AFB/PPRC.34/Inf.27
11 September 2024

Adaptation Fund Board
Project and Programme Review Committee
Thirty-fourth Meeting
Bonn, Germany, 8-9 October 2024

PROPOSAL FOR CAMBODIA, LAO PDR, VIET NAM, THAILAND

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Pre-Concept for a Regional Project

Countries/Region: Cambodia, Lao People's Democratic Republic, Thailand, Viet Nam.
Project Title: Enhancing Climate Adaptation and Resilience of Mekong Communities through Strengthening of Weather, Water and Climate Services (ECR-MEKONG)
Thematic focal area: Disaster risk reduction and early warning systems
Implementing Entity: World Meteorological Organization (WMO)
Executing Entities: Mekong river commission (MRC); Cambodia: Department of Meteorology (DOM), Department of Hydrology and River Works (DHRW), Ministry of Water Resources and Meteorology (MOWRAM); Lao PDR: Department of Meteorology and Hydrology (DMH), Ministry of Natural Resources and Environment (MoNRE); Thailand: Thai Meteorological Department (TMD), Ministry of Digital Economy and Society (MDES); Viet Nam: Viet Nam Meteorological and Hydrological Administration (VNMHA), Ministry of Environment (MONRE).
AF Project ID: AF00000268
IE Project ID:
Requested Financing from Adaptation Fund (US Dollars): 12,466,575
Reviewer and contact person: Dirk Lamberts
Co-reviewer(s): Imen Meliane
IE Contact Person(s): Ben Churchil

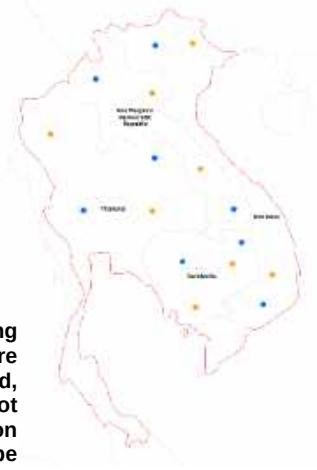
Technical Summary	The project "Enhancing Climate Adaptation and Resilience of Mekong Communities through Strengthening of Weather, Water and Climate Services (ECR-MEKONG)" aims to reduce vulnerability and exposure from climate hydro-meteorological hazards, therefore, strengthening the adaptation and resilience of communities in the Participating Countries to climate variability and change. This will be done through the three components below: Component 1: Preparedness and adaptation through user-centred and integrated national early warning systems (EWS) for drought and floods (USD 5,850,000); Component 2: Established Locally led adaptation and disaster risk reduction strategies to counter the adverse impact of drought and floods (USD 2,700,000); Component 3: Water, Weather and Climate resilient regional and national cooperation arrangements together with stakeholders including community involvement (USD 1,800,000).

	Requested financing overview: Project/Programme Execution Cost: USD 983,250 Total Project/Programme Cost: USD 11,333,250 Implementing Fee: USD 1,133,325 Financing Requested: USD 12,466,575 The proposal includes a request for a project formulation grant of USD 20,000.
Date	21 January 2024

Comments First Technical Review (Sep. 2023)	Comments Second Technical Review (Feb. 2024)	IE and EEs response to the Second Technical Review
Yes.	**-**	
Yes. Participating countries are particularly vulnerable to climate change-exacerbated floods and droughts, with increasing frequency and severity.	**-**	
Yes. As per the Endorsement letters dated 22 June 2023 (Cambodia), 23 December 2022 (Lao PDR), 19 July 2023 (Thailand) and 17 March 2023 (Viet Nam).	**No.** Please note that since the submission of the revised proposal, the DA for Cambodia has changed. The resubmission should therefore provide a new letter of endorsement by the new DA for Cambodia. Please also note that the second letter by Cambodia signed by the chair of the national council for sustainable development refers to a different proposal to the GCF.	The endorsement letter from the new designated NDA of Cambodia has been submitted with the revised ECR-Mekong project pre-concept note. Please check the Annex.
No.	**CR 1: Not cleared.**	**CR1: The proposed Hydro-meteorological EWS (one of the main priority highlighted under various**

Essential information needed to justify the funding request, is lacking. The scope of the project is so broad that the diversity and complexity of the problems the proposal aims to address is not presented or reflected in the proposed approach. **CR 1:** Please provide the necessary information on the problem as well as the proposed remedy, as required, at the different levels.	There is no doubt that an effective EWS would be a valuable adaptation asset for communities and households in the Mekong river basin. However, the nature of the challenges in developing a suitable EWS for the Mekong basin has not been addressed. The level of the proposed interventions is disconnected from the actual decision making processes in the countries and there is a lack of decision making abilities at the regional level. The link between data collection and analysis and decision making is absent. There is no pathway for such data to progress and relevant policy and political frameworks determining decision making are ignored. The diversity and complexity of the problems the proposal aims to address are not adequately presented or reflected in the proposed approach. In addition, the EEs have also been the main source of information on the issues, mostly related to their own capacity and they will be the main project beneficiaries. It may be advisable to consider the involvement of entities that can facilitate neutral identification of the most effective and indicated approaches.	**assessment study or needs reports prepared with the countries as highlighted with texts with CAR1) under the ECR-Mekong will be developed jointly with the National Meteorological and Hydrological Services (NMHSs) along with the transboundary entity (Mekong River commission) and other agencies (agriculture, water resources, irrigation, hydro-power companies, local administration, etc.) supporting communities in saving lives, damage to property, improving livelihoods etc. The NMHSs has the responsibility and mandate in each country to install, maintain and collect information related to Hydro-meteorological situation, carry out modelling and forecasting and issue impact based alerts and advisories to various stakeholders. Disaster Management and other agencies (Agriculture, Irrigation, Water Resources, Environment, Power, Energy, hydropower etc.) are the users of the warning or advisory services provided by the NMHSs and support them in making decisions related to informing the population, advisories for supporting livelihoods, infrastructure use such as power, telecommunication, transports, etc.** Presently in each country of the Mekong River basin, there is a lack of hydrological monitoring and observation networks, leading to limited data and information for impact-based forecasting and advisories for weather, water and climate related status and outlook. The proposed project will support the NMHSs of the targeted countries (which has the mandate and responsibilities) to monitor and inform other national and local agencies (disaster management, environment, water resources, ministry of planning etc.) and population on climate change events and its possible impacts. **The ECR-Mekong project will foster an opportunity of collaboration and coordination among various agencies, authorities etc. mainly for joint climate change events monitoring and delivering**

