



ADAPTATION FUND

PRE-CONCEPT FOR A REGIONAL PROJECT/PROGRAMME

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme: Enhancing Climate [Adaptation and Resilience](#) of Mekong Communities through Strengthening [of Weather, Water and](#) Climate Services (ECR-MEKONG)

Countries: Cambodia, Lao People's Democratic Republic (PDR), Viet Nam and Thailand

Thematic Focal Area¹: Disaster risk reduction and early warning systems

Type of Implementing Entity: MIE

Implementing Entity: World Meteorological Organization (WMO)

Executing Entities: [Mekong River Commission. In Cambodia: Department of Meteorology \(DOM\) and Department of Hydrology and River Works \(DHRW\), Ministry of Water Resources and Meteorology. In Lao PDR: Department of Meteorology and Hydrology, Ministry of Natural Resources and Environment. In Thailand: Thai Meteorological Department, Ministry of Digital Economy and Society and In Viet Nam: Meteorological and Hydrological Administration, Ministry of Environment, \(CR4\)](#)

Amount of Financing Requested: 12,466,575 (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, 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 [conducted, stakeholders from](#) all four countries indicated that floods, drought, and [severe weather events](#) 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 [improving warning services and risk informed decision making](#) for the agriculture and water sectors.

The Mekong is a transboundary river that runs through the Participating Countries. The riverflow is fundamental for the communities [residing near the Mekong River and its tributaries](#) 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, [timely warning and risk informed decision making on](#) agriculture and water management [will](#) offer major opportunities to improve proactive disaster risk management [strategies](#) and increase economic productivity. [In the last ten years, the lower Mekong countries faced around 100 meteorological and hydrological events leading to deaths of 1000 people, affecting socio-economic activities of more than 24 million \(EMDAT\). In Lao PDR, during 2018 there was a dam outbreak situation leading to loss of lives, damage to property and infrastructure and displacement of population²](#). The impact of drought on vulnerable communities in the Participating Countries has been demonstrated using the disastrous consequences of the 2015-16 El Niño [phenomenon](#). [Based on desk review, the impacts in participating countries were: 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.](#)

[Following the discussion with stakeholders from various sectors in the participating countries, it was identified that accurate and actionable knowledge about meteorological and hydrological parameters \(precipitation, temperature, soil moisture, water levels etc\), its spatial and temporal distribution, and impact based forecasts on various time scales from days to months, sub-season to seasonals are considered vital for the sustainable social and economic development of the Mekong River countries and for long term development planning purposes.](#) Therefore, this project will examine the following aspects of data collection, monitoring and forecasting; co-production of [affordable, sustainable and tailored warning services and advisories; dissemination](#) through effective communication channels ([technological and traditional mode of communication](#)); and participatory engagement of stakeholders to increase uptake of [climate change variabilities advisories and associated actions](#). All of these [development support and services](#) will provide stakeholders in agriculture, energy, and water sectors and local communities with [weather, water and climate related](#) information for [saving lives and improving economic and environmental benefits](#).

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

² <https://www.ohchr.org/en/press-releases/2022/07/lao-dam-disaster-un-experts-decry-lack-progress-survivors-four-years#:~:text=A%20torrent%20of%20water%2C%20mud,left%20homeless%20by%20the%20disaster.>

While the impact of climate change is difficult to forecast, below are projections for the Mekong River Basin for the next 20 to 30 years³, based on a downscaled global climate model:

- Basin-wide temperature increase of 0.79°C leading to annual rainfall increase of 200 mm (13.5% increase).
- Increase in dry-season rainfall in northern catchments and decrease in southern catchments.
- Total annual runoff increase of 21% with increase in flooding in all parts of the basin, with the greatest impact on downstream catchments of the Mekong River.

Climate change is expected to affect natural ecosystems and agriculture throughout the Mekong River Basin. This will make it increasingly difficult to meet the demand for natural resources from the growing population. Analysing the current situation in the Participating Countries and evaluating technical and technological capacities of NMHSs and other competent authorities, it is observed that there is inadequate hydro-meteorological observation networks, insufficient weather, water and climate databases, unavailability of impact based forecasts, lack of climate change and disaster risk reduction management plans and policies, and lack of infrastructures and 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. Implementing climate adaptation strategies and improving the management of water resources is recognized by the Mekong countries as one of the major challenges. This project proposal responds to addressing these needs through WMO-led coordination of partnership and cooperation among the NMHSs in the Participating countries, and jointly provide technical support to strengthen their day-to-day work responsibilities and services. Mekong River Commission (MRC) being an Inter-governmental organization established in 1995 serves as a regional platform for improving climate and water related diplomacy and a knowledge hub of water resources management for the sustainable development of the region and is committed to successfully implement Basin Development Strategy for the Mekong River Basin 2021–2030 & MRC Strategic Plan 2021–2025 through integrated basin wide forecasting and warning system, management of water resource etc. ensuring social, economic and environmental improvements leading to better living standards for all the Mekong basin countries and peoples. The proposed project will involve other national agencies such as disaster management, environmental agency, water resources, academia, NGOs etc. to provide support in co-design and development of outcomes related to early warning system, risk mapping, community-based flood and drought management including locally led adaptation strategies (developing synergies and complementarities with other on-going and completed projects), which will strengthen early warning systems and integrated water resources management, leading to increased preparedness and resilience to climate change events.

