



PRE-CONCEPT FOR A REGIONAL PROJECT/PROGRAMME

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Enhancing Climate Resilience of Mekong River Communities through Strengthening Climate Services (ECR-MEKONG)
Countries:	Cambodia, Lao People's Democratic Republic (PDR), Myanmar, Viet Nam and Thailand
Thematic Focal Area ¹ :	Disaster risk reduction and early warning systems
Type of Implementing Entity:	MIE
Implementing Entity:	World Meteorological Organization (WMO)
Executing Entities:	National Meteorological and Hydrological Services (NMHSs) of Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam, Australian Bureau of Meteorology, RMIT University, United Nations Food and Agriculture Organization (FAO) and Global Water Partnership (GWP)
Amount of Financing Requested:	13,662,862 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

The frequency and severity of drought and floods in Southeast Asia are increasing and will continue to increase over the next decades (IPCC Sixth Assessment Report). The least developed and developing countries in the region such as Cambodia, Lao PDR, Myanmar, Thailand, and Viet Nam (hereinafter referred to as the Participating Countries) are particularly vulnerable to the adverse effects of climate change-induced droughts and floods. Based on WMO assessments, all five countries indicated that floods, drought, and storms are the most common hazards affecting them. Moreover, in the past three decades, droughts and floods have affected more than 100 million people in these Countries (Asian Development Bank; WMO 2021). In addition, the Nationally Determined Contributions (NDCs) submitted to the UNFCCC by the Participating Countries indicate the need to strengthen drought and flood Early Warning Systems (EWS) especially for the agriculture and water sectors.

The Mekong is a transboundary river that runs through the Participating Countries. The riverflow is fundamental for the riparian communities as their livelihood mostly depends on agriculture (including crops, livestock, and inland fisheries). Agriculture is the primary source of employment in Lao PDR (61%), Viet Nam (41%) and Cambodia (27%). As such, decision-informed agriculture and water management offer major opportunities to improve proactive disaster risk management and increase economic productivity. The impact of drought/floods on vulnerable communities in the Participating Countries has been demonstrated using the disastrous consequences of drought-induced by the 2015-16 El Niño. These included: *Cambodia* - an estimated 2.5 million people were affected by drought; *Thailand* - the total rice production fell to 27 million tonnes, the lowest since 2000-2001; *Viet Nam* – it was the worst drought in the past 90 years, affecting 52 out of 63 provinces, 1.1 million people were food insecure and more than 2 million faced damaged or lost their livelihoods.

Accurate and actionable knowledge about rainfall, its spatial and temporal distribution, and rainfall forecasts on various time scales from days to months are vital for the sustainable economic development of the Mekong River countries and planning purposes. Therefore, this project will examine the following aspects of data collection, monitoring and forecasting; co-production of tailored services; provision through effective communication channels; and participatory engagement of stakeholders to increase uptake of advisories. All of these aspects will provide stakeholders in agriculture, energy, and water sectors and local communities with climate information for their specific needs.

Analysing the current situation in the Participating Countries and evaluating technical and technological capacities of their NMHSs, inadequate observation networks, insufficient climate databases, lack of management plans and policies, and lack of technical capacity to generate climate and weather information tailored to specific needs of key economic sectors and communities have been identified as the priorities to improve climate adaptation. This project proposal responds to addressing these needs through WMO-led coordination of partnership and cooperation among the NMHSs in the region, and the technical support to and capacity building of the NMHSs. The project will address the current limitations of the Participating Countries to produce and deliver relevant climate water, and weather information such as risk assessments and impact-based early warnings to a complex multi-institutional framework, sectoral stakeholders, national, and sub-national authorities in support of proactive risk management and adaptation plans at the community level of drought and flood events in the Mekong River region.