		warning services, developing policies, plans and decision-making guidelines/framework for managing climate change events at all levels. **Presently, each country of the Mekong River basin is managing water related hazards and issues in silos and there is no mutual cooperation, tools and technical support shared by each other. The project will allow a platform for co-designing tools, sharing experiences, and building an environment of trust, following the already defined procedure for data sharing, monitoring of water resources to support the implementation of the 1995 Mekong Agreement on water cooperation.** The pre-concept note has been designed with the consultation of mainly NMHSs, and environmental and disaster management agencies. The pre-concept note has been prepared and will be shared with different stakeholders in the countries. **Also, as advised, in the next project preparation phase (concept note), the IE and EEs have planned to carry out consultations workshop (concept note available here) in August 2024 with other agencies in the countries such as Agriculture, Irrigation, dam authorities, water resources, municipality chiefs etc. to identify their needs, gaps, capacities and gather support for collaboration in the development** and later implementation of the ECR-Mekong project. The relevant text changes have been made in the updated pre-concept note highlighted with CR1.

No. The pre-concept note is a broad mix of issues and topics, some with a clear climate change link, others with only a marginal or no connection at all. 1. The target area of the proposal is not clearly defined and misaligned with the envisaged objective. The absence from the proposal of PR China (and, to a lesser extent, Myanmar) as a participating country is a major gap as a key source of flood-determining flow and flow control through hydropower management is thereby not included. Furthermore, apart from Cambodia and Lao PDR, only relatively small parts of the territories of Thailand and Viet Nam are located in the Mekong river basin. It is unclear to what extent and how these two countries will use and develop national and nation-wide structures based on these limited requirements. 2. The target communities are poorly identified. The project title refers to "Mekong river communities", while elsewhere they are referred to as "riparian communities" or yet as "vulnerable communities in the Participating Countries". The flood and drought risks directly related to Mekong river flows and rainfall	**CR 2: Not cleared.** None of the seven points made have been adequately addressed. **CR 3: Not cleared.**	**CR2.1)** The ECR-Mekong project will develop/strengthen the Hydro-meteorological EWS covering the entire administrative boundary of the 4 targeted countries of the Mekong Basin (covering Mekong River, small tributaries and water resources areas) as shown in the below image.  **Figure 1: Targeted Participating Countries of the Mekong Basin where EWS and risk profiles will be developed, including tentative vulnerable pilot locations where locally led adaptation and risk reduction measures will be implemented.** The community-based adaptation and disaster risk management activities will be implemented in the vulnerable locations (will be finalized in consultation with various agencies and population during the concept note and proposal preparation phase) of the four countries based on consultations with stakeholders involved in climate risks preparedness and response measures. **The target area for the intervention has been added in the pre-concept note highlighting the potential community-based areas or region for developing adaptation and resilience measures.** **The ECR-Mekong IE and EEs acknowledge the need to involve or have participation of China (being upstream) for flood flow measurement or flow control (hydro-power). It is unfortunate that the PDR China and Myanmar have not been considering joining the project as beneficiary countries and/or executing entities.** The IE considered having China to join the