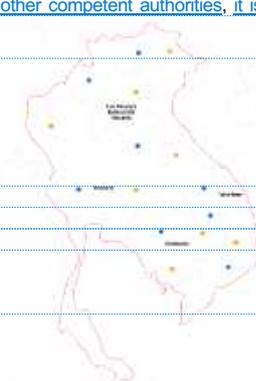


Figure 1: Targeted countries of the Mekong Basin where EWS and risk profile will be developed including vulnerable pilot locations where locally led adaptation and risk reduction measures will be implemented

Project / Programme Objectives:

The ECR-Mekong project is aligned with the Adaptation Fund objective to “reduce vulnerability and increase adaptive capacity of communities to respond to the impacts of climate change at local, national and regional level” and also it will support the United Nation Early Warning System for All initiative (EW4All) which is led by the World Meteorological Organization with other international partners to cover everyone on the planet (Cambodia and Lao PDR are part of first 30 priority countries) with the Early Warning system in the next five years as well as Cambodia and Lao PDR countries are also supported through Systematic Observation financing facility (SOFF) initiative (UN Fund co-created by UNDP, UNEP and WMO). The Adaptation Fund is member of the SOFF Advisory Board. SOFF goal is to support countries to improve their meteorological observations in compliance with the internationally agreed WMO Global Basic Observation Network (GBON), and which in turn will support Global Research Centres for Long-Range Forecasts (such as European Centre for Medium-Range Weather Forecasts) in developing high quality meteorological and hydrological monitoring and forecasting products. The overall objective of the project is to reduce vulnerability and exposure from hydro-meteorological hazards, therefore, strengthening the adaptation and resilience of communities in the Participating Countries to climate variability and change. Furthermore, the project will develop local, national and regional adaptation strategies and implementation mechanisms based on integrated monitoring and management of water resources. Floods and drought being common feature in the Participating countries, the project envisages strengthening the capacities of National Meteorological and Hydrological Services (NMHSs) with a regional integrated Hydro-Meteorological early warning system (providing short term status and seasonal outlook) embedded into a long-term integrated water resource information system and concrete locally led adaptation actions developed through a participatory design

Project / Programme Components and Financing:

Based on WMO preliminary assessments/consultations with NMHSs and Mekong River commission, existing capacity, needs to strengthen the early warning system has been identified, including guidance on weather, water and climate related services enhancing climate change adaptation and disaster risk reduction strategies at regional, national and local levels. National

³ <https://www.mrcmekong.org/about/mekong-basin/climate/>

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Deleted: by implementing climate-smart decision-making networks for better disaster risk management of drought and floods, agriculture management, and water 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...

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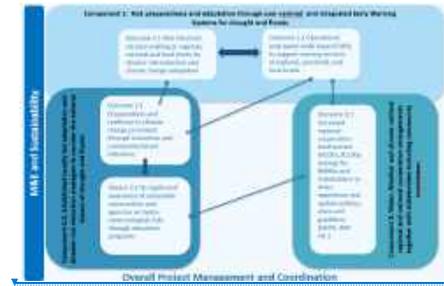
and regional capacity building is required for forecasting of weather and water events, enhancing sector-specific advisories, increasing collaboration among agencies in disseminating warnings and emergency response, developing self-help capabilities of the communities prone to hydro-meteorological hazards to better adapt, respond and develop resilience, Mekong River commission (MRC) and WMO designated South-East Asia Regional Climate Centre (RCC) are mandated for sharing of weather, water and climate data across the countries. The proposed ECR-Mekong project will address the major gap of transforming scattered national capacities, for hazard forecasting and early warning, into a common structure and an extension of successful solutions to cover larger territories as hydro-meteorological events are not spatially limited and go beyond the countries border.

