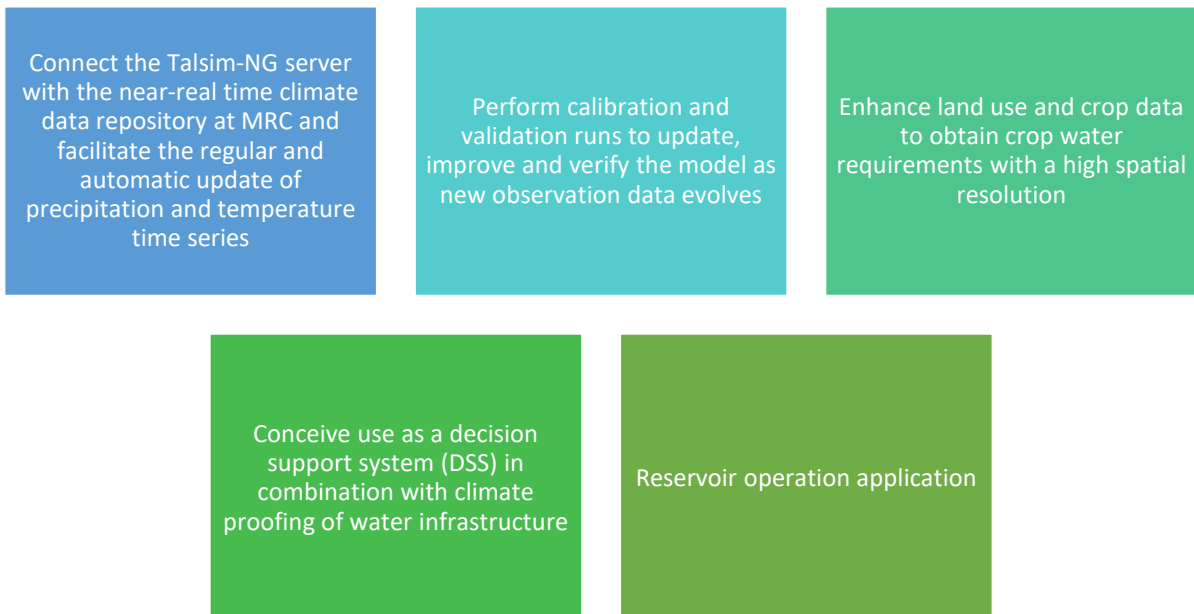
Figure 13: Talsim-NG 9C-9T model server architecture



There is no licensing cost for Talsim-NG software. Some free technical support is provided by SYDRO Consult via email or phone and if more support is needed, particularly for operational use, then this could be provided through a quote from Sydro for a larger annual maintenance and technical support package.

Possible opportunities for future development and deployment of the 9C-9T hydrological model for the 9C-9T sub-basin including an early warning capacity were also discussed, as presented in Figure 14. If further application of the model within MRC is supported, additional configuration would be required to enable operational use.

Figure 14: Future opportunities for the 9C-9T hydrological model



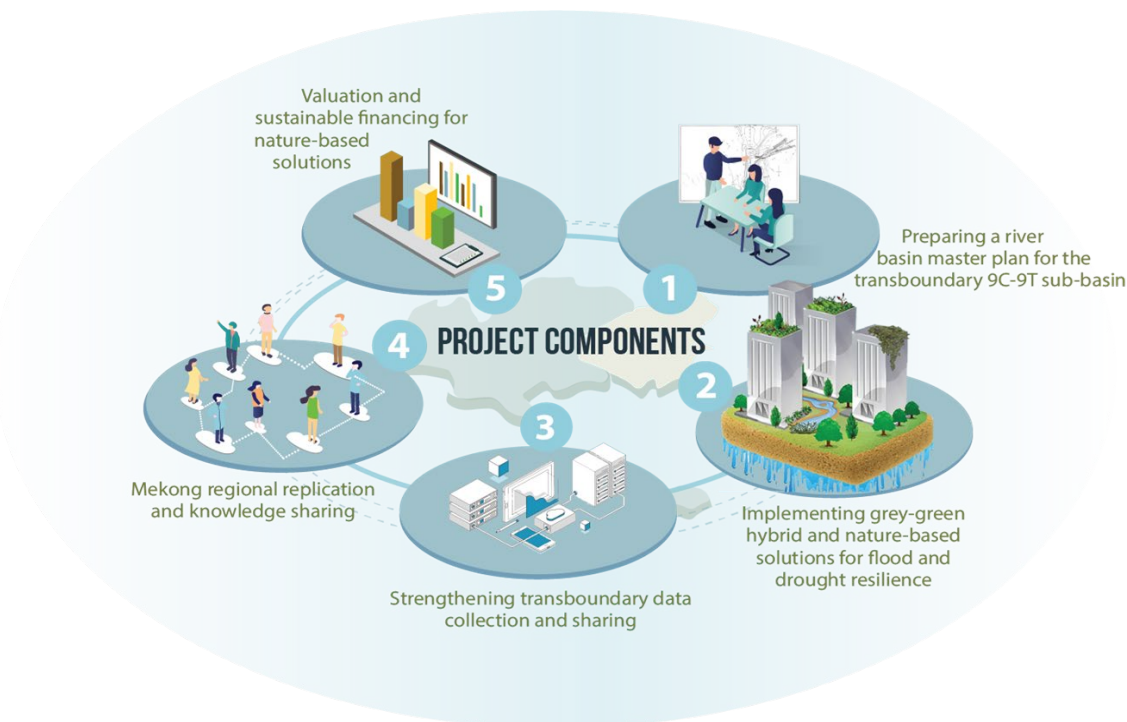
5 WORK PACKAGE 3: FUNDING PROPOSAL

5.1 Preparation of the Phase III project concept (Phase II)

As part of the initial stage of the funding proposal development in Phase II, a project concept note for the Joint Project Phase III was prepared, supported by guidance from the NWGs during 2020-2021. The concept note outlined the key flood and drought issues within the 9C-9T sub-basin and defined needed joint actions between Thailand and Cambodia to address them.

The concept note aimed to address major drivers of increasing flood and drought risk in the 9C-9T sub-basin, by building on and developing a more detailed conceptual model to support the preparation of five major components (outlined in Figure 15) for future financing.

Figure 15. Project components defined in the concept note prepared in Phase II



Of these components, the preparation of the 9C-9T Flood and Drought Master Plan was defined as the highest priority by the NWGs during the fourth NWG meetings in June 2021.

5.2 Preparation and endorsement of the 9C-9T Flood and Drought Master Plan (Phase II)

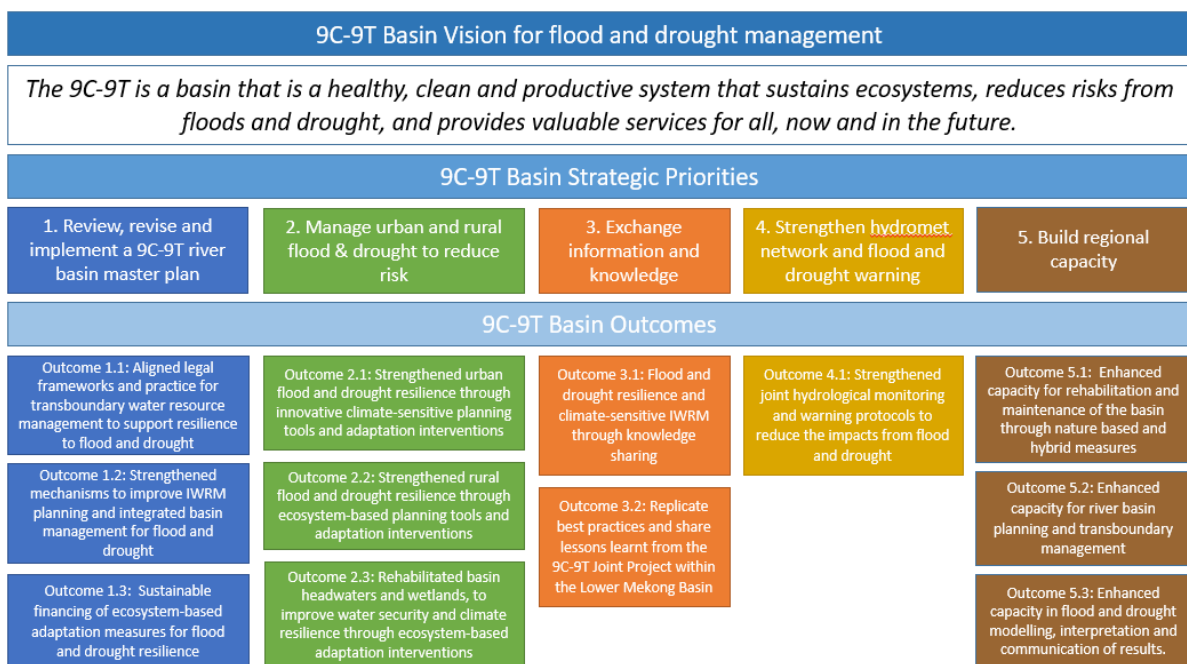
A major activity of Phase II was the preparation and final endorsement of the 9C-9T Flood and Drought Master Plan – which was initially planned for Phase III but brought forward in delivery due to its fundamental importance to the Joint Project sustainability and direction. It is a dynamic framework setting out the joint investment and priority outputs to strengthen resilience to flood and drought within the shared 9C-9T sub-basin, with support from the Mekong River Commission (MRC) and international partners. The Master Plan comprises a 20-year strategic vision to mitigate flood and drought, a 15-year action plan and a five-year schedule and indicative budget running from 2022 to 2026. The Master plan was endorsed by the two countries in December 2021.

The Master Plan promotes a strategic framework and accompanying investments for basin restoration within an integrated river basin planning approach. The strategic priority areas, outcomes and outputs of the action plan have been designed in response to the current condition of the 9C-9T sub-basin. The focus is on basin-wide rehabilitation of the watershed through nature based and hybrid solutions that build resilience in existing hard infrastructure assets such as reservoirs, canals, irrigation systems, roads and urban centres, as well as planned infrastructure.

The Master Plan mission statement is to combat flood and drought in the 9C-9T sub-basin by restoring and rejuvenating the basin through nature-based approaches. The shared basin vision is for *a sub-basin that is a healthy, clean and productive system that sustains ecosystems, reduces risks from floods and drought, and provides valuable services for all, now and in the future.*

The Master Plan was developed in alignment with the National Indicative Plan (NIP) 2021-2025 prepared by each country to capture the benefits of regional cooperation according to Basin Development Strategy (BDS) for the Mekong River Basin 2021-2030 and the MRC Strategic Plan 2021-2025. It was designed to promote six areas of action common to both Cambodia’s and Thailand’s national strategic priorities contributing to integrated water resources management. The strategic framework of the Master Plan scales up investment for flood and drought resilience for five strategic priorities and associated outcomes from 2022-2026, as presented in Figure 16.

Figure 16. Structure of the 9C-9T Flood and Drought Master Plan to outcome level



Cross-sectoral and multi-level cooperation nationally and bilaterally is essential for successful implementation of IWRM, river basin planning and transboundary resilience to flood and drought. Relevant government agencies and stakeholders on both sides of the border will need to contribute to revising, funding and implementing the Master Plan across the 20-year strategy. Most outputs require consultation and engagement with a range of stakeholders as implementation of the Master Plan begins. These stakeholders include the community leaders, civil society, academic and research institute, NGOs and private sector stakeholders, as well as national and local government agencies. In particular, prior to implementing each action, the local community in the vicinity and particularly in downstream areas should be consulted to seek their free, prior, and informed consent.

Detailed outputs proposed under each component are provided according to the objectives, outcomes and outputs outlined in the Master Plan. An initial action plan framework for more detailed guidance on Master Plan implementation has been prepared and further developed and expanded in Phase III (see Section 5.5).