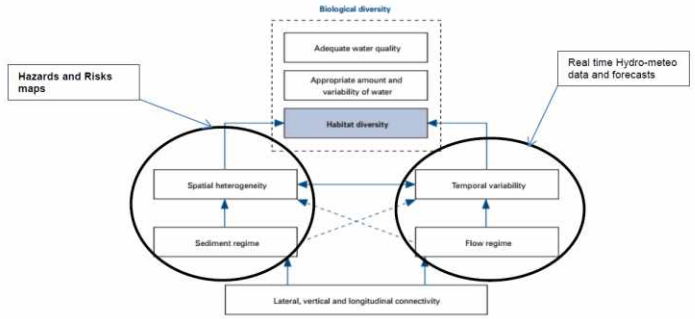
extend far beyond its direct riparian area. 3. The main objective of the project is described as being achieved "by implementing climate-smart decision-making networks". The proposal does not explain how these decision-making networks will be relevant in decision making across all the sectors involved in the management of drought and flood disaster risks. 4. There seems to be a major disconnect between the information that is needed and relevant for flood and drought disaster risk management (i.e. mostly *weather* forecasts) and the envisaged "climate services production and delivery". At the community level, for the mentioned sector of agriculture, weather forecasts are relevant, as decisions at a temporal scale where 'climate services' are relevant are typically not taken at the level of those communities. 5. There is a conceptual bias in the term 'flood' as used in the proposal. It is only used in the sense of being a catastrophic or disastrous event, one that should be avoided or minimised through a disaster preparedness approach. The recurrent flooding associated with the natural		project beneficiary country but there has not been any regular/positive response. Also in Myanmar, the issue of political instability is not allowing for consultation with agencies and communities leading to lack of their participation in the project (hoping the situation will improve in coming months or year). **IE and EEs will continue to approach China and Myanmar during the development phase of the project to join the project as beneficiary country or as a technical partner supporting the downstream countries with affordable, tailored and sustainable solutions.** **In case of non-participation, WMO and EEs will identify and use satellite-based information on determining hydro-meteorological conditions in upstream (including the impacts due to the hydro-power dams) and possible exposure and impacts in downstream area. This approach will be taken into consideration until there is a possible involvement of China.** The project IE and EEs will continuously inform the Adaptation Fund on the progress for the involvement of China and Myanmar. The necessary text changes have been added in the updated pre-concept note with the above mentioned information. **CR2.2)** The proposed ECR-Mekong project will cover the entire four countries of the Mekong Basin mainly supporting governmental agencies and identified vulnerable communities with self-help capabilities and improve their adaptation measures for climate change events such as floods and drought. **The words in the pre-concept note such as 'Mekong River communities' or 'riparian communities' have been replaced with Mekong country communities.** The proposed project will

hydrological cycle of the Mekong river and its vital importance to globally unique biodiversity, ecosystem processes, ecosystem services and livelihoods, while documented and demonstrated ad nauseam, is entirely absent from the proposal. The proposal makes some references to hydropower development as a factor affecting flooding but ignores the impact of e.g. irrigation development and loss of wetlands and floodplain vegetation, dynamics and other features such as connectivity. 6. Similarly, the proposal ignores the livelihoods and ways of life of millions of households in the Mekong river basin who have adapted to naturally occurring floods and droughts and, in a number of cases, have developed over several thousands of years ways to cope, exploit and often prosper with these natural hydrological cycles. 7. The project objective includes "better (…) water resources management encompassing hydropower generation." The development of both mainstream and tributaries hydropower infrastructure in the Mekong river basin of the past three decades has clearly shown the inability of the countries and		provide benefit to communities far beyond the Mekong River basin as floods and drought events and its associated impacts are witnessed also in the tributaries and catchments area of the countries (beyond the riparian area of the Mekong River stream). In the next stage of the project preparation, vulnerable areas and communities will be identified for intervention related to the disaster risk reduction and climate change adaptation measures. **CR 2.3)** The proposed ECR-Mekong project will support in **water, weather and climate smart decision networks mainly through the climate scenarios (climate induced risks in present climate and future projected climate), sub-seasonal to seasonal hydro-meteorological outlooks, hydro-meteorological status and forecasting products for daily, weekly, monthly advisory or early warning services.** The proposed project will bring together stakeholders of **each country and transboundary entities in joint monitoring of climate change events and variabilities and implement decision making at local, national and transboundary levels supporting social, economic and environmental benefits**. In the next stage of the project preparation, environmental impact assessment (EIA) and Social Impact Assessment (SIA) studies will be carried out with the stakeholders to better understand the gaps and needs for monitoring of climate change events and variabilities and identify decision making networks at all levels for improving their capacities. Later during the implementation phase, the decision-making network will be tested to check applicability, effectiveness and any scope for improvements. **CR2.4)** The project will promote the concept of transboundary implementation of the Integrated Flood and Drought Management strategies (supported by WMO and

companies involved to take into consideration factors in their hydropower operations that are not directly in support of their own profitability. Clearly, considering their impact on river flows, they are of vital importance in flood and drought disaster risks management. However, the proposal does not demonstrate how it will achieve such engagement with the hydropower sector. Attempts at their engagement have consistently failed, despite the existence of bespoke international agreements and institutions established for that exact purpose (e.g. the Mekong River Commission). **CR 2:** Please clarify the link between the project objectives, the project components and the proposed allocation of financing, taking into consideration the above remarks. **CR 3:** Please clarify the components to demonstrate how they will realistically result in outcomes that contribute to achieving the project objectives.		GWP- Associated Programme on Flood Management (APFM) and Integrated Drought Management Programme(IDMP) through non-structural and structural measures which has the objective to maximize the net benefit from the flood plain (supporting their existing strategies to cope, exploit and often prosper with the natural hydrological and meteorological cycles) and at the same time reduces the socio-economic and environmental impacts. **The "integrated" does not refer to the two hydrological extremes (i.e. integrating drought and flood management) but rather, as explained in relevant literature http://www.floodmanagement.info/publications/concept_paper_e.pdf and http://www.idmp.info/documents/IDMP_Concept_Note.pdf to the integration of aspects not only related to the technical side of these events (i.e. engineering or technological solutions) but also aspects related to the socio-economic, environmental and institutional implications that floods and drought entail.** **Through the project, Hydro-meteo impact based EWS will be designed and developed with the stakeholders (build upon from the existing projects and initiatives such as CREWS Cambodia and Lao PDR, World Bank funded projects etc. as provided under Annex 1) mainly to ensure other agencies such as Agriculture, Irrigation, Water Resources etc. have necessary information available for anticipatory action.** More details will be provided during the concept note and proposal stages.