Project / Programme Objectives:

The overall objective of the project is to reduce vulnerability and exposure from climate hazards, therefore, increase the resilience of communities in the Participating Countries to climate variability and change by implementing climate-smart decision-making networks for better disaster risk management of drought and floods, agriculture management, and water

¹ Thematic areas are: Food security; Disaster risk reduction and Early Warning Systems (EWS); Transboundary water management; Innovation in adaptation finance.

resources management encompassing hydropower generation. The sub-objectives of the project, which are in line with the project components below, and the Adaptation Fund outcomes, are:

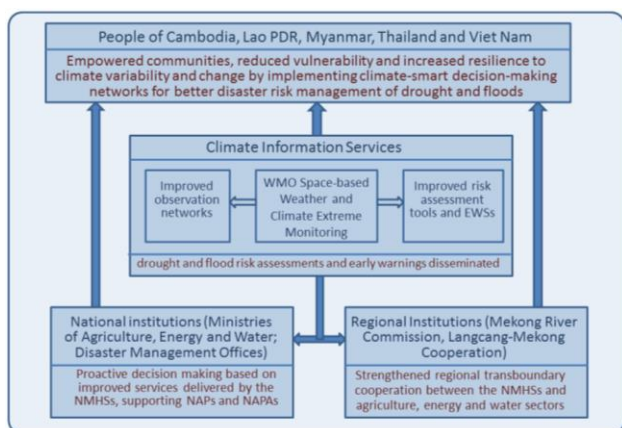
- Risk assessments and user-centred early warnings for drought and floods based on the increased operational capacity of the NMHSs in the Participating Countries are generated and disseminated to decision makers to meet the demand-driven needs for climate adaptation;
- Enhanced regional, national and local inter-institutional/sectorial stakeholder networks support the co-design and co-development of sector-specific climate services tailored for community- focused disaster risk management, food, water, and energy security;
- Smallholders farmers, vulnerable households, and communities are empowered to use climate, water and weather information services for disaster risk management and adaptation;
- Regional cooperation is strengthened to support mutual technical assistance among the NMHSs and to enhance national capacity in climate monitoring, prediction, and tailored sectorial information. Regional cooperation enables upscaling of the project outcomes to other countries in Southeast Asia and South Asia.

Project / Programme Components and Financing:

Based on WMO preliminary assessments of NMHSs current capacity, needs to strengthen the Climate Services Information System has been identified, including guidance on enhancing DRR, early warning and response mechanisms. National and regional capacity building is required for forecasting for climate-sensitive sectors, enhancing sector-specific advisories, increasing collaboration among agencies in disseminating warnings and emergency response, and sharing of base maps, hazard parameters, exposure and vulnerability data. One aspect of a Regional Climate Centre (RCC) is the sharing of climate data across the countries. There is a WMO designated South-East Asia Regional Climate Centre (RCC) Network which is coordinated by the Meteorological Service of Singapore (MSS) which has the role of data sharing, capacity development and conducts the ASEAN Regional Climate Outlook Forum.

Project/Programme Components	Expected Outcomes	Expected Outputs	Countries	Amount (US\$)
1. Development of user-centred integrated Early Warning Systems for drought and floods	Improved decision making based on better information provided by the NMHSs	Improved observation networks and databases, drought and flood risk assessment tools which lead to user-centered integrated EWSs available through the specialised web portal to support decision-making for national, provincial, and community agriculture, water, and energy stakeholders.	Cambodia Lao PDR Myanmar Thailand Viet Nam	3,500,000
2. Increased use of climate information and services by strengthening inter-institutional and inter-sectorial capacity	Operational mechanism for co-production of climate and water tools/products demonstrated through pilot cases	Implemented contributions for the establishment, consolidation, and monitoring of Regional and National Frameworks for Climate Services and improved sectorial local multi-stakeholder networks to support the co-design and co-production of tailored climate services.	Cambodia Lao PDR Myanmar Thailand Viet Nam	3,000,000
3. Enhanced capacity of communities to counter the adverse impact of drought and floods	Prototypes deployed and used by communities for improved climate risk management and adaptation plans	Local stakeholders and communities are able to adapt to climate change by understanding and proactively applying climate information tailored to their needs for risk management and adaptation plans.	Cambodia Lao PDR Myanmar Thailand Viet Nam	3,000,000
4. Strengthening regional cooperation and knowledge sharing among the NMHSs and stakeholders	Increased regional cooperation mechanisms (RCOFs) among the NMHSs and stakeholders	Development of regional plans / policies and sustained capacity building through regional transboundary strategic alliances and partnerships coordinated by Mekong River regional technical working groups from agriculture, energy, and water sectors and disaster management offices including the South-East Asia RCC Network and other partners.	Cambodia Lao PDR Myanmar Thailand Viet Nam	2,000,000
5. Project/Programme Execution cost				\$1,092,500
6. Total Project/Programme Cost				\$11,500,000
7. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)				\$1,070,362
Amount of Financing Requested				\$13,662,862