Three levels of intervention are considered in the action plan – bilateral, national and local – as relevant to achievement of each output. Both external and national funding will be required to implement the actions identified within this Master Plan. Indicative budgets for the contributions from each source are provided alongside each output. Given there are more than 40 outputs defined in the Master Plan, the elaboration of detailed activities will be an iterative process over the remainder of Phase III to end 2024 and beyond. It will involve working closely with the main implementing agencies in each country. Some actions may already be identified and budgeted in line agency development

plans and programs. Other actions may be supported by international organisations – for example the further development of early warning systems by the German Government. Still other actions which are consistent with national policy and commitment will need to be detailed. It may be best if the action plan only sought to define activities over the shorter term – for example, to end 2025, rather than for five- and ten-year cycles and was subject to a rolling review and revision annually. The way the plan would remain fresh and relevant. The exception would be if the national governments and international funding sources made substantial commitments to aspects of the master plan over a longer period necessitating detailed “project” design.

Figure 17: Strategic priorities, outcomes, interventions, and indicative budgets of the initial action plan presented in the Master Plan document (example for Strategic Priority 1)

Strategic priority	Outcomes	Outputs	Intervention levels	First five years of a 15 year program					Budget – 2022-2026 (USD)			Total
				2022	2023	2024	2025	2026	International	National Cambodia	National Thailand	
Priority 1: Review, revise and implement a 9C-9T river basin master plan	Outcome 1.1: Aligned legal frameworks and practice for transboundary water resource management to support resilience to flood and drought	Output 1.1.1: Review and update the 9C-9T flood and drought master plan as part of the existing five year national development planning and budget cycles.	Bilateral						200,000	20,000	50,000	270,000
		Output 1.1.2: Review and revise legal and administrative frameworks for river basin planning in both countries so they are well aligned, including a requirement for strategic environmental assessment as part of plan preparation.	National – with bilateral consultation to ensure consistency						60,000	20,000	20,000	100,000
		Output 1.1.3: Review and revise legal and administrative frameworks for spatial planning and zoning with safeguards on a catchment basis and ensure associated tools and capacities are in place.	National, and bilateral for transboundary catchments						60,000	20,000	20,000	100,000
		Output 1.1.4: Review and revise legal and administrative frameworks for environmental impact assessment systems to ensure cumulative assessments of many developments (small and large scale) within a catchment are conducted.	National, and bilateral for transboundary catchments						60,000	20,000	20,000	100,000
	Outcome 1.2: Strengthened mechanisms to improve IWRM planning and integrated basin management for flood and drought	Output 1.2.1: Conduct a transboundary 9C-9T river basin climate change vulnerability assessment and adaptation planning as an input to the river basin planning process and plan	Bilateral						60,000	20,000	50,000	130,000
		Output 1.2.2: Establish the Cambodia 9C river basin committee to improve cross-sector and community participation in river basin management based on the existing 9C-9T cross-sectoral institutional structure for transboundary cooperation.	Cambodia national with bilateral consultation and learning						60,000	50,000	0	110,000
		Output 1.2.3: Conduct a transboundary SEA of the 9C-9T basin action plan and assign management zones according to conservation and use values, with linked guiding principles for their rehabilitation and management and associated policy and institutional reforms.	Bilateral						200,000	20,000	50,000	270,000
		Output 1.2.4: Carry out comprehensive and transparent cumulative impact assessment of planned infrastructure in the 9C-9T basin such as weirs, ponds, wells, reservoirs and dams, and irrigation systems including pumping systems (for example listed infrastructure in the Thai National Water Resource Master Plan and MOWRAM sector development master plan)	National, and bilateral for transboundary catchments						30,000	150,000	200,000	380,000
		Output 1.2.5: Prepare and implement a gender and vulnerable communities strategy and action plan for mainstreaming within flood and drought resilience sector plans and measures	Bilateral and national						30,000	20,000	20,000	70,000
		Output 1.2.6: Review, prepare and adopt harmonized sector action plans for 9C and 9T sub-basin areas to build flood and drought resilience (ie plans by relevant national government sector agencies responsible for water management, irrigation, forestry and agriculture, other infrastructure development and environmental management for example)	Bilateral and national						150,000	50,000	50,000	250,000
Output 1.2.7: Harmonise the design regulation and guidelines for dams to ensure net gain in watershed condition and biodiversity – and the consideration of cumulative affects		Bilateral with national application and implementation						20,000	20,000	20,000	60,000	

The implementation of the Master Plan will be accompanied by regular monitoring and evaluation (M&E) against the strategic framework, overseen by the Joint Project governance structure. Most outputs require consultation and engagement with a range of stakeholders as implementation of the Master Plan moves forward. The overall indicator framework and annual reporting schedule is shown as an example in Figure 18. This framework will be further detailed against each output as each enters a detailed design phase linked to national and international funding opportunities (for example, GEF and GCF).

Figure 18: Indicator framework for monitoring and evaluation presented in the Master Plan document (example for Strategic Priority 1)

Strategic priority	Outcomes	Indicator	Intervention levels	Annual reporting				
				2022	2023	2024	2025	2026
Cross-cutting	Joint governance	Twenty-four (twelve in each country) meetings conducted for the National Working Group for the 9C-9T sub-basin. Ten meetings conducted for the regional Steering Committee for the 9C-9T sub-basin.	Bilateral					
Priority 1: Review, revise and implement a 9C-9T river basin master plan	Outcome 1.1: Aligned legal frameworks and practice for transboundary water resource management to support resilience to flood and drought	One revised Master Plan/action plan for the 9C-9T sub-basin (2027-2032)	Bilateral					
		Two sets of legal and administrative frameworks for river basin planning (Cambodia and Thailand) include a requirement for strategic environmental assessment.	National – with bilateral consultation to ensure consistency					
		One set of zoning overlays and safeguards for the 9C-9T sub-basin is available to agencies in both countries.	National, and bilateral for transboundary catchments					
		Two sets of legal and administrative frameworks for environmental impact assessment systems (Cambodia and Thailand) include a requirement cumulative assessments of many developments (small and large scale) within a catchment.	National, and bilateral for transboundary catchments					
	Outcome 1.2: Strengthened mechanisms to improve IWRM planning and integrated basin management for flood and drought	One climate change vulnerability assessment and adaptation plan for the 9C-9T sub-basin.	Bilateral					
	One river basin committee established for the Cambodian Stung Mongkol Borey basin.	Cambodia national with bilateral consultation and learning						

The Master Plan will be revised in 2025, prior to the next five-year cycle in 2026. At this point, countries will review its alignment and implementation to date, and suggest possible new priorities and outputs going forward.

5.3 Preparation of the NbS Project Concepts for flood and drought management (Phases II and III)

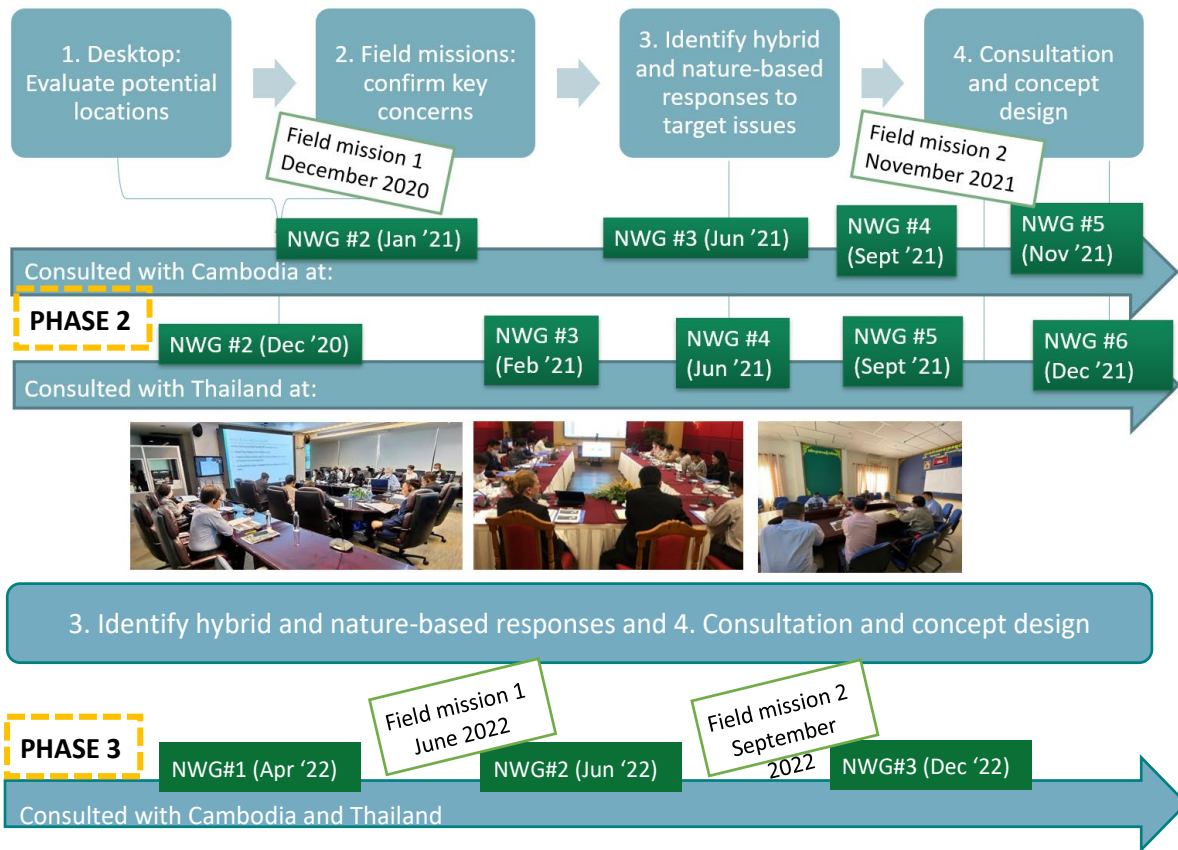
NbS and hybrid measures to build flood and drought resilience in the 9C-9T sub-basin were identified by countries as a key element of the Master Plan and future funding proposals. A report was developed with the NWGs and in consultation with local stakeholders through successive field missions on ‘Initial Project Concepts: A Network of Nature-based Solutions to Implement Component 2 of the 9C-9T Flood and Drought Master Plan 2022-2026’.

The report sets out NbS to be demonstrated within a network of collaborative projects for landscape restoration conducted by Cambodia and Thailand. Nature-based solutions are defined in the report as “actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits”.¹⁰

Detailed assessments identified priority landscapes and NbS interventions within the 9C-9T sub-basin (Figure 20). Each NbS “project”, setting out networks of NbS and hybrid measures, was developed through intensive Geographic Information Systems (GIS) analysis, field survey and local consultation. During 2021-22, four field missions in each country were conducted to support preparation of the concepts (Figure 19).