		CR 2.5) The project will support in adequately assessing and management of water resources in the Mekong river basin region mainly with the hydro-meteorological information available to various stakeholders such as citizens, hydropower dam operators, river basin authorities, MRC, irrigation, water resources management authorities, infrastructure authorities etc. for timely decision making on water availability and utility in the river streams through its current status (current flow whether it is normal situation, above normal or 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 parameters) which will improve the efficient use or release of water, preparedness action for lives and livelihoods. This will avoid storage of access amount of water which can eventually lead to dam break or spillage (in high precipitation situations). **A dam collapse at the Xe Pian Xe Namnoy hydropower project in southwestern Laos' Champassak province following heavy rains in July 2018 triggered devastating floods that left 71 people dead and more than 10,000 homeless**[1].Also, other impacts of uncontrolled release of dam water can lead to impacts to population, ecosystem, livelihood, impact to infrastructures such as roads, power, tele-communication etc. as highlighted here https://reliefweb.int/report/thailand/villagers-laos-and-thailand-suffer-china-opens-floodgates-mekong-river-dams. Monitoring of water resources and hydro-power infrastructure is critical for managing socio-economic activities. **The vulnerability in Mekong countries is not only increasing because of social dynamics but also**

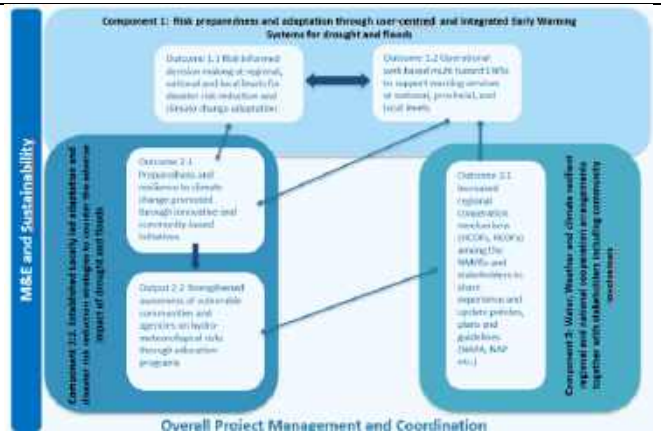
[1] https://www.rfa.org/english/news/laos/dam-break-in-northeast-laos-08082019163519.html#:~:text=A%20dam%20collapse%20at%20the,Reported%20by%20RFA's%20Lao%20Service.

		through ecosystem and environmental stresses due to modification of natural hazards, environmental degradation, climate change and losses of natural resources and biodiversity. These stresses have a major impact on the lives, livelihoods, use of infrastructure and connectivity such as roads, tele-communication, power etc. of the most vulnerable population.  *Link between bio-diversity and hydrometeorological components* **The proposed ECR-Mekong project will support in building links between biodiversity and hydro-meteorological monitoring and information systems to ensure biological diversity as shown in the above image.** **CR 2.6) The projected increase in temperature and rainfall will result (and some impacts are already visible) in crop failure, reduction in crop production and loss of livelihoods for farmers that practice rain-fed cropping (majority of them in the basin).** Research studies[2] show there will be short and intense monsoon period in future and then longer dry season where shortage of water will impact livelihoods, economic activities such as hydro-power generation, water availability, etc.

[2] https://www.hindawi.com/journals/amete/2020/8874869/ and https://www.sciencedirect.com/science/article/pii/S1674927821000277

		for example, in the Cambodian and Lao PDR part of the basin, local activities (agriculture, livestock farming and fishing) are completely dependent of the floods and drought due to the extreme poverty of local communities. However, rainfall has been irregular which directly impacts local economic activities. Farmers cannot stock cereals which hinders stability in terms of food security. They often choose crop diversification and exodus to cities as adaptation strategies. **Communities (marginalized, vulnerable, etc.) will be the priority beneficiaries of the proposed project with whom the project partners will engage them in understanding existing adaptation and risk management strategies, priority needs, and co-design solutions (improving livelihoods through agriculture productivity, fishing, restoration of wetlands or flood plains etc,.) which are affordable, tailored and sustainable in the long term.** In the next phase of the concept note and proposal preparations, several face-to-face consultation meetings with communities are planned to understand and define their needs which can be supported through the ECR-Mekong project. **C.R 2.7)** The proposed project has clearly identified the issues and impact of the hydro-power dams on managing water resources in the countries**. Impacts of uncontrolled release of dam water can lead to impacts to population, ecosystem, livelihood etc as highlighted here https://reliefweb.int/report/thailand/villagers-laos-and-thailand-suffer-china-opens-floodgates-mekong-river-dams. Monitoring of water resources and hydro-power infrastructure is critical for managing socio-economic activities.**

		The project is committed to work with various stakeholders (transboundary and national agencies, private companies, local administration communities etc.) to gather information and provide hydro-meteorological tools and solutions which can be effective for day-to-day monitoring of operational hydrological and meteorological status and events as well as support in developing self-help capacities of communities with the climate change adaptation measures**. The project partners will ensure collaboration with government or private dam authorities in each targeted countries to identify cooperation needs, tailored solutions to monitor and release of stored water from dams preventing the situation of flooding or providing water during dry season** Additional tailored information will be presented after the consultation of various stakeholders managing water resources, climate change, development initiatives, agriculture, irrigation etc. during the concept note stage including possible solutions for improving the management of hydro-power dam operations and its impacts to communities. **CR2 and CR3:** The linkages between components, outcomes and outputs are presented in the below architectural diagram.