Project Duration: 5 years (2023 – 2027)



Interconnections between the four project components are shown in this diagram. At this pre-concept stage, the proposed activities in the Participating Countries are indicative and broadly described.

The proposed project will implement activities to address the climate services production and delivery gaps. The full value-chain of climate services will be demonstrated in pilot sites that the Participating Countries will identify. Socio-economic benefits of resilience and adaptation measures based on user-centered EWSs will be quantified at communities' level.

PART II: PROJECT / PROGRAMME JUSTIFICATION

Project Justification

The project is advancing a multi-sectoral (agriculture, energy, and water) climate risk reduction approach to minimize the vulnerability and exposure of the Mekong River communities and to increase their adaptive capacity to climate change, variability and extremes. Given high vulnerability of local communities in the Participating Countries to the impact of drought and floods and the need to build resilience to these hazards, the project will focus on enhancing EWSs for drought and flood monitoring and prediction, effective management of water resources through improved availability of and access to climate products tailored to specific needs of sectors and communities. Specific interactions with stakeholders would include the following: Mekong River Commission (MRC), International Institute of Rural Reconstruction (IIRR) in Myanmar; the Cambodian Farmer Federation Association of Agricultural Producers (CFAP); Atlantic Commodities Vietnam (ACOM) in Vietnam; National Agriculture and Forestry Research Institute, Ministry of Finance in Laos; and Department of Agriculture in Thailand. Also, during the project proposal phase, farmer organizations will be solicited for inclusion in the project. Based on preliminary consultations, the following gaps and needs to improve resilience to climate change, and disaster risks were identified:

- Lack of technical capacity to generate and disseminate climate information and early warnings;
- Lack of capacity to use climate information for proactive decision-making;
- Lack of national capacity to produce relevant climate information and early warning system and exchange information among the countries;
- Lack of institutional capacity for cross-sectoral and cross-national coordination and co-production of information.

To address the identified needs, the proposed project will implement activities through four project components:

1. Development of user-centred integrated Early Warning Systems for drought and floods;
2. Increased use of climate information and services by strengthening the inter-institutional and inter-sectorial capacity;
3. Enhanced capacity of communities to prepare, respond, adapt and reach the last mile in order to minimize adverse impacts of drought and floods;
4. Strengthening regional cooperation and knowledge and data sharing among the NMHSs and stakeholders.

WMO surveys its Member countries via the Country Profile Database (CPDB) and results from the most recent survey indicated that only Myanmar and Thailand provide drought services and only Thailand has a drought policy. Only Thailand indicated that they have a flash flood forecast system. The identified gaps of inadequate regional observation networks and insufficient databases will be addressed through improving surface-based observation networks and providing satellite observations through the WMO flagship initiative Space-based Weather and Climate Extreme Monitoring (SWCEM). The project will collaborate with disaster management authorities providing them with early warnings for drought and floods which will assist them in developing, revising and delivering their national disaster risk reduction and management strategies. An important part of flood and drought plans are to link the hazard monitoring to actions on the ground. Risk transfer mechanisms will also be explored in the proposal. Local communities will be engaged in the co-production of the EWSs for drought and floods which will improve their preparedness, response capability and resilience. Details on this co-production will be further developed in the project proposal. It is well-known that the participating countries share common climate drivers (IPCC AR6 WG1) and it is important to ensure consistency in the way the regional information is optimised and integrated into national and sub-national climate services. The regional approach is fundamental for strengthening Climate Services Information Systems consisting of cascading information from global to regional and national levels; for this architecture to function it requires that the NMHSs in the Participating Countries consolidate their resources, share data and knowledge at the regional level. It is essential that climate products are aligned across national borders and therefore regional cooperation and interaction is needed. The WMO designated RCC Network based in Singapore would assist in the development of adaptation aspects of the project. Examples of countries working together on drought and flood management aspects can be taken from the World Bank EPIC report.