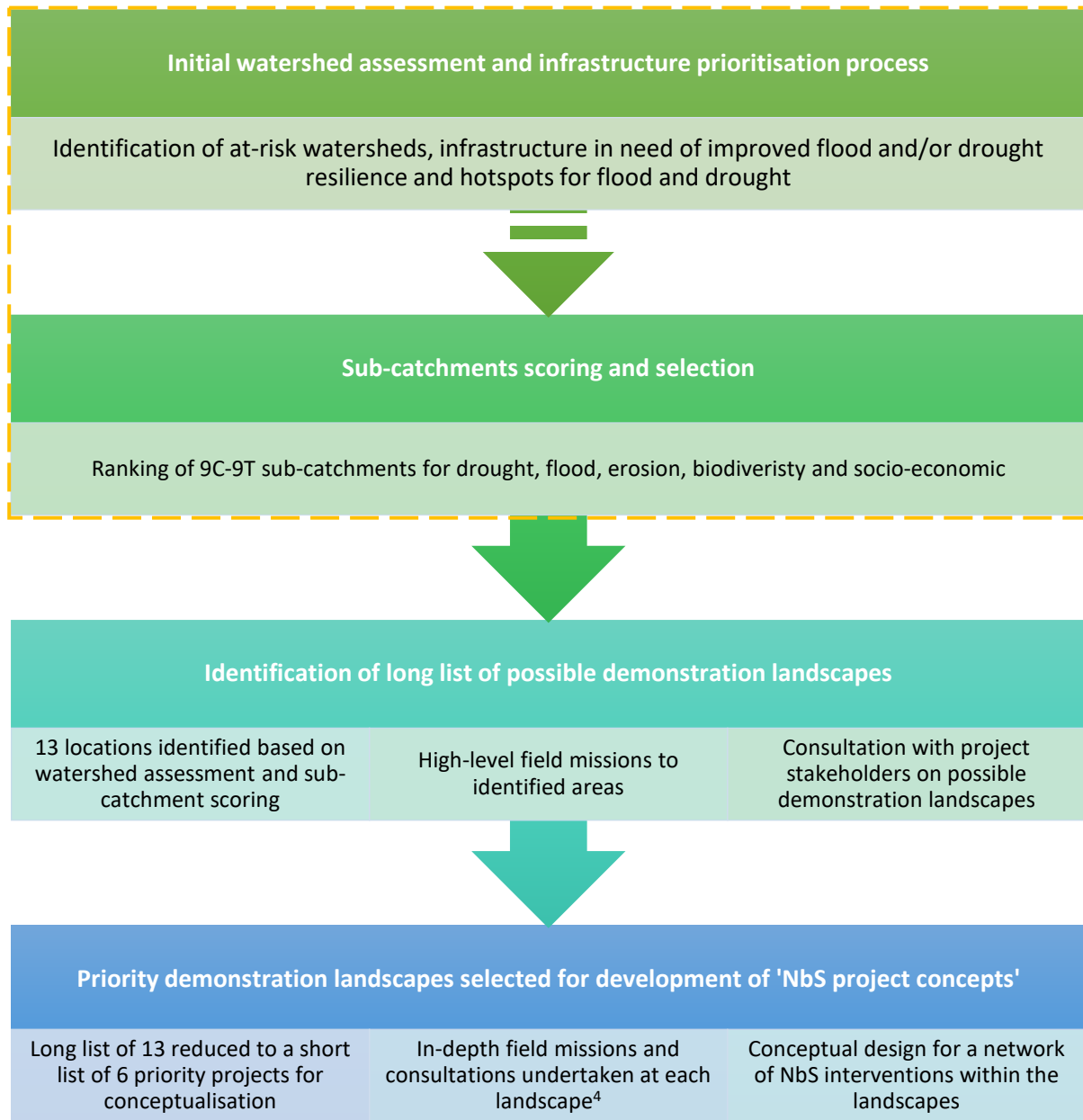
¹⁰ The formally agreed definition under the United Nations Environment Assembly (UNEA).

Figure 19: Consultation and assessment process to inform NbS conceptualisation



A landscape scale and ecosystem-based approach was taken in defining demonstration projects suited for scaling up and replication across the basin. The network of NbS and hybrid projects for each landscape were defined by the NWGs, with strong support from the Cambodian Ministry of Water Resources and Meteorology (MOWRAM) and the Thai Office of National Water Resources (ONWR).

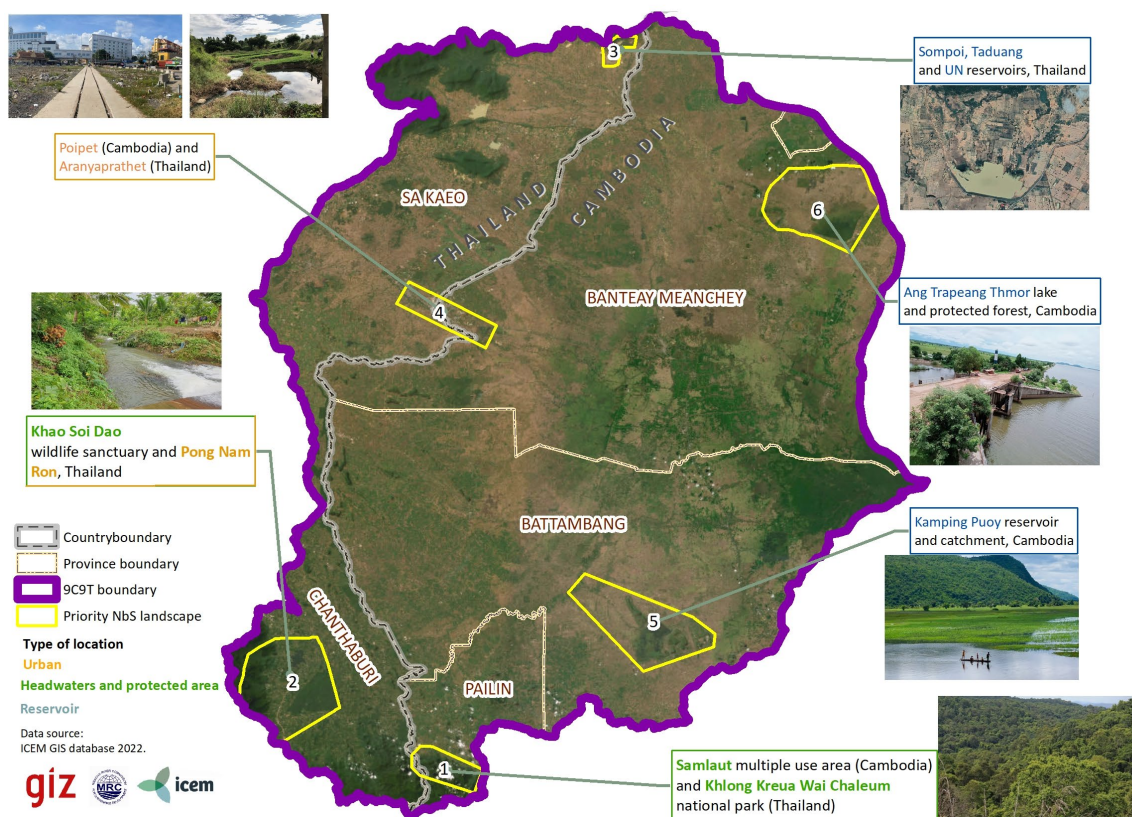
Figure 20: Steps for identifying priority landscapes to develop a network of NbS interventions



The report covers three degraded landscapes in each country that are in urgent need of restoration. The six landscapes provide for the demonstration of 15 specific nature based and hybrid solutions laid out in networks across connected forest, agricultural and urban landscapes (Figures 21 and 22).

¹¹ No site visit was conducted to the Samlout Multiple Use Area (Cambodia) and Khlong Kreua Wai Chaleum National Park (Thailand) to support design. NbS network design was conducted through secondary data and spatial analysis. Future field missions will allow for detailing of the NbS network in these critical biodiversity areas and headwaters.

Figure 21: Selected project landscapes for NbS conceptualisation



The six project concepts are presented in detail as individual chapters, each consisting of the following components:

- A project overview and objectives,
- An outline of the project alignment to the 9C-9T Masterplan,
- The implementing stakeholders, including the leading and supporting agencies for the particular project location and alignment with lead agency priorities;
- A site description;
- An assessment of the flood and drought drivers and impacts;
- The nature based and hybrid solutions concepts proposed, including concept design; and
- An overview of project benefits.

Proposed measures include rehabilitation of degraded upper catchments and drainage corridors; restoration and expansion of forest cover and wetlands; canal, river and reservoir rehabilitation including vegetated buffers, sediment trapping and bank stabilization; vegetated buffers on boundaries of agricultural fields and along roads; and a wide range of NbS in urban areas, including swales, rain gardens, constructed wetlands, expansion of green space and urban forest canopy cover.

The NbS project descriptions are at the conceptual stage for further development with lead implementing agencies during Master Plan implementation from 2023 onwards. The projects are a starting point leading to architectural landscape drawings so that stakeholders have a clear sense of what the interventions look like in the target locations, and then detailed engineering design. This report is intended for use by agencies responsible for 9C-9T Master Plan Outcome 2 implementation.

Further development of the project concepts will be progressed as the Master Plan is implemented, via national and international funding contributions. The project concepts will be included in international funding applications from 2023. Once national and international funding is secured, detailed designs for each project concept and their network of NbS will be developed, accompanied by comprehensive assessments, plans and stakeholder engagement, as outlined in the 9C-9T Master Plan. More projects can be added over time, based on country priorities and funding opportunities.

Figure 22: Overview of the six NbS project concepts



5.4 GEF-8 International Waters funding proposal (Phase III)

5.4.1. GEF-8 project outline

The Global Environment Facility’s International Waters (GEF-IW) program was identified as an important funding opportunity to implement certain elements of the Master Plan. Building on an initial GEF-7 Concept Note developed during Phase II, a Project Identification Form (PIF) was drafted in Phase III targeting GEF8, for submission to the GEF Council in December 2023 or June 2024. The PIF presents an outline of the proposed GEF supported project, including the project rationale, description, alignment with GEF-8 priorities, policy requirements, financing and endorsements.

Table 4 summarizes the project information and contribution to GEF Global Environmental Indicator, and the proposed GEF agency and executing agencies. The existing institutional structure within the 9C-9T sub-basin will be retained and expanded as part of the proposed GEF project. Table 5 sets out the project budget, including proposed co-financing per country.

Table 4: Project information and contribution to GEF Global Environmental Indicator

Project Objective:	To enhance transboundary cooperation to restore and build ecosystem and community resilience to flood and drought impacts in shared river basins in the Mekong region, with a focus on the 9C-9T basin shared by Cambodia and Thailand and the Sekong basin shared by Viet Nam, Lao PDR and Cambodia		
Countries:	Cambodia, Thailand, Lao PDR and Viet Nam		
GEF 8 Core Indicator:	Number of shared water ecosystems (fresh or marine) under new or improved cooperative management	GEF Focal Area:	International Waters
Project Executing Entities:	Mekong River Commission (Regional executing partner); Ministry of Water Resources and Meteorology (Cambodia); Office of National Water Resources (Thailand); Ministry of Natural Resources and Environment (Lao PDR) and Ministry of Natural Resources and Environment (Viet Nam); other regional transboundary partners	GEF Agency:	FAO
Submission Date:	June 2023	Project Duration:	60 months

Table 5: Current proposal for GEF IW budget and, co-financing contributions for the Project

Project executing entity	GEF IW Project budget (USD)		Expected project co-financing contribution (USD)		
	9C-9T	Sekong	In-kind	Investment	Combined
MRC			500,000	2,000,000	2,500,000
Thailand	9,170,000		4,300,000	12,000,000	16,300,000
Cambodia			4,200,000	63,000,000	67,200,000
Lao PDR		1,000,000	500,000	5,000,000	5,500,000
Vietnam			100,000	2,000,000	2,100,000
Total		10,170,000	9,600,000	84,000,000	93,600,000