| Project/Programme Components | Expected Outcomes | Expected Outputs | Countries | Amount (US\$) |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------|
| 1. <u>Preparedness and adaptation through user-centred and integrated Early Warning Systems for drought and floods</u> | Outcome 1.1 <u>Risk informed decision making at regional, national and local levels for disaster risk reduction and climate change adaptation.</u> | Output 1.1.1 <u>Strengthen observation networks and social-structural databases, drought and flood risk maps for current and future predicted climate are developed/updated.</u> | Cambodia Lao PDR Thailand Viet Nam | 3,150,000 |
| | | Output 1.1.2 <u>Develop capacity and established frameworks at the local, national, and regional levels to ensure risk informed decision-making to various stakeholders</u> | | |
| | | Output 1.1.3 <u>Long term risk management strategies identified and integrated into development plans (economic, social, environmental aspects)</u> | | |
| | Outcome 1.2 <u>Operational web based multi hazard EWSs (interfaces) to support warning services at national, provincial, and local levels.</u> | Output 1.2.1 <u>Hydrological and meteorological status and outlook instruments with EWS is developed and operationally used by the NMHSs</u> Output 1.2.2 <u>EWS and concrete adaptation measures tested in selected vulnerable communities during monsoon and dry season.</u> | | 2,700,000 |
| 2. <u>Established Locally led adaptation and disaster risk reduction strategies to counter the adverse impact of drought and floods</u> | Outcome 2.1 <u>Preparedness and resilience to climate change promoted through innovative and community-based initiatives.</u> | Output 2.1.1 <u>Implementation of community-based floods and drought management strategies in the vulnerable sites and different ecosystems</u> | | 2,700,000 |
| | | Output 2.1.2 <u>Enhanced Local stakeholders and communities' capacities to adapt to climate change by understanding and proactively applying warning information or advisories tailored to their needs for risk management and adaptation policies and plans (NAP, NAPA, Nationally Determined Contributions).</u> | Cambodia Lao PDR Thailand Viet Nam | |
| | Output 2.2 <u>Strengthened awareness of vulnerable communities and agencies on hydro-meteorological risks through education programs</u> | Output 2.2.1 <u>Enhanced knowledge and awareness of stakeholders on the nature-based solutions and mainstreaming gender for managing climate change events.</u> Output 2.2.2: <u>Strengthened capacity of stakeholders to improve management of climate change adaptation and disaster risk reduction measures, including innovative learnings and experience sharing</u> | Cambodia Lao PDR Thailand Viet Nam | |

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- Deleted:** 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.
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| 3. Water, Weather and climate resilient regional and national cooperation arrangements together with stakeholders including community involvement | Outcome 3.1 Increased regional cooperation mechanisms (Regional Hydrological and Climate Outlook Forums (RHCOFs)) among the NMHSs and stakeholders to share experience and have updated policies, plans and guidelines | Output 3.1.1 Updated regional and national plans / policies on climate change adaptation and disaster risk management and sustained capacity building through regional transboundary strategic alliances and partnerships coordinated by Mekong River Commission | Cambodia Lao PDR Thailand Viet Nam | 1,800,000 |
| | Outcome 3.2 Strengthened governance strategies on water resources management and services at transboundary, national and local levels | Output 3.2.1 Governance strategies are reviewed and improved for water resources management and services including linkages between transboundary, national and local levels | | |
| 5. Project/Programme Execution cost (9.5% of total components cost) | | | | \$ 983,250 |
| 6. Total Project/Programme Cost | | | | \$11,333,250 |
| 7. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) (10% of the Total Project/Programme Cost) | | | | \$ 1,133,325 |
| Amount of Financing Requested | | | | \$ 12,446,575 |

Project Duration: 5 years (2024 – 2028)



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

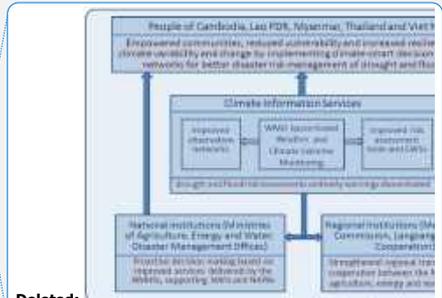
The proposed project will implement activities to address the climate change-influenced variabilities and events mainly through the EWS and related services production and delivery to various stakeholders. The full value-chain of observation, monitoring, forecasting and warning services will be demonstrated in pilot sites that the Participating Countries will identify. Evidence based socio-economic benefits of resilience and adaptation measures based on user-centered EWSs will be quantified at communities' level.

The component 3 will be on governance/cooperation to ensure the experience and good practices gained from the proposed project leads to review and update of national policies and plans (NAP, NAPA, Nationally Determined Contributions and disaster risk reduction strategies) eventually leading to long term investments for strengthening climate change adaptation at regional, national and local levels.

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PART II: PROJECT / PROGRAMME JUSTIFICATION

Project Justification for regional approach, cost effectiveness, innovative, sustainability, socio-economic benefits etc.

The project is advancing a multi-sectoral (agriculture, energy, and water utility) disaster risk reduction approaches to minimize the vulnerability and exposure of the Mekong 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 prepare for and 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 weather, water and climate products tailored to specific needs of sectors and communities. Specific interactions and support for local stakeholders would include the following: 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. 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 weather, water and climate information and early warnings;
- Lack of capacity to use weather, water and climate information for proactive and risk informed decision-making;
- Lack of national capacity to produce relevant climate extremes information and integrated 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 3 project components and associated outcomes and outputs as follow: Component 1 Risk preparedness and adaptation through user-centred and integrated Early Warning Systems for drought and floods. Component 2: Established Locally led adaptation and disaster risk reduction strategies to counter the adverse impact of drought and floods, and Component 3: Water, Weather and climate resilient regional and national cooperation arrangements together with stakeholders including community involvement