Promotion of new and innovative solutions

Expected innovative deliverables through this project include:

- Improved availability of and access to climate data, satellite observations, and global and regional climate model outputs, for use by both intensive and extensive agriculture, water management, and energy sectors; a user requirement process and a gap analysis will help identify possible additional monitoring.
- A wide portfolio of climate services to agriculture, water management and energy sectors, such as databases, subseasonal to seasonal forecasts for medium and long-term climatic and hydrological variables, drought and flood risk assessments and early warnings, capacity building workshops and training.
- Optimization of decision-making on water use based on precipitation monitoring, expected climate outlook scenarios, Hydrological Status and Outlook System (HydroSOS), and impact-based forecasts. This will be particularly important to solve potential conflicts in water use between agriculture, energy, and water management using multipurpose infrastructures.

There are different capabilities in the Participating Countries and therefore the main gap is a lack of standardized climate information across the region. Vietnam and Thailand are a bit more advanced and special attention would be given to Cambodia, Lao and Myanmar and the project should be able to facilitate the exchange of skill between these countries. Also, drought and flood early warnings will be disseminated to at-risk communities through a user-centered integrated EWSs. This would be co-produced with stakeholders in partnership with project partners such as the MRC and/or the RCC-Network in SE Asia. Flood and drought hazards are usually treated separately and this project will develop and promote common adaptation measures at regional, national and local level to these hazards.

Cost Effectiveness

The project will build on the existing global and national climate services information system coordinated by the WMO and national authorities involved in the project. That system will produce and deliver authoritative climate services through existing operational mechanisms, technical standards and communication. Duplication of efforts and maximum efficiency of intervention will be avoided by strengthening WMO GPC LRFs and the NMHSs in the Participating Countries. The impact and cost-effectiveness will be reflected in the enhanced ongoing collection, updating, and processing of data at the regional level, in delivering climate data and forecast model outputs to countries, in providing technical assistance in model downscaling outputs, and developing tailored products for country-level decision support systems.

Consistency with national or subnational strategies

The Project will be consistent with national and regional sustainable development strategies, among them:

- *Cambodia*: Cambodia Climate Change Strategic Plan (2014-2023), , the Agricultural Development Plan, the Climate Change Strategic Plan for Water Resources and Meteorology, the Nationally Determined Contribution to the Paris Agreement
- *Laos*: The National Strategy on Climate Change, the National Adaptation Program of Action
- *Myanmar*: The National Environmental Policy, the Myanmar Climate Change Policy, the National Climate Change Strategy and Action Plan 2016-2030, the National Adaptation Programme of Action, Climate Change Action Plan (CCAP) for Water Resources and Meteorology, CCAP for Gender, CCAP for Agriculture
- *Thailand*: Thailand Climate Change Master Plan 2015-2050, 12th National Economic and Social Development Plan (NESDP) 2017-2021, Nationally Appropriate Mitigation Actions
- *Viet Nam*: The Climate Change Action Plan for Agriculture and Rural Development, the National Adaptation Programme for Climate Change, the National Climate Change Strategy
- *Regional*: Mekong River Commission Basin Development Strategy (2021-2030) and Mekong River Commission Strategic Plan 2021-2025, and the Lancang-Mekong Environmental Cooperation Strategic Framework (2019-2023)

Learning and Knowledge management

A learning and knowledge management component to capture and disseminate lessons learned will be provided by WMO GPC LRFs, Regional and National Climate Outlook Forums which are a platform for regular interactions between climate specialists and users in a regional/national context. The climate services information system will comprise a set of tools, including an online web interface and sharing platform to facilitate access and networking. Lessons learnt from knowledge management in this project will facilitate the dissemination of best practices. This learning and knowledge management component will target three different levels: 1) learning among the NMHSs (specialist level); 2) learning among local governments and communities (local level), and 3) learning and collaboration over shared resources (the Mekong River, as being the major and significant river in the region that would be affected by climate change).