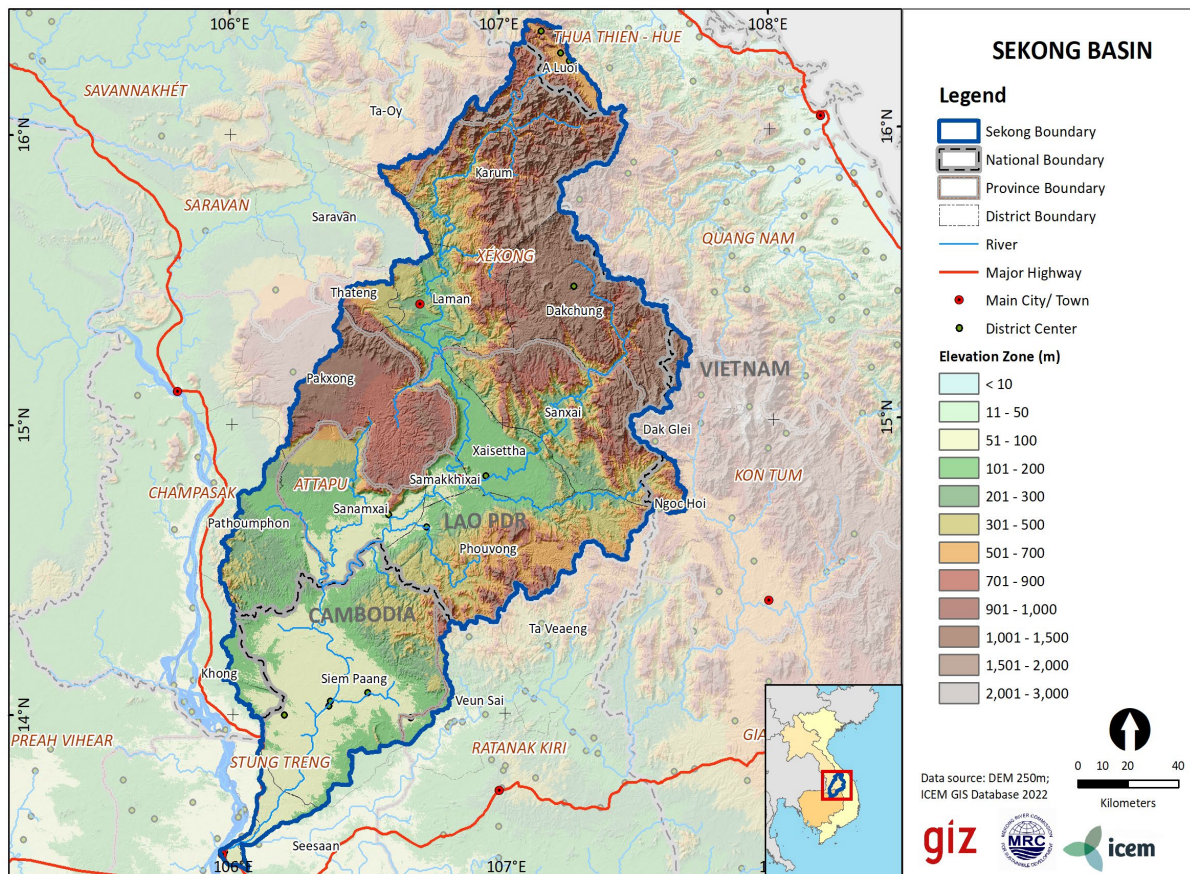
The GEF System for Transparent Allocation of Resources (STAR) contributions are currently being discussed and agreed with the four project countries, via the GEF Operational Focal Points (OFPs). Preliminary agreements have been made in Cambodia for a STAR contribution of USD\$ 640,000. In Thailand, ONWR has proposed a USD\$3 million STAR contribution which going through a national GEF STAR allocation review process to be completed in July 2023. A STAR contribution of \$ 400,000 is under consideration in Viet Nam. In Lao PDR, contributing funds are being sought through the Least Development Country Fund (LDCF). Final STAR contributions will need to be confirmed by the PMU prior to submission of the PIF to GEF (Table 5).

The proposed GEF project seeks to restore ecosystem services in two shared river basins as a model for replication and collaborative management of international waters in the Mekong region. The project will replicate the 9C-9T model restoration approach in the Sekong basin shared by Vietnam, Lao PDR and Cambodia (Figure 23). The 9C-9T and the Sekong basins bring together all four LMB countries in a transboundary initiative to restore ecosystem health and achieve biodiversity gains.

The Project aims to build on the success of the 9C-9T collaboration to reduce the vulnerability of communities and ecosystems in Cambodia, Thailand, Lao PDR and Vietnam. It will deploy NbS for transboundary ecosystem restoration and effective flood and drought management in the 9C-9T and Sekong basins. It will promote investment in five core areas or ‘Components’ – which are aligned with the 9C-9T Master Plan joint priority areas:

1. Embedding the endorsed Master Plan for the 9C-9T as a permanent cyclical policy framework which is implemented, reviewed and revised every five years as an integral part of both governments development planning and budgetary process
2. Implementing urban, rural and watershed flood and drought management through networks of NbS measures in the 9C-9T
3. Strengthening information and knowledge exchange, hydromet networks, and flood and drought early warning in the 9C-9T
4. Building regional capacity in transboundary river basin ecosystem restoration and maintenance with NbS through demonstration and exchange
5. Replicating the river basin restoration and management approach in the Sekong basin

Figure 23: The Sekong River Basin



5.4.2. PIF development process

The process for engaging countries and developing the PIF for submission to GEF has involved a long and complex process. An overview of the PIF development process is presented in Table 6.

Initial intentions to submit the PIF under GEF-7 in Phase II were adjusted to target GEF-8 because the GEF7 funding was expended. Feedback provided by the GEF Secretariat to date in 2022 and 2023 is outlined below. This feedback has been taken on board and has informed the PIF development process:

- Initial discussions with the GEF Secretariat were favourable and they requested project summary for internal review.¹²
- STAR contributions from all project countries would be required to secure GEF IW funding.
- The need for countries to provide sufficient cash co-financing was emphasised with a ratio of at least 1:7 GEF funds to co-financing.
- At the submission stage, endorsement of the PIF is required by all countries receiving project financing, via a joint endorsement letter.
- It was initially suggested that the earliest opportunity for PIF submission to GEF would be in April 2023 for the June 2023 GEF Council 64th meeting. This was subsequently changed to December 2023 and possibly June 2024.

The first draft PIF (developed in May 2022) presented to countries focused only on the 9C-9T (Cambodia and Thailand) and was fully aligned to the 9C-9T Master Plan strategic priorities. Based on further discussions and recommendations from MRC at the June 2022 Expert group on Strategy and Partnerships, the project scope was expanded to take on a LMB wide approach bringing in Lao PDR and Viet Nam, through the Sekong replication component. Country specific GEF-8 PIF round table meetings were held in each of the four project countries in October 2022, to agree on the PIF approach and next steps for identifying co-financing and STAR contributions.

Table 6: Phase III GEF-8 PIF consultation and development process (*italics represent tasks still to be completed*)

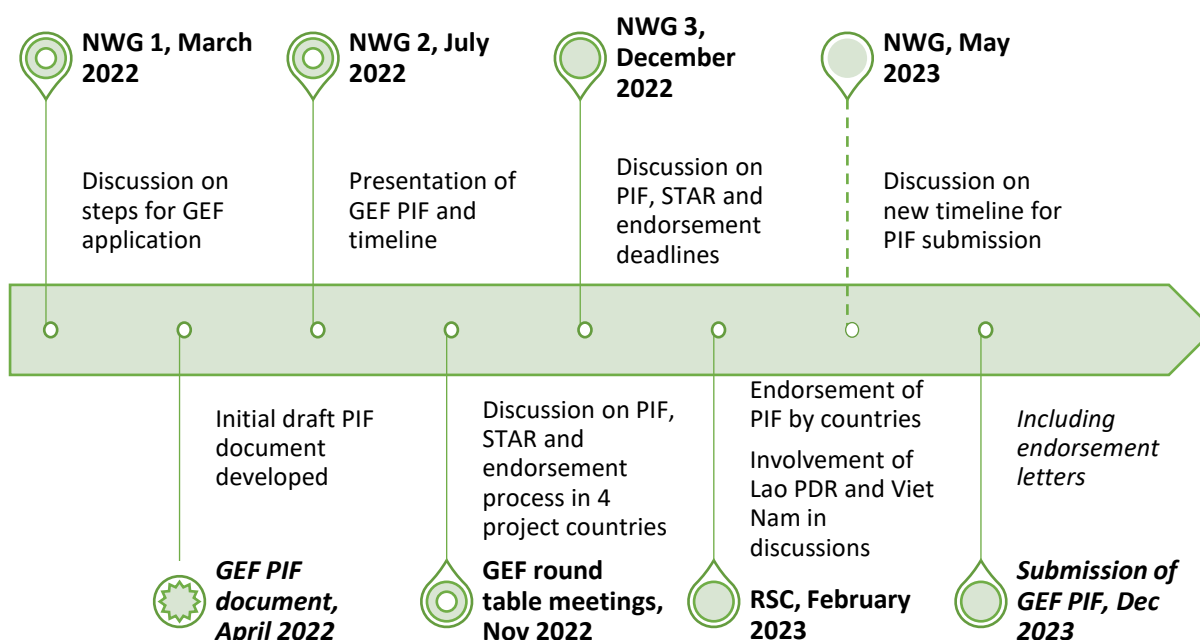
Step	Action	Agency	Indicative timeline
1	Drafting of the GEF-8 PIF by the consultant team and review and update based on MRC-GIZ comments	ICEM	May 2022
2	Prepare initial list of co-financing for the GEF-8 PIF		
3	Hold Expert group on Strategy and Partnerships to discuss revised funding approach	MRC	June 2022
4	Prepare list of co-financing for the GEF-8 PIF	National agencies	October 2022
5	Revision of the GEF-8 PIF to include Lao PDR and Viet Nam	ICEM	
6	Review and expanded list of co-financing for the GEF-8 PIF	National agencies	
7	Hold meetings with Member Countries to discuss revised funding approach	MRC - ICEM	
8	Work with GEF OFP on consultation with concerned agencies including their participation in the Joint Project NWG for review of the PIF	National agencies with support from MRC and ICEM	November - December 2022
9	Discussion on national STAR contributions	National agencies	

¹² MRC, 2023. Global Environment Facility (GEF) International Waters (IW) Project Concept: 'Restoration of Shared River Basins in the Mekong Region'.

Step	Action	Agency	Indicative timeline
10	Request letters of confirmation of participation from all concerned agencies		January - March 2023
11	Endorsement of draft PIF by RSC	<i>Regional Steering Committee</i>	February 2023
12	Meeting with GEF Sec on the draft PIF	<i>MRC-GIZ</i>	<i>July 2023</i>
13	Update of PIF based on comments from GEF Sec		
14	Member Countries endorse final PIF	<i>Regional Steering Committee</i>	<i>August 2023</i>
15	Confirmation of national STAR contributions	<i>National agencies</i>	
16	Submit the PIF from participating agencies to the GEF ODP	<i>National agencies</i>	
17	Letter of endorsement drafted by FAO and sent to all countries for signing	<i>FAO (GEF Agency)</i>	<i>September 2023</i>
18	PIF submitted by FAO via GEF Portal to GEF Secretariat for review at December 2023 GEF Council meeting		

The 9C-9T NWG and RSC have been engaged from the outset of the PIF development process, to inform the approach and priority Master Plan outputs for inclusion in the PIF for GEF financing. Their involvement in Phase III is presented in Figure 24.

Figure 24: NWG and RSC stakeholder involvement in the PIF development process



The PIF is currently a working document which was endorsed by countries in May 2023. Any future updates to the PIF based on GEF Secretariat recommendations will be made in the second half of 2023 to take account of GEF IW feedback and FAO advice.