As the proposed ECR-Mekong project will engage and support stakeholders at all levels, ensuring the climate change and impacts are pro-actively monitored, timely information for advisories/warnings to communities, necessary tools and knowledge available with population having localized climate change adaptation and disaster risk reductions measures to improve their adaptation and resilience capabilities.

The project will support in adequately managing of water resources in the Mekong basin region mainly through hydro-meteorological information available for various stakeholders such as hydro power dam operators, river basin authorities, MRC, irrigation, agriculture, environmental entities etc. for timely decision making on water availability in river stream mainly its status (current flow whether it is normal situation, above normal or 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 parameters) which will improve the efficient use or release of water. This will avoid storage of access amount of water which can eventually lead to dam

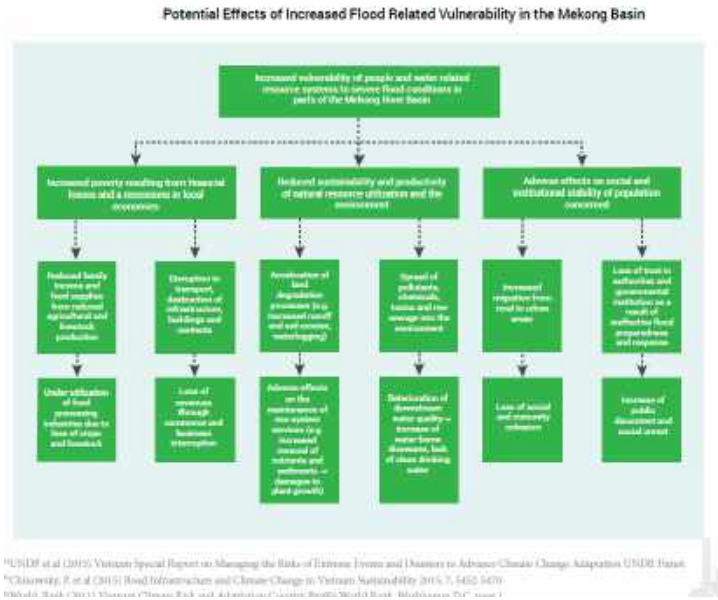
		break or spillage. In Lao PDR, during 2018 there was a dam outbreak situation leading to loss of lives, damage to property and infrastructure and displacement of population[3]. Following the development of the hydrological status and outlook system, the dam operators, MRC and national hydro-meteorological agencies could jointly monitor the situation at the Mekong River basin and make risk informed decision-making to water utilities companies, irrigation, agriculture etc. for reducing the impacts to population and river stream dependent livelihoods. The proposed ECR-Mekong project is addressing this major gap of transforming these scattered national capacities, for hazard monitoring, forecasting and early warning, into a common structure and an extension of successful solutions to cover larger territories as both the hydro-meteorological events are not spatially limited and go beyond the countries border. The project objectives and project components have been aligned based on the above presented approach. Component 1 Risk preparedness and adaptation through user-centred and integrated Early Warning Systems for drought and floods, with Outcome 1.1 Risk informed decision making at regional, national and local levels for disaster risk reduction and climate change adaptation and Outcome 1.2: Operational web-based multi-hazard EWSs (interfaces) are established/strengthened to support warning services at (regional) national, provincial, and local levels. including outputs: - *Develop capacity and established frameworks at the local, national and regional levels to ensure risk informed decision-making.* - *Future scenario and impacts on the socio-economic and environmental.*

[3] 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.

		- *Enhanced understanding of existing hydromet warnings at the national level, through increased collaboration between NMHSs and DRM authorities to harmonise multi-risk information and warnings.* - *Integration of existing information and data to strengthen flood and drought forecasting instruments and Early Warning Systems (EWS) and coordination at the transboundary level to reduce disaster risks in vulnerable communities.* - *A web-based Hydrological Status and Outlook System for EWS is designed and developed together with the National services along with impact-based flood forecasting.* Component 2: Established Locally led adaptation and disaster risk reduction strategies to counter the adverse impact of drought and floods, with Outcome 2.1 Preparedness and resilience to climate change is increased/promoted through innovative and community-based initiatives. And Outcome 2.2: Strengthened awareness of vulnerable communities and agencies on hydro-meteorological risks through education programmes. Outputs includes: - *Community based flood and drought management in order to develop capacities and increase resilience of communities in selected vulnerable areas where flooding poses a prominent risk.* - *Develop preparedness and response measures implemented through the National forecasts and warning services.* - *Demonstration of the added value of the E2E EWS Alarm through a series of pilot testing during monsoon and dry seasons* - *Develop medium and long-term locally led adaptation measures for vulnerable communities.*