A central output of the project is the development of an End-to-End Early Warning System covering the various areas at risk of floods and drought (including landslides). The system will allow to produce and disseminate warnings according to pre-defined levels of risks, using color coding and icons for the different types of hazards, similarly to the warning systems largely installed over a large number of countries and transboundary watersheds. The existing early warning system (including <https://portal.mrcmekong.org/monitoring/flood-forecasting>) are mainly providing monitoring, forecasts and warnings for riverine flood and flash flood events within the next days (usually for 0-5 days) and agrometeorological droughts. However the ECR-Mekong is proposing a system (integrating information and products from other completed and on-going projects or initiatives) which will provide hydro-meteorological information for various stakeholders such as hydro power dam operators, river basin authorities, MRC etc. for timely decision making on water availability in river stream mainly its status (current flow whether it is normal situation, above normal (high flow) or low (below normal)), forecasts (0-7 days for floods and hydro-meteo drought events), sub-seasonal to seasonal outlook (how the situation is going to change in coming months accessing also the meteorological and climatological parameters) which will improve the efficient use or release of water to communities. The basin scale approach is a suitable way to identify and implement cost-effective measures as Mekong countries have similar challenges related to climate change events (floods and drought) that will be addressed during this project. There is a need for better, more effective and coherent regional, national and local strategies and decision-making frameworks to address water related climate resilience challenges in the Mekong Basin countries. These challenges are being exacerbated by a changing climate, deterioration in socio-economic and environmental conditions and unplanned development. It is thus vital that the Mekong basin is better understood through a regional project which provides opportunities to share experiences, good practices and address knowledge gaps. Such a project will be useful to manage water resources, extreme events linked to climatic impact in a transboundary management framework and in an environment of mutual trust and confidence. Also, a regional approach will ensure monitoring and warning information is shared between the respective agencies of the Mekong countries and is further developed for end-user to support timely decisions. A regional approach also provides scope for data sharing on a real time basis and facilitating disaster response and execution of risk reduction measures. By involving the four-countries, previous knowledge and funding, as well as current projects, can be considered to ensure minimum overlap and transfer of methodologies from one area to the other.

Early Warning Systems provide more than a tenfold return on investment. Just 24 hours' notice of an impending hazardous event can cut the ensuing damage by 30 per cent. The Global Commission on Adaptation found that spending just US\$800 million on such systems in developing countries would avoid losses of \$3 to 16 billion per year⁴. In consultation with the national and local stakeholders it was agreed that the climate change adaptation (CCA) measures (through EWS, community-based activities, risk maps for understanding potential impacts) to floods and drought hazards is more cost-effective than the baseline of disaster response and rehabilitation. The cost effectiveness analysis of the proposed project with alternative methods have been studied ensuring cost effectiveness, impact to social, economic and environments, sustainability of the solutions. Alternative to the proposed project approach, the costliest measure (approximately 100-150 times more cost as compared to the proposed project) would be resettlement of vulnerable communities, which would also involve unacceptable amounts of risk in terms of social and economic disruption to the communities.

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⁴<https://www.un.org/africarenewal/magazine/april-2023/fast-tracking-global-early-warnings-systems#:~:text=Early%20Warning%20Systems%20provide%20more,damage%20by%2030%20per%20cent.>

WMO surveys its Member countries via the Country Profile Database (CPDB) and results from the most recent survey indicated that [Mekong countries provide flood and drought warning services through global or regional products](#) and only Thailand has a [national drought monitoring system and policy](#). [Moreover, there is a lack of local riverine flood monitoring, impact based forecasting and warning service](#). The identified gaps of inadequate [national observations networks](#) and insufficient databases will be addressed through WMO flagship initiative [Space-based Weather and Climate Extreme Monitoring \(SWCEM\) and Multi-donor System Observation and Financing Facility \(SOFF\)](#). The project will collaborate with disaster management authorities providing them with early warnings for drought and floods which will assist them in [responding to emergency situation and](#) revising and [implementing](#) their national disaster risk reduction and management strategies. An important part of flood and drought plans are to link the hazard monitoring, [risk knowledge to community led preparedness and response](#) actions on the ground. 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. 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 ([each national data/information and knowledge are shared](#)) and integrated ([at regional levels integrated to develop regional products](#)) and shared with national and sub-national stakeholders for weather, water and climate services.

Expected innovative deliverables through this project include: [The floods and drought risk maps, integrating environmental indicators to the impact on human and properties approaches, will be open-source and thus facilitate mainstreaming of results into other initiatives relating to floods and drought management or generally development processes \(raising of houses, cropping patterns, water resources management etc.\) in the target countries. An integrated and state-of-the-art approach to flood and drought early warning systems is an immediate priority for the Mekong region where timely and relevant information are lacking for impending hydro-meteorological hazards. In these countries during a flooding situation in one part, there can be a drought in another part of the country. An integrated approach to floods and drought monitoring and early warning systems will support national forecasters to observe and generate useful early warning services to the stakeholders. Improved availability of and access to weather and water data, satellite observations, and global and regional hydro-meteo model outputs, for use to save lives and improve decision making by agriculture, water management, and energy sectors; The project will bring together policymakers and decision makers to review, develop and refine existing policies on water management and disaster risk management following experiences and lesson learned from the outcome of component 1 and 2. This will allow developing regional/transboundary water management and climate adaptation plans and guidelines instead of country specific ones.](#)

- This will be particularly important to solve [on-going or 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 [hydro-meteo data and](#) information across the region [and sharing of data for developing regional products for improved decision making](#). Vietnam and Thailand are a bit more advanced and special attention would be given to Cambodia, and Lao 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, [who have mandate to issue forecasts and warning at regional levels](#). Flood and drought hazards are usually treated separately and this project will develop and promote common [and integrated](#) adaptation measures at regional, national and local level to these hazards.