5.5 Elaborating Action Plan for implementing the 9C-9T Flood and Drought Master Plan (Phase III)

Cross-sectoral and multi-level cooperation nationally and bilaterally is essential for successful implementation of IWRM, river basin planning and transboundary resilience to flood and drought. Relevant government agencies and stakeholders on both sides of the border will need to contribute to revising and implementing the Master Plan in five-year cycles across the 20-year strategy. Institutional arrangements for implementation of the Master Plan will retain and expand the existing governance structure established for the 9C-9T sub-basin. The funding strategy for the Master Plan is grounded in national funding contributions via sectoral and agency budgets of Cambodia and Thailand. The national budget commitments are essential for the sustainability of project activities.

National funding will be supplemented by international funding to add momentum and scale in the short-to-medium term. To further the national funding approach and build on the high-level action plan identified in the Master Plan document, a detailed action plan was drafted to:

1. Facilitate implementation of the 9C-9T master plan;
2. Identify specific and tangible actions (or activities) for each masterplan output;
3. Identify a government agency to lead the implementation of each action;
4. Provide an indicative national cost break down for each action per lead implementing agency; and
5. Enable masterplan budgets to be mainstreamed into line agency finances.

The action plan was developed in MS Excel, progressing a level further than the Master Plan, by identifying individual actions. In total 3-6 individual actions were detailed for each of the 47 Master Plan outputs. Individual or joint lead agencies and multi-scale support agencies were identified for each output for both Cambodia and Thailand (where relevant). Initially, six lead agencies were identified in Thailand and four in Cambodia.

The July 2022 NWG meetings considered the draft Action Plan and the need for government budgetary contributions for its implementation. NWGs recommended that a separate meeting of national line and lead agencies should be convened to discuss the action plan and required government budgetary commitments in more detail. Roundtable meetings were subsequently held between Cambodian and Thai NWG line agencies in October 2022. The draft action plan was translated into Khmer and Thai in advance of the meetings.

The meeting objectives were to present and discuss:

1. The 9C-9T Flood and Drought Masterplan and action plan;
2. The nominated lead agencies (and supporting agencies) for each action;
3. The suitability of the proposed national budget contributions and timeline for each action;
4. Identifying existing or planned activities by each agency consistent with the action plan; and
5. Next steps to be taken by lead agencies to seek national budget contributions for action plan implementation.

Discussions focused on the suitability of the action plan to guide national implementation, including the appropriateness of the suggested lead agencies, government budget contributions and timeline for each action.

The outcome of the meetings in Cambodia and Thailand led to the preparation of a revised draft of the action plan. The action plan is a working document to be further detailed and reviewed through continuing discussion with lead agencies and to reflect evolving government priorities and funding commitments.

6 WORK PACKAGE 4: CAPACITY BUILDING

The Capacity Building Program of project Phase II was developed and endorsed in October 2020. This was further developed for Phase III in 2022.

Well targeted capacity building is a major element of the MRC Joint Project on Flood and Drought Management. Engagement and knowledge sharing are essential for the guidance, design, and sustainability of the project activities and to build ongoing cooperation between Cambodia and Thailand. The Joint Project capacity building program aims to provide NWG members with tools and capacities for long-term implementation of project activities. It facilitated technical knowledge sharing for flood and drought management. Coverage of this topic included a mix of expert exchange and hands-on exercises in fields relating to flood and drought resilience. The capacity building activities were held as part of the ongoing engagement with national, regional and local level stakeholders.

Table 7 presents the topics and schedule of the events that were delivered as part of the capacity building program. The events adopted strong practical and participatory methodologies and were held with Cambodian and Thai NWG members (and other stakeholders where relevant). Each event involved presentations, practical exercises and discussions (often with simultaneous interpretation) to maximise the engagement of participants.

Table 7: Event schedule for consultations and accompanying capacity building programme

Meeting	Cambodia	Thailand	Topic
Phase II			
Technical Intensive #1	January 2021	December 2020	1-day technical intensive covering the river basin planning process
Technical Intensive #2	July 2021	February 2021	1-day technical intensive co-delivered with the MRC RFDMC on: Topic 1: Drought assessment and management Topic 2: Flood assessment and management
Technical Intensive #3	September 2021		1-day technical intensive covering Remediation and adaptation planning with hybrid and nature-based approaches
Modelling Intensive #1	November 2021		4 half-day training for expert hydrological modellers
Technical Intensive #4	November 2021	December 2021	1-day technical intensive: Topic 1: Decision support using the 9C-9T Basin Atlas Topic 2: Water resources assessment
Phase III			
Modelling Intensive #1	November and December 2022		Hydrological modelling training intensive for MRC staff
Nature-based Solutions training #1	October 2022	October 2022	Nature based solutions training on urban NbS (Cambodia and Thailand)
Nature-based Solutions training #2	February 2023	March 2023	Nature based solutions training on rural NbS (Cambodia and Thailand)

6.1 Hydrological modelling training intensive (Phase III)

A multi-day hydrological modelling training workshop was delivered by ICEM in November and December 2022 for MRCS officers and relevant specialists. The event built on the November 2021 modelling intensive, providing training in the deployment and management of the 9C-9T Talsim-NG hydrological model and supporting the final transfer of the model to the MRCS server. The model software and data were packaged for participants to install on their laptop computers and the MRC server.

6.2 Nature-based solutions field trainings (Phase III)

6.3.1. Poipet, Cambodia and Aranyaprathet, Thailand

To further engage and build capacity of stakeholders linked to the priority 9C-9T landscapes, an urban NbS training mission was held in Poipet, Banteay Meanchey Province and Aranyaprathet, Sa Kaeo Province towards the end of 2022. It was the first of two NbS training events in Cambodia and Thailand, to fulfil the task under WP4 to undertake two training events per country in Cambodia and Thailand for national and sub-national level stakeholders on NbS for flood and drought management in the 9C-9T sub-basin.

The field mission in Poipet, Cambodia was held immediately after a similar mission to Aranyaprathet, Thailand, with the respective national field teams. The objectives of the training missions were to:

1. Consult with local stakeholders on the 9C-9T project and priority locations for NbS interventions to support flood and drought management
2. Consolidate and gather further information on the design of hybrid and nature-based measures for flood and drought management
3. Provide in-person training to national and sub-national stakeholders on the core concepts, benefits, principles, measures and potential solutions offered through the implementation of NbS interventions, as well as the role of different stakeholders to support effective implementation
4. Illustrate practical NbS and hybrid solutions through targeted site visits.

The training workshops were held over a single day in each city, with morning workshop sessions and afternoon site visits with participants followed by a further workshop session. In the morning, NbS principles and some relevant techniques were introduced and illustrated through case examples. Trainees were then divided into two groups for a short desk exercise analysing a training location and developing and presenting potential natural based solutions.

After lunch, trainees visited three locations, accompanied by the technical team. Features, challenges and potential solutions were discussed on-site at each location. These locations are presented in Figure 25 for Poipet and Figure 26 for Aranyaprathet. Participants then reconvened at the workshop venue for a final session at which proposed NbS strategies were define through group discussions, then presented to plenary followed and a next steps wrap-up.

In Cambodia, there were 10 trainees and in Thailand 18 from a variety of local, provincial and national governmental organisations.

Post-workshop materials were shared with all participants, including a workshop report, presentations, the 9C-9T Basin Atlas, NbS factsheets and good practice resources.

Figure 25: Poipet Nbs training locations



Figure 26: Aranyaprathet Nbs training locations



6.3.2. Ang Trapeang Thmor, Cambodia and Sompoi, Thailand

A second in-person training for national and sub-national stakeholder on rural NbS interventions was held at Sompoi reservoir, Sa Kaeo Province in February 2023 and Ang Trapeang Thmor Lake and Protected Landscape, Banteay Meanchey Province in March 2023.

As the training events were held in rural environments over relatively large areas, additional days were required to effectively deliver the workshops and field visits. One day was required for the pre-workshop site walkover, half a day for the classroom training and a full day for the post-classroom field training. The locations visited during the field training locations are presented in Figure 27 for Ang Trapeang Thmor and Figure 28 for Sompoi.

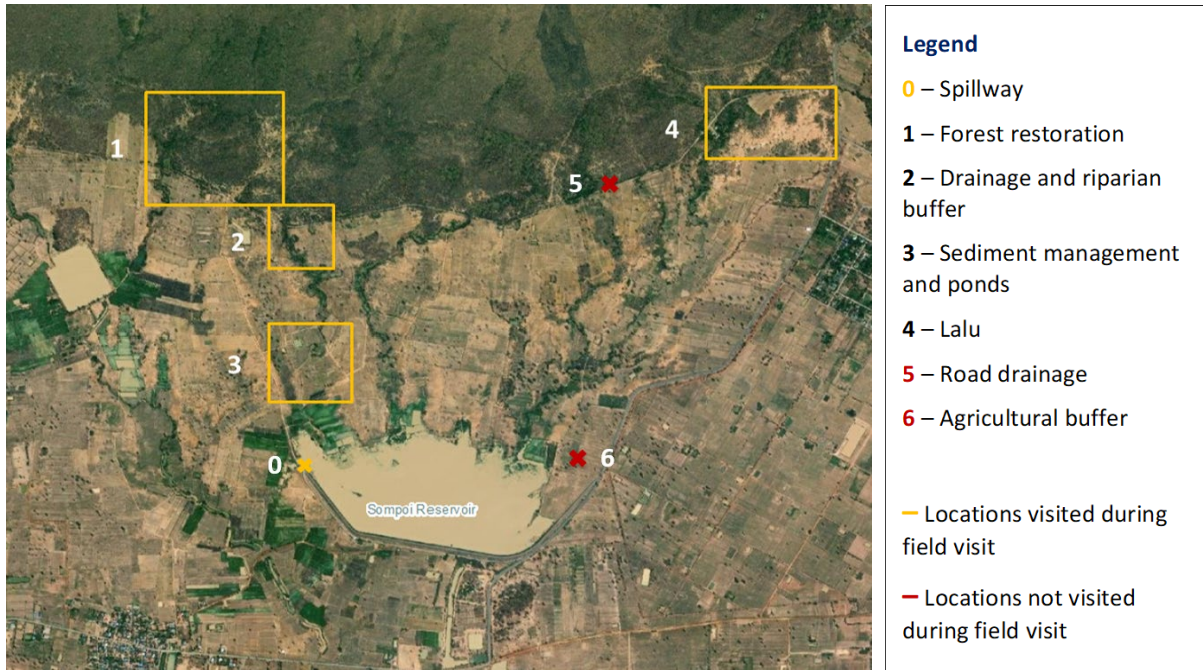
In Cambodia and Thailand, 18 and 13 trainees respectively joined the workshop from a variety of local, provincial and national governmental organisations.

As with the first round of training, post-workshop materials were shared with all participants, including a workshop report, presentations, the 9C-9T Basin Atlas, NbS factsheets and good practice resources.