		Component 3: Water, Weather and Climate resilient regional and national cooperation arrangements together with stakeholders including community involvement, with Outcomes 3.1: regional cooperation mechanisms (Regional Hydrological and Climate Outlook Forums (RHCOFs,)) among the NMHSs and stakeholders are strengthened and have updated policies, plans and guidelines and Outcomes 3.2: Strengthened governance strategies on water resources management and services at transboundary, national and local levels - *Strengthened capacities of actors and decision-makers at national and transboundary level on long term risk management policies plan and strategies* - *Helping in participatory management of water and natural resources in MRC and support to Hydrological Climate Outlook Forum* - *Regional mechanism for adaptation cooperation on HydroSOS established and operational. Periodic review and update of the mechanism is agreed on by riparian states* - *National adaptation strategies (NAPs) are fully inclusive of water management issues, address community concerns. Methodology and mechanism for leveraging and sharing benefits of optimising adaptation at regional level are in place* - *A collaborative process is developed to ensure those instruments and strategies are accepted by the local organization and communities and adapted to the local context* The component 3 will be on governance 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. Each component will deliver outcomes and associated outputs which are inter-linked or dependent on the information and outputs from the previous outputs or activities. References: https://unfccc.int/sites/default/files/200311_start_adaptation_mekong.pdf https://en.wikipedia.org/wiki/2018_Laos_dam_collapse https://www.mrcmekong.org/news-and-events/news/extent-of-flooding-and-water-level-rise-from-dam-break-in-southern-laos/
No. Despite its very broad scope, it can be concluded that the proposal would contribute primarily to disaster risk reduction and early warning systems. The potential for the project to support concrete adaptation actions is low, as the allocation of funding to activities that could be considered concrete adaptation, or that are likely imminently leading to such adaptation, is very limited, involving only an unspecified number of pilot cases and sites.	**CAR 1: Not cleared.** None of the considerations raised in the initial review have been adequately addressed. In addition, the pre-concept note does not provide verified or documented justifications for the need for the project. All the identified 'needs' have already been addressed and funded several times, as is illustrated in part by the list of ongoing similar initiatives in the region presented in the response sheet. It is necessary to provide further justification as to how the requested funding would be	**CAR1:** In the recently concluded study of the Early Warning for All, it is found that Cambodia and Lao PDR (two of the priority Global countries for the EW4All initiative) both require support for developing impact based forecasting systems and capacity for warning services. Also in Vietnam, it is suggested in various study report that the need for effective, innovative approaches for flood and drought monitoring, preparedness and management measures are important for growing population and economy. As suggested by the World Bank for Thailand, the need for improving early warning system for water security and utilities. The study conclude by GIZ with MRC highlighted the strategic priority for having flood and drought management measures in the Mekong river basin especially 1. Implement a river basin master plan 2. Manage urban and rural flood and drought

The added value of the regional approach is not demonstrated (please also see comment 1 under point 3 above). For rainfall forecasting, regional impacts in terms of flood and drought risk materialise in a lagged manner through the hydrology of the river, which is extensively monitored and for which robust flood forecasting has already existed for several years (please see e.g. https://portal.mrcmekong.org/monitoring/flood-forecasting). The description of how the project would provide new and innovative solutions for climate change adaptation is vague and contains very few new and no innovative elements. Numerous attempts to "solve potential conflicts in water use between agriculture, energy, and water management using multipurpose infrastructures" have been made in the past, many through MRC, and have mostly failed. The section on cost-effectiveness provides no information on how the proposed project would be a cost-effective way to achieving the project objectives. The proposal contains no gender considerations.	more effective than all the previous projects, in particular outlining how capacity would be sustained once the project ends, as this was not the case of other projects that have invested in building capacity of MRC and institutions in the countries, but capacity is no longer available nor has it been institutionalised following the conclusion of the external support. It is therefore critical that the projects builds on previous experiences and lessons learned. Apart from new output 1.2.2 - EWSs and concrete adaptation measures are tested in selected vulnerable communities – there are few concrete adaptation actions involved.	3. Exchange information and knowledge 4. Strengthen hydromet network and flood and drought warning 5. Build regional capacity. Also, floods and drought in Mekong region/countries have increasing the vulnerability of populations as suggested in the below image:  The MRC report (https://www.mrcmekong.org/our-work/topics/flood-and-drought/#:~:text=The%20LMB%20has%20been%20experiencing,intrusion%20in%20the%20Mekong%20Delta) suggest that the Lower Mekong Basin has been experiencing severe drought hazards with serious economic losses due to damages of agricultural crops, negative impacts on the environment, and effects on people's livelihoods. Yields of rice and other lifeline crops plummet as a result of water shortages and saltwater intrusion in the Mekong Delta. The low flow observed in

Sustainability of the project is said to be “guaranteed” by the national meteorological institutions “in their roles of government agencies supported by public funding with officially mandated duties.” The proposal contains no relevant information in support of the claim of sustainability of the project outcomes. **CAR 1:** Please provide the required information justifying the proposed project.		the Mekong River during the 2019–2020 drought was estimated to have a return period of 50–100 years. Regional droughts and transboundary drought risks management are extremely relevant to how drought risks are assessed, how the risk information is shared, and for actions that early warning information invokes. While it is important to enable timely drought early warning, transboundary drought risks take the discussion further and demand that the warning information be shared with a wide variety of stakeholders that have not previously been considered. There is a need to review how the drought risk information is packaged and shared with stakeholders, with emphasis on the actions that they can take. Approaches such as impact-based forecasting provide a good solution to address the transboundary impacts of droughts[4]. The implementation of the proposed ECR-MEKONG project is key for building coordination and collaboration between different stakeholders of the Mekong Basin. Especially the project will strengthen the capacity of the NMHSs of the countries to carry out impact-based warning and advisory services to the stakeholders resulting in increased visibility of their work at the national level with other agencies (Water resources agency, disaster management, agriculture, irrigation, etc.) **and will support in getting regular and increased budget from the Ministries to maintain, sustain and improve their day to day operations and activities which is currently a challenge and issue which requires immediate attention. The budget increase from the government will allow opportunity to increase human resources at the national agencies which is presently a big**