[The cost effectiveness analysis includes various short-term benefits such as prevention and minimization of losses from hydro-meteorological hazards, availability and access to impact based EWS. In the medium-term climate adaptation and disaster risk mitigation planning will be augmented through development of risk maps, irrigation facilities, climate resilient cropping, renewable energy generation, development of local economy and creation of new social institutions etc. In the long-term perspective, there will be optimal use of water resources leading to prevention and mitigation of flood and droughts, ecological restoration, formulation and implementation of policies for making communities adapt to climate changes. Alternative to the proposed measures such as resettlement of vulnerable communities, involve much higher cost, but with limited benefits and detrimental environmental consequences. The alternative solution would be to construct dams and reservoirs or reconstruct or retrofit the vulnerable community which will approximately cost 150-300 Million USD. Given the relative costs and benefits of possible Climate Change Adaptation \(CCA\) and DRR measures, the project has selected the three least-expensive interventions through EWS and knowledge/capacity building measures, to generate significant benefits in the form of increased safety and economic activities as opposed to significant investment in structural or hard measures. During the concept note preparation, the project partners will present a detailed and quantitative analysis of cost effectiveness of the selected measures as compared to alternative options to address the issues.](#)

The Project will be consistent with [international, national and regional sustainable development strategies](#), among them:

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

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 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.

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Deleted: 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 stan... [1]

Deleted: Consistency with national or subnational strategies [1]

- **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
- **Thailand:** Thailand Climate Change Master Plan 2015-2050, 13th National Economic and Social Development Plan (NESDP) 2023-2027, Nationally Determined Contributions (NDC)
- **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)
- [The proposed project will contribute to UN Sustainable Development Goal \(SDG\) target 6.5 to implement integrated water resources management at all levels, including through transboundary cooperation. It also contributes to target 1.5 in building resilience through reduction in exposure and vulnerability for climate related extreme events; target 2.4 to ensure sustainable food production through climate adaptation to drought, flooding, other disasters; and target 11.5 making human settlements inclusive, safe, resilient and sustainable.](#)

A learning and knowledge management component to capture and disseminate lessons learned will be provided by WMO Regional and National Climate Outlook Forums which are a platform for regular interactions between climate specialists and users in a regional/national context. 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). [Knowledge management tools and platform will be developed for sharing experience and storing project documents, reports etc. and also a dedicated website for the project with community of practice \(in different language if possible\) will be designed for sharing experience and supporting stakeholders.](#)

Deleted: Learning and Knowledge management

Deleted: GPC LRFs,

Deleted: The climate services information system will comprise a set of tools, including an online web interface and sharing platform to facilitate access and networking

Deleted: Consultative Process

This pre-concept note was developed [based on the needs highlighted](#) by national institutions, WMO, GWP, FAO, RMIT University, Australian Bureau of Meteorology following national consultations with [hydrological and meteorological services of Cambodia, Lao PDR, Thailand, and Viet Nam during WMO regular constituent or expert groups consultations meetings organized in Region II \(Asia\)](#). The [first](#) 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 [were consulted during the implementation of the WMO CREWS project in Cambodia and Lao PDR](#). The Mekong River Commission [is](#) consulted as one of the main stakeholders of the project. In addition, the discussions among five countries (China, 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. [The recent community consultations were carried out in Cambodia during August 2022 where issues and needs were provided as: Riverine floods in the downstream agriculture areas are generating negative impacts. There is a need to develop local capacities to manage the agricultural production between the floods to ensure food security and adequate income. A new mode of early warning communication system is required for increasing self-help capabilities, preparedness and response measures. Internet connectivity is available with mobile phones and similarly local radio network can be useful for communication. Activities related to water and soil conservation are required to improve agriculture production and improve food security. A detailed consultation with communities are planned in the next preparation phase together with the national and regional stakeholders to finalize the list of activities, list of pilot sites for testing EWS, prepare for EIA and SIA studies, role and responsibilities of the national and regional agencies, etc.](#)

Deleted: will be consulted during the next stage of the project proposal process

Deleted: will also be

Deleted: Sustainability of the project

The participating NMHSs are sustainable institutions within their national governments [who have mandates for monitoring, forecasting and delivering advisory and warning services to stakeholders which have been a challenged until now or carried out with limitation](#). 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, the Thai Meteorological Department, and the Viet Nam Meteorological and Hydrological Administration in their roles of government agencies supported by public funding [who will ensure adequate resources \(human, infrastructure, capacities\) are available not only during but also after the project period. The national agencies and regional entity \(MRC\) will ensure availability of standardized interoperable Hydro-meteorological data, especially on real time basis, coordination of information channels and procedures for end-to-end early warning systems, and increase in knowledge availability with community members on social-economic and environmental risks and their participation in decision making and developing climate change adaptation strategies and will lead to long term sustainability of developed products, services and knowledge which will be shared continuously between technical professionals of different agencies and at local level among population groups.](#)

Deleted: with officially mandated duties

Deleted: 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.