Figure 27: Ang Trapeang Thmor NbS training locations



Figure 28: Sompoi NbS training locations



7 WORK PACKAGE 5: PRACTICAL CONTRIBUTIONS

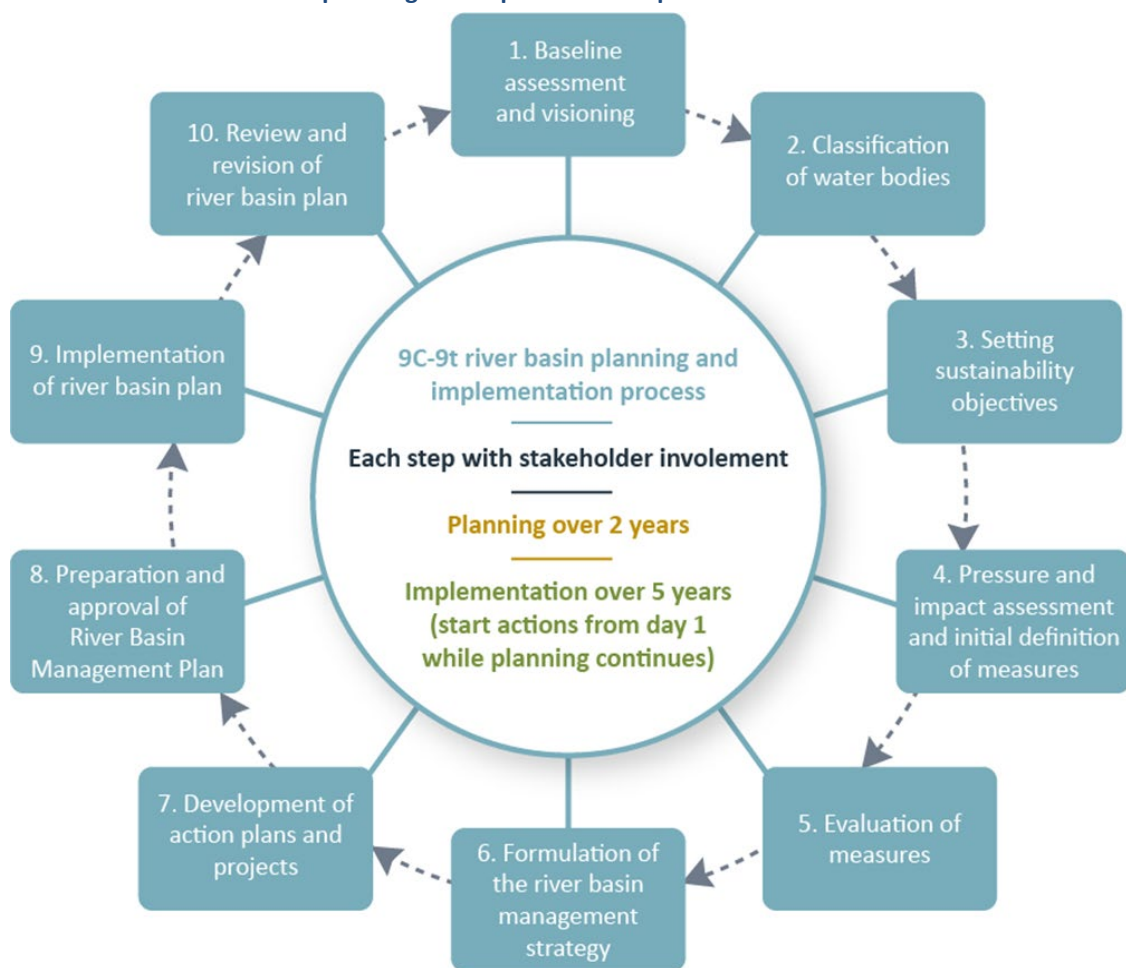
WP5 of Phase II required that tangible progress be made for the development of flood and drought management tools and the activities and outcomes of WP5 informed the contributions and field work focus for all WPs.

7.1 A roadmap for river basin planning

A road map for the collaborative river basin management planning process between Cambodia and Thailand was developed in November 2020. The road map was developed based on the existing river basin planning policies, procedures and structures in place in Cambodia and Thailand. It sets out steps to be followed in the Joint Project Phase III to bring the first cycle of planning to fruition.

The overarching guide for this process was a vision and framework of aspirations for 9C-9T stakeholders, the goods and services the basin should provide, and how can it be improved and safeguarded for generations to come.

Figure 29. The 9C-9T river basin planning and implementation process



The roadmap emphasised the participatory nature of effective river basin management and planning. The planning agencies need to lay out a consultation and communications plan for involving the stakeholders in each phase of the basin planning process. The road map laid the foundations for the development of the 9C-9T Flood and Drought Master Plan.

7.2 Preparation of concept sheets (Phase II)

To enable the selection of appropriate flood and drought management tools for development through the Joint Project, ten project concepts were undertaken, as listed in Table 8. These concepts were

developed for discussion by the NWG and eventual integration into the 9C-9T Master Plan for implementation.

Table 8: The ten proposed practical contributions from Phase II

No.	Heading
1.	Harmonisation of design floods for dams
2.	Coordination of reservoir operations for water security
3.	Integration of remote sensing data into flood and drought management
4.	Interactive, transboundary communication of water availability
5.	Identification of drought early warning trigger values
6.	Nature-based floodwater retention for flood and drought mitigation
7.	Verification of gauging stations with hydraulic modelling
8.	Community base hazard mapping and response analysis
9.	Incorporation of seasonal forecast in drought early warning
10.	River restoration for healthy hard infrastructure

The concept sheets provide an overview of benefits, the contribution to flood and drought management, the data requirements, necessary activities and skills and capacities required. Each sheet highlights potential project risks and example case studies. The sheets have been uploaded to the 9C-9T Basin Atlas, under the ‘Documents’ page.

The project concepts were a foundation for the creation of 50 NbS factsheets for the Basin Atlas catalogue.

7.3 The 9C-9T Basin Atlas (Phases II and III)

Further details are provided in Section 4.5.

8 CONSULTATION PROCESS

8.1 NWG and RSC meetings (Phases II and III)

During Phase II, direct consultation and engagement occurred with project stakeholders through the organization of NWGs and RSC meetings. The project organized and hosted these meetings to facilitate the active engagement, discussion, and guidance by the key stakeholders. These meetings involved detailed review, guidance and endorsement of project plans and resulting outputs associated with the different WPs.

During 2020-2021, four RSC meetings and 11 NWG meetings were organized involving both countries, as listed in Tables 9 and 10. NWG meeting summary reports were prepared for each NWG event and shared with countries for review and action, via the MRC. Meeting reports are available for download on the 9C-9T Basin Atlas. In keeping with MRC and GIZ policies, the full meeting participant lists and presentations (including wrap up presentations) are available upon request. One of the Cambodian NWG meetings, which was scheduled for February 2021 was cancelled due to the COVID-19 situation in the country during early 2021. All meeting events were conducted virtually (i.e. on Zoom or MS Teams) or using a hybrid method (i.e. a combination of in-person and virtual settings).

During Phase III, additional NWG and RSC meetings were held with eight NWG meetings delivered in a hybrid format. The RSC meeting was held in-person in February 2023 in Siem Reap at which the current version of the GEF PIF was endorsed. At an earlier NWG meeting, the Thai delegation had proposed the establishment of a Joint Commission to continue the joint planning beyond German government supports and to discuss with countries on the GEF-8 PIF application. The final RSC meeting was then converted into two final NWG meetings in May 2023 to discuss the Joint Commission TOR and Joint Task Force.

NWG meeting summary reports have been developed for each NWG event and have been shared with countries, via the MRC. The full meeting participant lists and presentations (including wrap up presentations) are available upon request.

Table 9: List of NWG meetings conducted during Phases II and III

Meeting	Cambodia	Thailand
Phase II		
NWG Meeting #1	September 2020	
NWG Meeting #2	January 2021	December 2020
NWG Meeting #3	Cancelled	February 2021
NWG Meeting #4	June 2021	June 2021
NWG Meeting #5	September 2021	September 2021
NWG Meeting #6	November 2021	December 2021
Phase III		
NWG Meeting #1	March 2022	April 2022
NWG Meeting #2	July 2022	June 2022
NWG Meeting #3	December 2022	
NWG Meeting #4	May 2023	

Table 10: List of RSC meetings conducted during Phases II and III

Meeting	Date
Phase II	
Steering Committee Meeting #1	June 2020
Steering Committee Meeting #2	November 2020
Steering Committee Meeting #3	August 2021
Steering Committee Meeting #4	December 2021
Phase III	
Steering Committee Meeting #1	February 2020

8.2 Proposed Joint Commission and Joint Task Force (Phase III)

The February 2023 RSC meeting in Siem Reap proposed to institutionalize the collaboration between Cambodia and Thailand in implementing the 9C-9T Flood and Drought Master Plan by establishing a Joint Commission (JC) as a permanent staffed and funded body. Currently, the collaboration is project based with oversight by the RSC. Now that a Master Plan is in place with a 20-year vision and five-year implementation and action planning cycle, it is necessary to place the collaboration on a stronger institutional foundation. To move forward with this initiative, the RSC recommended that a Joint Task Force (JTF) be established to arrive at a full proposal for the JC for further discussion by the RSC.

The objective of the JC would be to oversee and drive implementation and regular revision of the 9C-9T Master Plan on Flood and Drought Management and its linked Action Plan in a fully collaborative manner between Cambodia and Thailand. The JC would be chaired on a joint basis by the MOWRAM in Cambodia and by ONWR in Thailand.

At the June 2023 NWGs in Cambodia and Thailand, as an immediate action, a joint meeting between representatives of the Cambodia and Thailand NWGs was proposed to discuss the establishment of the JTF, facilitated by MRCS. The meeting is planned for later in 2023, aligned with future project phases.

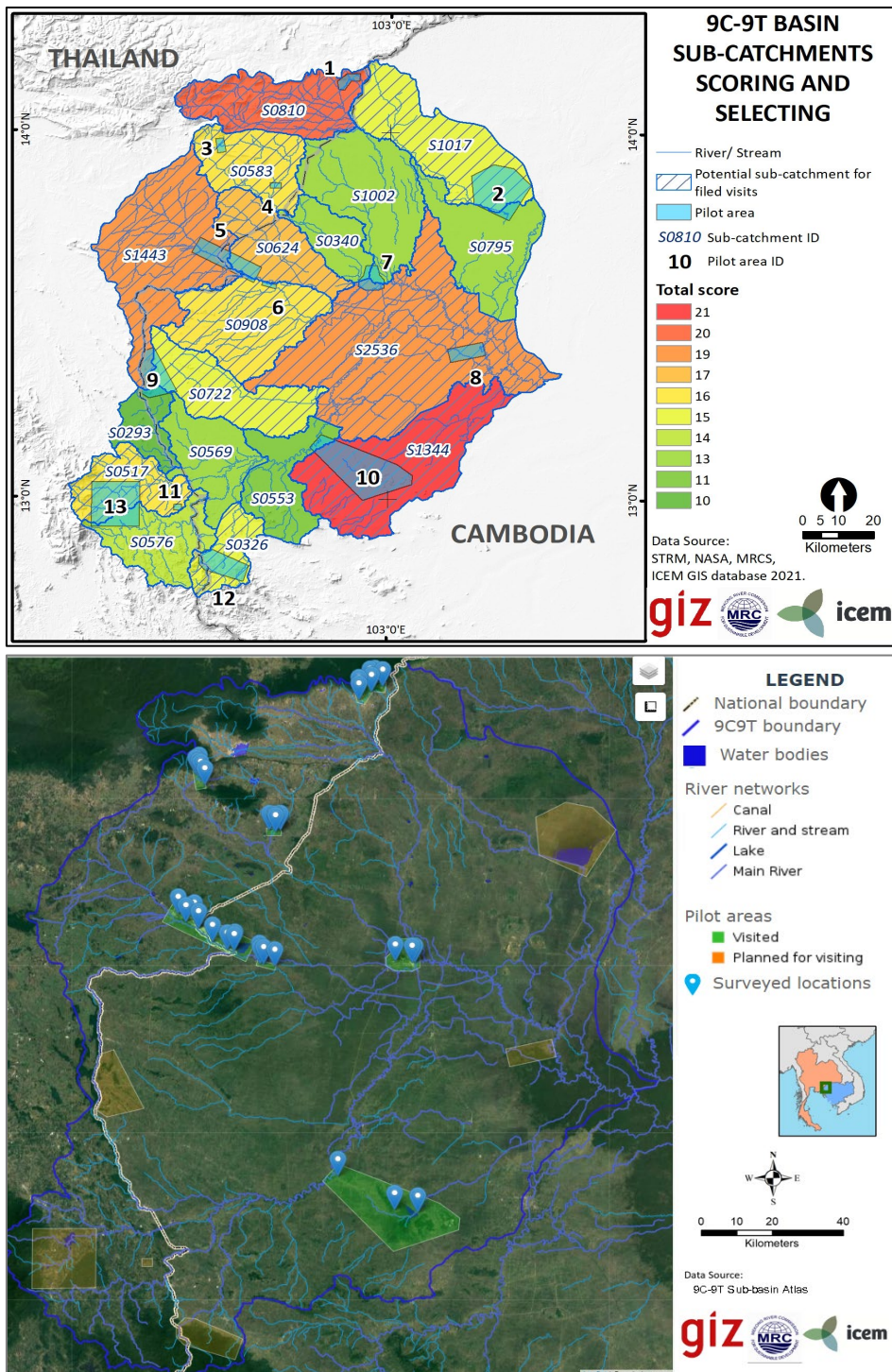
9 FIELD MISSIONS

9.1 Phase II field missions

A major outcome of the Joint Project in Phase II was the identification of a network of demonstration landscapes where flood and drought resilience building measures are needed. A network of thirteen priority landscapes were defined based on the results of the watershed assessment and ranking processes (see Section 4.1), which were presented and discussed at the NWG and RSC meetings during Phase II.