[4] https://www.mdpi.com/2225-1154/10/9/124

		limitation in day-to-day operation and services carried out by NMHSs with other stakeholders. Some of the concrete adaptation measures will include: **Regional level approaches:** Within the Lower Mekong Basin, there is a lack of climate change related information system especially multi-hazard early warning system covering the main river and its tributaries. Based on preliminary information, sharing of data and information from local, national to regional levels have been a challenge especially on operational hydrology. The measurements and transmission of data and information at various locations are not available and this information is critical to accurate forecasting and warning on floods and drought. The project will consider the integrated management of floods and drought through EWS, and risk based informed decision making. This will be a unique transboundary approaches where hydrological aspects will be considered for the entire Mekong Basin (for example at any given time one area of the Basin could be experiencing drought and another area experiencing a flooding situation) and then related information will be downscaled to national levels for climate change adaptation and disaster risk reduction approaches. **National level approaches:** In the Mekong River basin countries, the predicted negative impacts of climate change are leading to more severe and frequent pattern of drought and flood events. Both floods and drought could be aggravated in terms of frequency, predictability and severity leading to loss of lives and livelihoods, damage to property and environmental degradation. The project will allow national stakeholders to adopt mix of existing structural (dams, reservoirs etc) and non-structural measures (EWS, risk maps, knowledge and awareness,

		flood proofing, land use planning etc.) for improved climate change adaptation and disaster risk reduction. **Local level approaches:** Climate change variabilities have impacted communities on their lives, livelihood, food security, and natural resources. It is observed that the community are not receiving timely advisories from the national agencies for adaptation and risk reduction measures to the climate change events. At local level, community will develop self-help capabilities and adaptation measures (early warning system, risk knowledge, local level plans for emergency situation, raising of house level due to flood marking, changing crop patterns, creating or re-establishing flood plains which increase flood management capacity and support biodiversity and habitat conservation objectives; Improving preparedness and contingency planning to deal with risks (including climate); etc.)
Unclear. The proposal includes eight organisations as named Executing Entities, four in each participating country, and four located outside the project region. In addition, unspecified "relevant national institutions" will execute activities at community level in each country. The role of MRC as regional partner is unclear. **CR 4:** Please clarify (i) the role of each executing entity in executing the proposed components/outputs,	**CR 4: Partially cleared.** The identity and role of the now six executing entities has been clarified. However, the process of coordination among the EEs has not been clarified. **CAR 2: Cleared for this stage.** The response sheet states that the IE "will apply 1.5% of the execution fee in order to provide support in the execution of activities under various components of the proposed project", which is unclear. Further, the response sheet states that the	**CR4:** The draft institutional arrangement for the ECR-Mekong project is provided under Annex 2 and will be refined in the next project development phase aligning with the mandate and expertise of various agencies. **For coordination at all levels,** a National Working Group (NWG) (supported by the appointed National Project coordinator of the Executing Entity) will be established in each country and will be responsible for the overall execution of the project and facilitating coordination with various stakeholders (different agencies at national and local levels, research or academia, NGOs, Community based Organizations (CBOs), muncipality/mayor office or administration units etc.) at the national and local levels.

as well as (ii) the process through which a smooth coordination among the myriad of EEs will be ensured. None of the participating countries has an accredited NIE. The IE will be involved in the execution of some activities. The proposal should comply with relevant AF guidelines related to implementing entities providing execution services. **CAR 2:** Please clarify the role of the IE in the execution of the project, and correct the administrative costs accordingly as needed, in line with relevant AF guidelines.	IE will not directly implement any activities in the countries "but mainly provide guidance and support through the WMO technical partners (especially from WMO Associated Programme on Flood Management (APFM) and Integrated Drought Management Programme (IDMP))". Please note that a concept note will need to see a clear description of the relation between these programmes and the IE, as well as their specific roles in the implementation and execution of the project.	Regular coordination and planning meeting will be conducted with different stakeholders to ensure activity planning, drafting of regular progress reports; ensuring co-design of work plans, quality assurance of activities and outputs; jointly promote and ensure visibility of the project, through issuance of communication products as may be appropriate; to identify and resolve potential situations of conflict or challenges that may negatively impact on the project implementation including preventing any social, environmental and gender specific risks. **The Regional working strategy group (RWSG)** will provide coordination and oversight of the National Working Group of the four project countries mainly to check implementation progress of the activities, engage in policy dialogues and knowledge exchange, facilitate cooperation, and develop advocacy and joint strategies for dissemination at global platforms. The RWSG will meet NWGs every month virtually, face to face meeting will be organized every six months for implementation updates and annually for the project period to co-develop work plans. **The Implementing and Executing agencies will coordinate with both RWSG and NWG** to provide overall guidance, assessing implementation progress with the intended objective and technical support during the implementation of the project activities ensuring it is affordable, tailored and sustainable without any social, environmental and social risks. The knowledge gained through the proposed project implementation will be used to strengthen regional coordination on climate change adaptation and incorporated into future versions of regional and national