The commitment from the national agencies have been provided which is reflected in their participation of the project as the executing partners. The official commitment from MRC has been received for their participation as the regional executing entity and supporting the development and implementation of the ECR-Mekong project.

An effective, sustainable and tailored flood and drought EWS (will ensure participation and access of the most vulnerable groups including those with disability, women, senior citizens and children) through the project will help in taking adaptive measures such as raising of houses from past flooding levels, farm practices, crop selection/adoption, harvest timing etc. It will build resilience into livelihoods and contribute to local economy. The project will promote nature-based solution approach will promote appropriate adaptation measures and help maintain ecological balance for the entire basin ensuring systematic measures to mitigate land degradation and soil desertification.

Investments in risk reduction and preventive adaptation measures based on authoritative water, weather and climate information spanning the historical recurrence and the future new trends should result in economic benefits for local communities and the entire targeted Project Countries given the potential avoided costs associated with lack of preparedness or use of structural measures (dams, reservoirs, dykes etc resulting in environmental and social impacts). 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 and marginalized populations and with regards to gender (women's, youth, elderly, internal displaced populations etc.) consideration will be provided in the consultation planned during the project concept and proposal preparation phase.

The project will indirectly benefit hundreds of thousands of people living in the Mekong River Basin countries through the proposed strategy of community-based flood and drought management and by enabling local level climate change adaptation measures. In addition, private sectors such as those in agriculture, aquaculture, hydropower will be one of the important stakeholders and benefit from the project outcomes. The studies for hazard and vulnerability mapping proposed under Component 1 of this project will help screen potential risks from a local community perspective (as per the Adaptation Fund's Environmental and Social Policy (ESP) and Gender Policy (GP)) that may arise during implementation). From an environmental viewpoint, the IUCN Red List of Ecosystems Categories and Criteria will be studied to better understand the status of ecosystems, applicable at local, national and global levels. A balanced ecosystem services will be promoted through natural and nature-based solutions linking ecosystem management with livelihoods. With the information available at this stage, the project is expected to fall into medium risk category B because interventions such as information through risk maps and EWS could lead to movement of communities to a safer zone where they might need to identify new resources (livelihoods, house, adoption to new culture etc.) for survival.

The project will not duplicate the efforts of other initiatives or funding sources. Instead, the proposed project will identify synergies and complementarities with ongoing and planned initiatives (the AF project in Lao PDR, CREWS projects in South-East Asia, 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 the proposed regional programs and ensure use of existing resources (human, tools, infrastructures etc.) available to build upon it. Thus, the project will seek engagement with the regional and national institutions in the region to identify good practices, gaps and needs so that common efforts could be delivered jointly with the stakeholders. There are no regional projects that bring Mekong River countries together to address the common climate change events related impacts and apply integrated approaches for drought and flood EWS and locally led adaptation and disaster risk reduction measures. The project will develop a regional web-based system that could be set up to address the national needs and regional mandate with regional partner, MRC taking roles and responsibilities in managing the system and its long-term sustainability.

PART III: IMPLEMENTATION ARRANGEMENTS

WMO will be the implementing entity for this project. WMO will indirectly implement this project through the NMHSs, regional partners (Mekong River Commission) and other technical organizations (partners of the WMO/GWP Associated Programme on Flood Management (APFM) and Integrated Flood and Drought Management (IDMP)) to implement project activities delivering affordable, sustainable, tailored water, weather and climate monitoring, forecasting and warning related products and services. 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 co-production of various products or services related to management of climate change events. 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

Deleted: Economic, social, and environmental benefits ¶

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Deleted: Compliance with Adaptation Fund Environmental and Societal Policy ¶

Deleted: 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.

Deleted: Overlap with other funding sources and engagement with NIEs ¶

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and flood monitoring and prediction available to end-users assisting them with decision making in resilient food production, hydropower generation, and water management. [APFM and IDMP partners together with RMIT University SPACE Centre](#), drawing on its expertise in space-based observations and application of geographic information systems (GIS), 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.