During Phase II, two field mission were conducted in each of the countries to collect data and information for these priority locations (Figure 30).

Figure 30. Long list of 13 possible demonstration landscapes (top); Phase II field survey locations (bottom)



The first mission was conducted in November and December 2020 and the second during November 2021. A detailed field guide was developed before each mission with objectives, details of activities and outputs – and sets of survey questions. The first mission objectives were to collect information and identify flood and drought issues from the local level and check assumptions about conditions on the ground based on advice from local authorities, communities and field inspections.

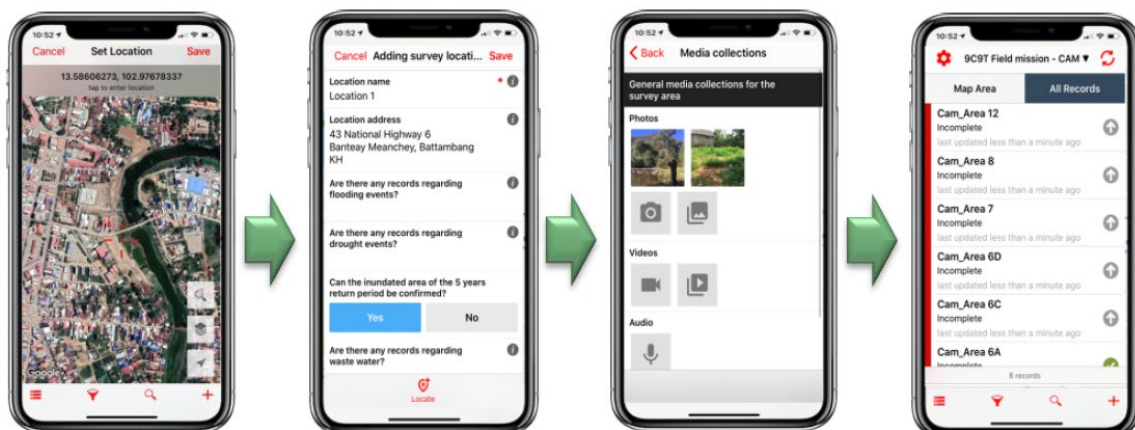
The second mission objectives covering additional landscapes were to fill information gaps from the local level, further specify potential restoration sites within each landscape and needed NbS and hybrid measures, undertake stakeholder consultation and check assumptions about conditions on the ground.

Field mission data collection was conducted via four methods:

1. Collection of onsite observations, photos and survey information using the Fulcrum Mobile Data Collection App;
2. Survey estimates of on-site dimensions using a laser distance measurer (where appropriate);
3. Onsite reporting based on field observations and discussions with local stakeholders; and
4. Roundtable meetings and discussions with provincial authorities.

A survey app was created in Fulcrum to complement the mission guides by providing a mobile data tool for the field team. Specific survey questions were detailed for each location, reflecting the guiding questions of each field mission. For each of the priority locations identified, the app (sample of user interface shown in Figure 31) enables on-the-go mobile data collection, providing mobile base maps, survey forms, geotagging of photos taken at each site and quick syncing of data to cloud-based storage.

Figure 31. User interface for Fulcrum Mobile Data Collector App – as set up for 9C-9T field mission



Results from these missions contributed to ground-truthing analysis of the 9C-9T Basin Atlas and informing the initial conceptual design for hybrid and NbS measures for flood and drought resilience. Field mission results were presented and discussed across several meetings with the Cambodian and Thai NWG members.

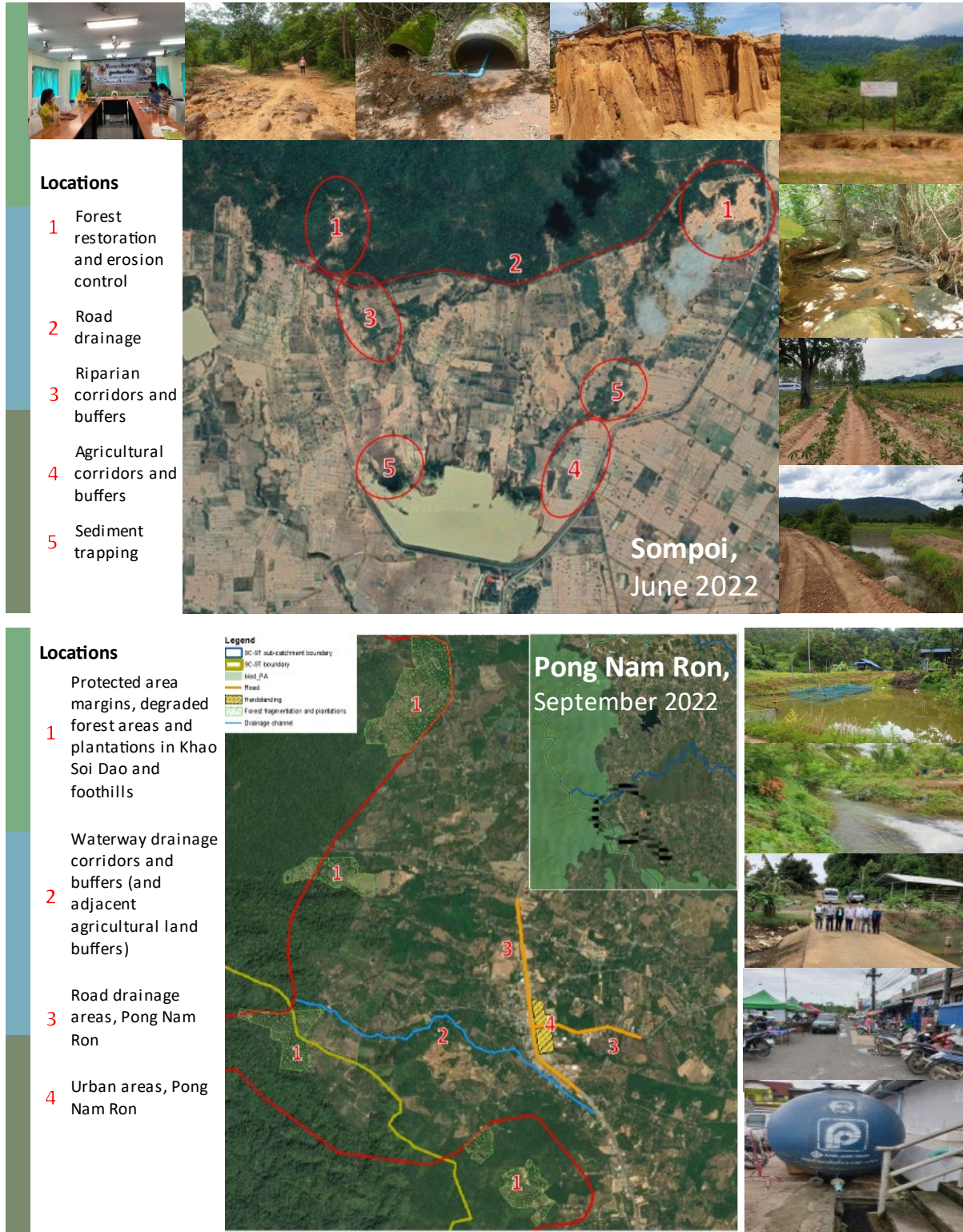
9.2 Phase III field missions

The field missions in Phase III focused on detailed visits to four of the six priority landscapes identified for NbS demonstration, presented in Figure 22. These informed the conceptualisation of a network of NbS measures for priority landscapes, to implement Component 2 of the Master Plan, as outlined in the NbS concepts report.

The Phase III field mission reports have been uploaded to the 9C-9T Basin Atlas, under the 'Documents' page.

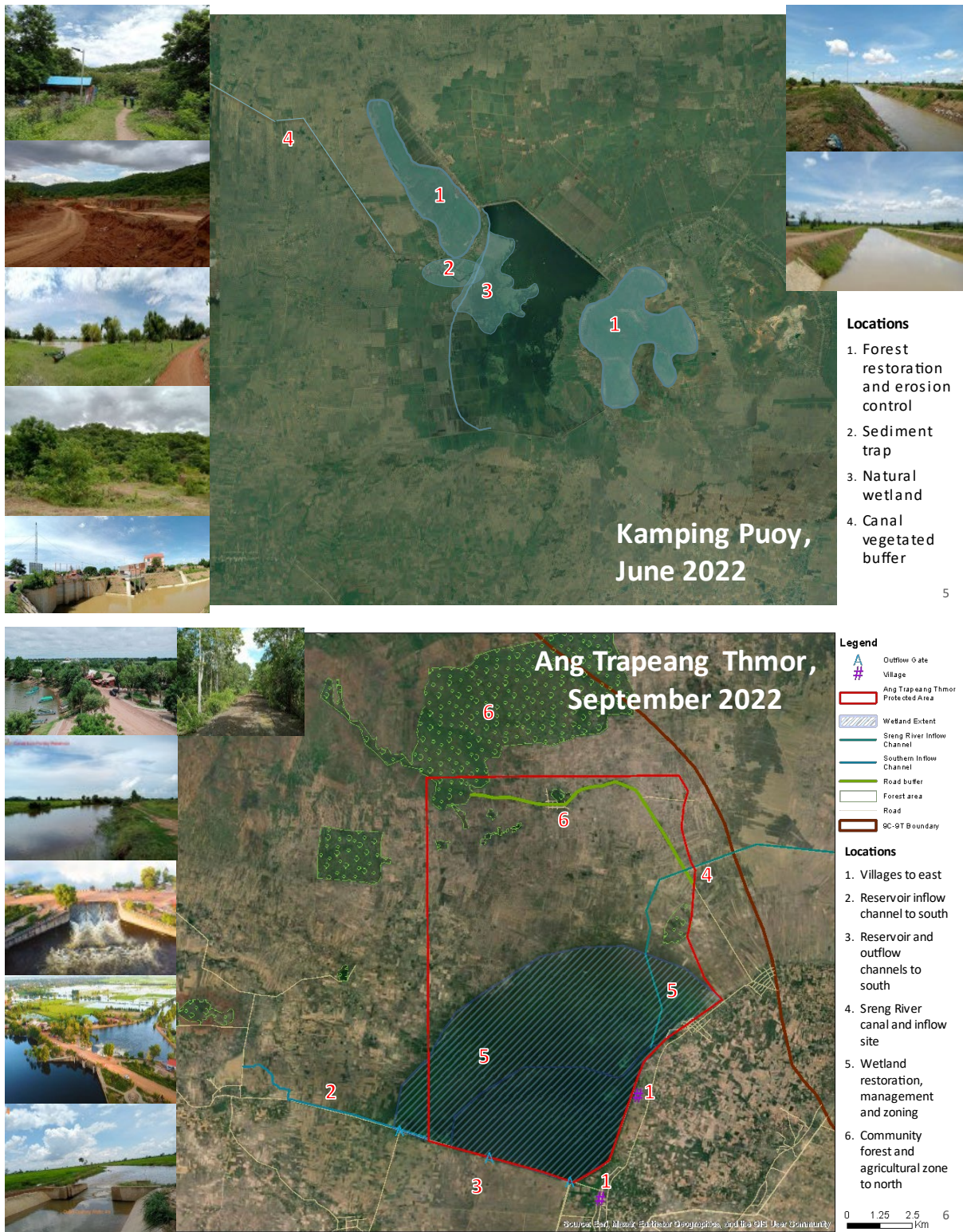
In Thailand, the first field mission was undertaken in June 2022 to visit, identify and document a selection of five locations around the Khlong Sompoi Reservoir, Sa Kaeo province, that offer the potential for demonstrating resilience-building flood and drought management through hybrid and NbS measures. The second mission was held in September 2022 to Khao Soi Dao and Pong Nam Ron, Chanthaburi Province (Figure 32).