Consultative Process

This pre-concept note was developed by national institutions, WMO, GWP, FAO, RMIT University, Australian Bureau of Meteorology following national consultations with meteorological services of Cambodia, Lao PDR, Myanmar, Thailand, and Viet Nam. The national consultations were undertaken in November 2019 at the ASEAN Regional Climate Outlook Forum and then virtually during the COVID-19 pandemic. Other organizations such as UNDP, WFP, ADPC, and WB will be consulted during the next stage of the project proposal process. The Mekong River Commission will also be consulted as one of the main stakeholders of the project. In addition , the discussions among six countries (China, Myanmar, Laos, Cambodia, Thailand, and Viet Nam) facilitated by Lancang-Mekong Water Resources Cooperation Centre (LMWRCC) in 2018 and 2019 have shown that climate variability and change makes the urgency of climate information services over the upper and lower

Mekong River basin is even more prominent, thus it requires transboundary cooperation of all riparian countries starting by data and information exchange on climate information as the basis of integrated river basin planning in the region.

Sustainability of the project

The participating NMHSs are sustainable institutions within their national governments. The project sustainability will be guaranteed by the Cambodia Department of Meteorology and Department of Hydrology and River Works under the Ministry of Water Resources and Meteorology, Lao PDR Department of Meteorology and Hydrology, Myanmar Department of Meteorology and Hydrology, the Thai Meteorological Department, and the Viet Nam Meteorological and Hydrological Administration in their roles of government agencies supported by public funding with officially mandated duties. In the Participating Countries, policies for adaptation to climate change in agriculture are spearheaded by the relevant national Ministries. The NMHSs of the Participating Countries and WMO GPC LRFs provide climate services on operational basis.

Economic, social, and environmental benefits

Investments in risk reduction and preventive adaptation measures based on authoritative climate information spanning the historical recurrence and the future new trends should result in economic benefits for local communities and the entire Participating Countries given the potential avoided costs associated with lack of preparedness. A comprehensive description of social and environmental benefits will be provided in the final proposal, after due assessments (EIA and SIA including screening of the 15 environmental, social, and gender principles of the Adaptation Fund) and consultations are carried out with the respective authorities and communities. Consultations will be undertaken on aiding vulnerable populations and with regards to gender consideration during the project preparation phase.

Compliance with Adaptation Fund Environmental and Societal Policy

In compliance with the Environmental and Social Policy (ESP) of the Adaptation Fund, the proposal will be screened for its environmental and social impacts. With the information available at this stage, the project is expected to have no adverse environmental or social impacts and would therefore be in category C. Information required to confirm this classification will be provided at the concept stage.

Overlap with other funding sources and engagement with NIEs

The project will not duplicate the efforts of other initiatives or funding sources. Instead, the project will identify synergies with ongoing and planned initiatives (the AF projects in Lao PDR and Myanmar, CREWS projects in South East Asia, PNG and the Pacific, and De-Risk South East Asia, FAO's GCF PEARL and SAMIS, UNEP/Mekong EbA South, UN-Habitat projects in Viet Nam and Cambodia to ensure coherence with regional programs. Thus, the project will seek engagement with the regional and national institutions in the region. There are no regional projects that bring Mekong River countries together to address common climate-related impacts and apply similar approaches for drought and flood EWS. The project will explore whether a regional system could be set up to address the national needs and regional with regional partners such as the MRC.