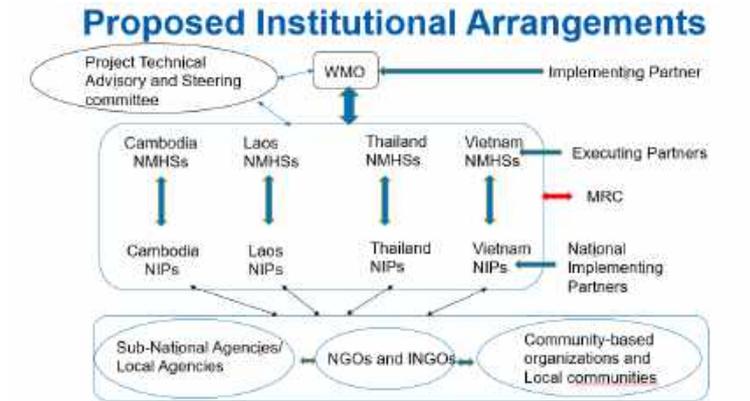
FAO, GWP, NMHSs, [Asian Disaster Preparedness Centre \(ADPC\)](#), [Regional Integrated Multi-Hazard Early Warning System for Africa and Asia \(RIMES\)](#) and relevant national institutions ([Ministries of Agriculture and Water Management](#)) would be hired for implementing activities at the local 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 preparedness resilience of livelihoods to threats and crises. [Other projects implemented by MRC, ADPC, UNDP, WFP, UNDRR, WB and WMO have been preliminary screened \(Annex 1\) for developing synergies and complementarities and avoiding duplication of efforts. A detailed review of on-going projects or initiatives will be conducted during the concept stage preparation phase.](#)

[A project steering/advisory committee will be established with membership of National designated authority, agencies specialized in hydrology, meteorology, climatology, water resources, disaster management and of regional entities. An initial project institutional arrangement \(Annex 2\) is described with a clear description of the roles and responsibilities \(organization chart showing how they report to each other\) of the implementing entity and of executing entity or organizations/stakeholders involved in the project. During the next phase of the project development, it will be refined with additional stakeholders from national, regional and local levels. A Project Management unit \(PMU\) will be established with the WMO, regional and national entities staff working directly with the National Working groups \(formed with the representatives of various agencies\) to ensure the planning and timely execution of the project activities.](#)

[Annex 1: List of projects or initiatives for developing synergies or complementarities with the proposed ECR Mekong project](#)

[ECR-Mekong draft list of projects or initiatives for developing synergies and complementarities with the proposed ECR.docx](#)

[Annex 2: Proposed Institutional Arrangements of the ECR-Mekong which will be updated in the next preparation phase with the national and regional entities](#)



[Annex 3: Community consultation report provided with some initial needs or justifications for the proposed project.](#)

[Community consultation report - Cambodia- 19 August 2022 KM.pdf](#)

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Deleted: There are other actors such as the Mekong River Commission, ADPC, UNDP, WFP etc. that are active in the region.

Deleted: 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'

Deleted: 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.

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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¶
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 government 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.

| | |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Tin Ponlok Secretary of State Ministry of Environment Cambodia | Date: <u>22 June 2023</u> |
| Syamphone Sengchandala Director General Department of Climate Change Ministry of Natural Resources and Environment Lao PDR | Date: 23 December 2022 |
| Jatuporn Buruspat Permanent Secretary, Ministry of Natural Resources and Environment Thailand | Date: 11 August 2022 |
| Dr Tran Hong Ha Minister of Natural Resources and Environment Viet Nam | Date: 30 July 2022 |

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

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 (Cambodia: National Climate Change Adaptation Plan; Laos: The National Strategy on Climate Change, the National Adaptation Program of Action; Thailand: Thailand Climate Change Master Plan 2015-2050; Viet Nam: 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, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

Moyenda Chaponda

Moyenda Chaponda

Implementing Entity Coordinator
Project Management and Implementation Unit
Member Services and Development Department

| | |
|------------------------------------------------------|------------------------------------------------------|
| Date: <u>22 December 2023</u> | Tel. and email: +41 22 730 8646 mchaponda@wmo.int |
| Project Contact Person: Robert Stefanski | |
| Tel. And Email: +41 22 730 8305 / rstefanski@wmo.int | |

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KINGDOM OF CAMBODIA
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Ministry of Environment

N^o :1445..... MoE

Phnom Penh, 22 June 2023

To: The Adaptation Fund Board Secretariat

c/o Global Environment Facility Secretariat

1818H Street, NW, MSN P-4-400

Washington DC, United States of America.

Email: Secretariat@Adaptation-Fund.org

Fax: +1 202 522 3240/5

Subject: Endorsement for "Enhancing Climate Resilience of Mekong River Communities Through Strengthening Climate Service (ECR-MEKONG)"

Dear Sir/Madam,

In my capacity as designated authority for the Adaptation Fund in Cambodia, I confirm that the above regional project proposal is in accordance with my government's national and regional priorities, especially with the specific commitments to the Cambodia Climate Change Strategic Plan (2014-2023), the Mekong Climate Change Adaptation Strategy and Action Plan (MASAP), and Cambodia's Updated Nationally Determined Contribution (Updated NDC) in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Mekong River basin.