Figure 32: Thailand field mission locations – Sompoi reservoir (top); Pong Nam Ron (bottom)



In Cambodia, the first mission was undertaken in June 2022 to Kamping Puoy reservoir, Battambang Province. The second mission was held in August and September 2022 to Ang Trapeang Thmor lake and protected landscape, Banteay Meanchey Province (Figure 33).

Figure 33: Cambodia field mission locations – Kamping Puoy reservoir (top); Ang Trapeang Thmor lake and protected landscape (bottom)



5

10 CONCLUSION

Phase II of the Joint Project developed a funding roadmap, a 9C-9T Flood and Drought Master Plan, and practical management tools for flood and drought management, via a web-based Basin Atlas for the 9C-9T Sub-basin.

The technical contribution of ICEM under the current contract to Phase III of the Joint Project was completed in June 2023 and continued to be implemented through the cross-sectoral NWGs and RSCs established in both countries, with support from the MRC-GIZ. After a year and a half year of implementation, and following on from two years of Phase II implementation, detailed NbS project concepts have been further developed for implementing Component 2 of the Master Plan, supported by field missions to project demonstration landscapes. Those concepts are being integrated into funding proposals for international and national support.

Further outputs in 2023 have included the development of a draft Global Environment Facility (GEF) Project Identification Form (PIF), the development of a gender and vulnerability action plan linked to the Master Plan, the transfer of the 9C-9T hydrological model to MRCS, the updating of the 9C-9T Basin Atlas and an economic analysis of the NbS concepts – all supplemented through a capacity building and training program.

10.1 Active working outputs

The following project outputs are still ongoing and will be progressed by MRC-GIZ as part of a continuation of Phase III of the Joint Project:

- **GEF-8 PIF:** awaiting feedback from the GEF Secretariat to revise the draft PIF and share with countries. This will be progressed by MRC-GIZ from July 2023; and
- **9C-9T Action Plan:** currently a working document held by MRC-GIZ, for progression during the GEF-8 and GCF development stages in 2024, assuming the PIF and concept note respectively are approved.
- **Establishment and operation of the Joint Task Force on a 9C-9T Joint Commission:** A working paper was prepared and discussed by the NWGs which requested that MRC fund and convene the Joint Task Force.

10.2 Joint Project outcomes and achievements

The wide-ranging scope of the Joint Project has encompassed transboundary cooperation, river basin planning, decision support tools development and application, nature-based solutions conceptualization for restoration of degraded landscapes, hydrological modelling, economic valuation, gender and vulnerability assessment, seeking international and national funding, capacity building, national and bi-lateral meetings and events, and upscaling and replication initiatives. The following summary presents an overview of the key outcomes under the Joint Project in Phases II and III.

Outcome 1: Establishing joint frameworks and collaboration mechanisms

1. Establishment and endorsement of a joint transboundary 15-year **Flood and Drought Master Plan** – a dynamic and strategic framework setting out joint investment and action.
2. Further elaboration and discussion on a cross-sectoral **5-year Action Plan** schedule and indicative budget led by countries, identifying 6 lead agencies in Thailand and 5 in Cambodia.
3. Development of a **Gender and Vulnerability Action Plan** as an integral part of the Master Plan.
4. Establishing formal **joint governance mechanisms** via a transboundary Regional Steering Committee and National Working Groups in Thailand and Cambodia.
5. Working paper to establish a Joint Task Force to advise on setting up a Joint Commission

Outcome 2: Transboundary baseline contextualization and deploying decision support tools

6. Preparation of baseline assessments and mapping outputs on climate change, hydrology, land degradation, natural resource management, socio-economics and gender and vulnerability considerations.
7. Undertaking of **8 field missions** to urban and rural landscapes in Cambodia and Thailand.
8. Development and deployment of a **hydrological model** for the 9C-9T sub-basin with the MRC Regional Flood and Drought Management Centre.
9. Establishment of a shared online tool of knowledge and geospatial information – **the 9C-9T Basin Atlas** – to support basin-wide planning by the Cambodia and Thailand, managed by the MRCS (*translated into Khmer and Thai*).
10. Development of a linked online, interactive **NbS Catalogue** outlining over **50** individual NbS measure factsheets.
11. Development of **10** technical briefs for planners and practitioners on early warning systems, hydromet systems, dam design regulations and other technical areas.

Outcome 3: Nature-based solutions conceptualisation for future demonstration projects

12. Undertaking of a hotspot-led identification of at-risk watersheds, infrastructure in need of improved flood and/or drought resilience and hotspots for flood and drought, comprising **14** landscapes.
13. Preparation of **NbS Project concepts** in **6** priority landscapes in the 9C-9T sub-basin in need of restoration, where networks of NbS and hybrid green-grey measures can build urban and rural resilience to flood and drought.
14. Development of an accompanying **NbS Project Concepts report** outlining opportunities for NbS to be demonstrated within a network of collaborative projects conducted collaboratively by Cambodia and Thailand.
15. Proposed measures include the restoration of over **4000 Ha** of degraded forest, rehabilitation of over **50km** of degraded waterways and urban greening for over **130,000** people.
16. Undertaking of an economic cost-benefit analysis of **3** priority landscapes, to make the economic case for investment in NbS demonstration projects.

Outcome 4: Supporting international funding initiatives

17. Preparation of a GEF project concept (PIF) endorsed by four Lower Mekong Basin countries on 'Restoration of shared river basins in the Mekong region' for **GEF-8** funding under the International Waters (IW) component.
18. Commitment by Germany to support implementation of the 9C-9T Master Plan through the establishment of an early warning system and hydromet stations, as well as replication of the 9C-9T model in the 3S basin.
19. Involvement of all Lower Mekong Basin countries; Cambodia, Thailand, Lao PDR and Viet Nam, to facilitate replication and planning of following up activities.

Outcome 5: Providing multi-stakeholder and multi-scale capacity-building for key stakeholders

20. Delivery of **17** in-person and hybrid capacity building and training events for key stakeholders. actively involved in the development and implementation of the Joint Project for flood and drought management.

Outcome 6: Ensuring national and transboundary coordination and consultation

21. Facilitation of **19** hybrid **National Working Group** meetings in Cambodia and Thailand.
22. Facilitation of **5** transboundary in-person and hybrid **Regional Steering Committee** meetings in Cambodia and Thailand.

Outcome 7: Driving upscaling and replication of Joint Projects in the Lower Mekong Basin

23. Plans to scale up to other sub-regions within the Lower Mekong Basin, including the Sekong, Sesan and Srepok (3S) sub-basins, incorporating other MRC member states and emphasizing the regional importance of Joint Projects.

10.3 Lessons learnt

Key challenges were identified throughout the Joint Project development process. In most cases, effective solutions were found to overcome these problems. The lessons of implementation to date inform future activities and phases of the Joint Project and of its Master Plan, and other joint projects established under MRC with member countries.

Table 11: Experiences and lessons learnt to inform future Joint Project activities and other joint projects

Topic	Experiences from the 9C-9T Joint Project	Proposed solutions to inform future Joint Projects
Gender representation in NWG and RSC events	Despite strong intentions and promotion via the project team, most NWG and RSC events did not achieve a gender-balance	From the outset of a Joint Project, stronger stipulations are required to encourage a more equitable gender mix in NWGs and RSCs
Line agency participation in NWG, RSC and training events	Whilst by Phase III a reasonable cross sectoral representation of core line agencies was achieved at most repeat events (particular NWGs and RSCs), often participants were new and had not attended any previous meetings. This diminishes the uptake of Joint Project activities, technical content, and engagement processes	Encourage consistent representation by core individuals of different line agencies, to foster sustained engagement and commitment to the Joint Project
Data collection delays via NMCs	All data collection requests were distributed to countries through the NMCs. This typically took months to receive (if at all), and the data was often not in the required format for use by the project team (e.g. in Khmer/Thai, no spatial information, no metadata). This had implications for what datasets could be included on the 9C-9T Basin Atlas	While the MRC/NMC process for connecting with line agencies is well established procedure, it should be accompanied by the project team being supported in going direct to line agencies
9C-9T Flood and Drought Master Plan	The 9C-9T Flood and Drought Master Plan is an effective planning and financing instrument to (i) identify joint/transboundary priorities and (ii) to inform sustainable future management and development in the 9C-9T sub-basin. The Master Plan is unique in that it provides a detailed and proactive planning framework, by identifying specific outputs, timelines and budgets	Similar frameworks and collaborative institutional arrangements are needed for other shared river basins in the LMB. This model needs to be recognized in the MRC basin development plan and strategic orientations.
International funding proposal endorsement processes	An extensive consultation period was required for the GEF-8 PIF development process, especially when it was expanded from two to four LMB countries. Much of this consultation and document revisions was not anticipated in the project TOR and work plan. It has involved numerous meetings and reviews by countries and engagement on technical content, co-financing, STAR allocations and project support letters	The project team has built up an institutional understanding of the GEF PIF development process that directly involves NMCs, which can inform future GEF funding proposals
Action Planning and budget considerations	Whilst a draft action plan was developed for the 9C-9T during Phase III, during consultations with countries, it was made clear that national financing cannot be defined and mainstreamed into national	Action planning is most valuable once international or national funding has been secured for specific outputs and activities. Detailed design and budgeting can

Topic	Experiences from the 9C-9T Joint Project	Proposed solutions to inform future Joint Projects
	budgets without detailed project design and cost information for each activity under each output.	then be defined. It may be best to leave the Master Plan as the main implementing framework – rather than prepare a comprehensive five-year action plan which can quickly become irrelevant.
Mainstreaming NbS into national policies and practices	Hard infrastructure measures continue to be implemented without nature-based measures in the 9C-9T. Capacities and awareness of NbS is limited. Yet, positions of participating countries shifted markedly from Phase II to Phase III with all countries embracing NbS – especially Thailand – and supporting the restoration Master Plan.	NbS training and demonstration at a national and sub-national level supports increased understanding of the importance and relevance of NbS for flood and drought management.
Hydrological modelling to inform landscape scale NbS conceptualization and economic analyses	Landscape-scale hydrological modelling is required to support the effective conceptualization and valuation of NbS and hybrid measures, including their spatial representation. The data provided at basin/sub-basin scale, such as for the whole 9C-9T, is too coarse to inform landscape interventions and cost-benefit analyses	If NbS conceptualization is undertaken for priority sites within a sub-basin, high-resolution hydrological modelling (also incorporating climate change scenarios) is required to support this process, and prior to any economic analyses. This should be accounted for in future Joint Project tasks and budgeting

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