PART III: IMPLEMENTATION ARRANGEMENTS

WMO will be the implementing entity for this project. WMO indirectly implement projects through the NMHSs, regional partners and other organizations to implement weather and climate activities. The NMHSs of the Participating Countries will play the key role in developing partnerships for the project implementation by taking the lead on national consultations and climate information co-production. WMO GPC LRFs hosted by the Australian Bureau of Meteorology will provide global, regional, and national climate information and support the NMHSs in the project implementation. WMO GPC LRFs will assist the NMHSs with enhancing EWS promoting the development and provision of reliable, consistent, and high-quality data and products for drought and flood monitoring and prediction available to end-users assisting them with decision making in resilient food production, hydropower generation, and water management. RMIT University SPACE Centre, drawing on its expertise in space-based observations and application of geographic information systems (GIS) to climate monitoring, will develop tailored methodologies for risk assessments and produce web-based information tools for multi-layered GIS mapping of drought and flood risk combined with relevant exposure and vulnerability information at regional, national, sub-national and community level.

FAO, GWP, NMHSs, and relevant national institutions will be implementing activities at the local communities based on their extensive experience in assisting communities to make agriculture more productive and sustainable, enabling inclusive and efficient agricultural and food systems, and increasing the resilience of livelihoods to threats and crises. There are other actors such as the Mekong River Commission, ADPC, UNDP, WFP etc. that are active in the region. Their activities will need to be reviewed at the concept stage to ensure there is no overlapping with this project. WMO GPC LRFs, RMIT University SPACE Centre, FAO, GWP, NMHSs and relevant national institutions will also be taking the role of the stakeholders' engagement both at national and local levels to ensure the utilization of climate information services is supporting the decision-making processes on the ground. The national stakeholders will include the Ministries of Agriculture and Water Management.

The identified country-level project partners are:

- *Cambodia*: Department of Meteorology (DOM) and Department of Hydrology and River Works (DHRW), Ministry of Water Resources and Meteorology
- *Lao PDR*: Department of Meteorology and Hydrology, Ministry of Natural Resources and Environment
- *Myanmar*: Department of Meteorology and Hydrology, Ministry of Transportation and Communication
- *Thailand*: Thai Meteorological Department, Ministry of Digital Economy and Society
- *Viet Nam*: Meteorological and Hydrological Administration, Ministry of Environment

PART IV: ENDORSEMENT BY GOVERNMENTS AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government² *Provide the name and position of the government official and indicate date of endorsement for each country participating in the proposed project/programme. Add more lines as necessary. The endorsement letters should be attached as annexes to the project/programme proposal.*

H.E. U Ohn Winn Union Minister Ministry of Natural Resources and Environmental Conservation Myanmar	Date: 28 October 2020
Tin Ponlok Secretary of State Ministry of Environment Cambodia	Date: 13 April 2021
Syamphone Sengchandala Director General Department of Climate Change Ministry of Natural Resources and Environment Lao PDR	Date: 12 July 2021
Jatuporn Buruspat Permanent Secretary, Ministry of Natural Resources and Environment Thailand	Date: 15 March 2021
Dr Tran Hong Ha Minister of Natural Resources and Environment Viet Nam	Date: 8 February 2021

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

<p>I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (<u><i>Cambodia</i></u>: National Climate Change Adaptation Plan; <u><i>Laos</i></u>: The National Strategy on Climate Change, the National Adaptation Program of Action; <u><i>Myanmar</i></u>: The National Environmental Policy, the Myanmar Climate Change Policy, the National Climate Change Strategy and Action Plan 2016-2030, the National Adaptation Programme of Action; <u><i>Thailand</i></u>: Thailand Climate Change Master Plan 2015-2050; <u><i>Viet Nam</i></u>: The Climate Change Action Plan for Agriculture and Rural Development, the National Adaptation Programme for Climate Change, the National Climate Change Strategy), and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p>

² Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.



Jean-Paul Gaudechoux
Head, Regional Strategic Division
Regional Strategy Office
Member Services and Development Department
World Meteorological Organization

Implementing Entity Coordinator

Date: 2 May 2022

Tel. and email: +41 79 514 4261
jpgaudechoux@wmo.int

Project Contact Person: Robert Stefanski

Tel. And Email: +41 22 730 8305 / rstefanski@wmo.int