Accordingly, I am pleased to endorse the preparation of the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the World Meteorological Organization (WMO) and executed by the National Meteorological and Hydrological Services of the Ministry of Water Resources and Meteorology, Cambodia.

I sincerely hope that this proposal will be considered favorably by the Adaptation Fund. *aw 10/6*

Sincerely Yours,

Tin Ponlok
Secretary of State



KINGDOM OF CAMBODIA
Nation Religion King

Ministry of Environment

N° :.....1006..... MoE

Mr. Henry Gonzalez
Executive Director a.i.
Green Climate Fund Secretariat
G-Tower 175 Art Center-daero
Yeonsu-gu, Incheon 22004
Republic of Korea

Phnom Penh, 22 June 2023

Subject: Funding proposal for the GCF by the United Nations Development Programme regarding Early Warnings for All (EW4All) initiative

Dear Mr. Gonzalez,

We refer to the programme titled Early Warnings for All (EW4All) as included in the idea note submitted by the United Nations Development Programme to us on 2 June 2023.

The undersigned is the duly authorized representative of the Ministry of Environment, the National Designated Authority of the Royal Government of Cambodia.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the programme as included in the funding proposal.

By communicating our no-objection, it is implied that:

(a) The government of Cambodia has no-objection to the programme as included in the funding proposal;

(b) The programme as included in the funding proposal is in conformity with the national priorities, strategies and plans of Cambodia;

(c) In accordance with the GCF's environmental and social safeguards, the programme as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the programme as included in the funding proposal has been duly followed.

We also confirm that our no-objection applies to all projects or activities to be implemented within the scope of the programme.

We acknowledge that this letter will be made publicly available on the GCF website. 

Sincerely yours,




Say Samal
Chair of the National Council for
Sustainable Development,
Minister of Environment



Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

Ministry of Natural Resources and Environment
Department of Climate Change

No: 1065-1000/DCC

Vientiane Capital, Date: 23. December 2022

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptaion-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for "Enhancing Climate Resilience of Mekong River Communities Through Strengthening Climate Services"

In my capacity as the designated authority for the Adaptation Fund in Lao PDR, I confirm that the above regional project proposal is in accordance with the government's national and regional priorities in implementing adaptation activities to reduce the adverse impact of, and risk, posed by climate change in the Mekong River basin.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project will be implemented by WMO and executed by the National Meteorological Service in Lao PDR.

Sincerely,



Syamphone Sengchandala

Director General,
Department of Climate Change,
Ministry of Natural Resources and Environment.
Designated Authority for Lao PDR



SOCIALIST REPUBLIC OF VIET NAM
MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT

Ha Noi, 17 March 2023
Ref. No: /MONRE-2023

The Adaptation Fund Board

c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Endorsement for the revised Pre-Concept Proposal of "Enhancing Climate Resilience of Mekong River Communities through Strengthening Climate Services" project

After addressing all comments based on the Adaptation Fund's review of the Pre-Concept Proposal of "Enhancing Climate Resilience of Mekong River Communities through Strengthening Climate Services" project submitted in 2022, the World Meteorological Organization (WMO) and the Ministry of Natural Resources and Environment of Viet Nam are ready to submit the revised Pre-Concept Proposal.

In my capacity as designated authority for the Adaptation Fund in the Socialist Republic of Viet Nam, I confirm that the above regional project proposal is in accordance with the government's national and regional priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Mekong River basin, Viet Nam.

Accordingly, I am pleased to endorse the above-mentioned project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the World Meteorological Organization (WMO) and executed by Viet Nam Meteorological and Hydrological Administration, Ministry of Natural Resources and Environment of Viet Nam and national partners.

Yours Sincerely,

Tran Hong Ha
Minister of Natural Resources and Environment
Socialist Republic of Viet Nam.

No 1006.4/ 1893



Ministry of Natural Resources
and Environment
92 Soi Phahol Yothin 7,
Phahol Yothin Road, Phaya Thai,
Bangkok 10400 Thailand
Tel./Fax +66 2 265 6692

19 July B.E. 2566 (2023)

Sir/Madam,

Subject: Endorsement for Enhancing Climate Resilience of Mekong River Communities through Strengthening Climate Services (ECR-MEKONG)

In my capacity, as designated authority for the Adaptation Fund in the Kingdom of Thailand, I confirm that the above regional pre-concept note is in accordance with the government's national and sub-regional priorities in implementing adaptation activities to strengthen the capacity on climate information and services for relevant agencies, increase collaboration network within Thailand and among Mekong river countries, and support Thailand's National Adaptation Plan implementation on water management sector, and agriculture and food security sector.

Accordingly, I am pleased to endorse the above pre-concept note dated 26 May 2023 for your consideration. If approved, the project will be implemented by World Meteorological Organization and executed by Thai Meteorological Department.

Yours sincerely,

(Mr. Jatuporn Buruspat)

Permanent Secretary

Ministry Natural Resources and Environment

Adaptation Fund Board Secretariat
c/o Global Environment Facility
1818 H Street NW, Washington DC 20433, USA
Email: secretariat@adaptation-fund.org