		adaptation plans across the countries and region through: i) continuous sharing of information to national and regional stakeholders; ii) participation in regional learning assembly; and iii) the provision of policy briefs and papers. In the next development phase of the project, roles and responsibilities and detailed coordination mechanism of other relevant agencies at regional level (ICIMOD, ADPC, RIMES etc.) and national levels (disaster management, water resources, agriculture, irrigation, research institute or academia, environmental agency, NGOs etc.) will be provided for different proposed activities (such as support to data collection for risk maps and its use, community-based flood and drought management, capacity development on nature-based solutions and gender mainstreaming, synergies with other projects, etc.). and support letter will be gathered to secure their availability and participation during and after the project phase.
Yes.	**CR5:** The previous submission of the proposal included a request for a project formulation grant that is not included in this submission. Please clarify if the project still requests a PFG at this stage and include such request with the resubmission.	Yes, the IE is requesting for the project formulation grant for the ECR-Mekong project, and it is submitted with the revised pre-concept note for consideration by the Adaptation Fund Secretariat, PPRC and Board for approval.
Unclear. The total funding requested does not correspond to the sum of the project activities and the administrative costs. **CAR 3:** Please correct the amounts of funding requested.	**CAR 3: Cleared.**	

At 8.5 per cent, the Implementing Entity Management Fee is at or below 10% of the project/programme cost, as are at 8.7 per cent the Project Execution Costs.		
Yes.	**-**	

Annex 1: Draft list of projects or initiatives for developing synergies and complementarities with the proposed ECR-Mekong project

	Title	Details	Period	Institutions Involved
Disaster Risk Reduction				
1	Piloting Flood Management Planning Tool at the Sangkat Level Phnom Penh	- The aim of the project is to build the city's capacity to predict, manage, and mitigate the impact from floods at the local/commune level	2021 - 2022	GFDRR
2	Cambodia Southeast Asia Disaster Risk Management Project: Component 1 and 2	- Component 1: Resilient rural corridors. Resilient rural roads rehabilitation and maintenance (Activities include road safety training and disaster risk management, preparedness planning, and awareness raising for communities adjacent to rural roads.) - Component 2: Financial planning for disaster resilience (This involves provision of technical assistance to strengthen MEF's capacity for financial planning for disaster resilience.	2017 - 2023	World Bank, MRD, and MEF
3	Strengthening Cooperation on Disaster Risk Management within the Association of Southeast Asian Nations	- The KSTA aims to support the Association of Southeast Asian Nations (ASEAN) Secretariat and member states implement the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) Work Programme 2021-2025 by supporting increased cooperation and enhancing capacity on disaster risk management (DRM).	2021 - 2023	ADB
4	Building Disaster-Resilient Infrastructure through Enhanced Knowledge	- The TA aims to strengthen action-oriented disaster risk management (DRM) knowledge for disaster-resilient infrastructure in developing member countries (DMCs).	2020 - 2022	ADB

	Title	Details	Period	Institutions Involved
5	Lao PDR Southeast Asia Disaster Risk Management Project	- The objective of the Southeast Asia Disaster Risk Management Project for Laos is to reduce the impacts of flooding in Muang Xay and enhance the Government's capacity to provide hydro-meteorological services and disaster response.	2017 - 2024	The World Bank
Early Warning System				
1	Installation of the Automated Weather Observation System for Forecasting and Warning of Natural Disaster in Cambodia	Key activities include: - Investigating the meteorological status and relevant infrastructure conditions, including weather stations in Cambodia - Installation of 27 Automatic Weather Stations (AWSs) and power system at the weather stations - Development of a data receiving system at MOWRAM in Phnom Penh, a data analysis and display system to support weather forecasting.	2019 - 2022	KMA and KMI
2	Support of the GEO-KOMPSAT-2A Receiving and Analysis System in Cambodia	Key activities include: - Investigating the meteorological status and relevant infrastructure for meteorological satellite utilization in Cambodia - Selection of a service provider for the installation of GEO-KOMPSAT-2A (GK2A) receiving and analysis system. GK2A[5] is expected to provide nationwide meteorological information with high-resolution satellite images and high-speed data transfer.	2020 - 2023	KMA and KMI
3	Cambodia Agricultural Sector Diversification Project (Component 3: Improvement of agricultural information systems and quality control management)	- The component has a sub-component on Agricultural Information System which will be developed to improve the use of soil/agro-ecological maps, agricultural early warning systems, food production and agricultural statistics/census data, etc. New technologies in ICT will be promoted to ensure broadcast dissemination and best use of available data and information for public and private sector stakeholder's planning and decision-making.	2019 - 2025	MAFF, MEF, MRD, MOWRAM, and The World Bank
4	EWS1294	- The EWS1294 is a life-saving system that provides accurate and timely flood information to national and provincial authorities and allows them to easily and quickly disseminate reliable warning messages to at-risk communities regarding climatic or societal hazards. The system is operational in Cambodia and is being developed in Laos.	2013 - 2024	ECHO, SDC, MFA, UNDP, WFP, BHA, PIN

	Title	Details	Period	Institutions Involved
5	Flash Flood Guidance System with Global Coverage (FFGS)	- FFGS is necessary to provide operational forecasters and disaster management agencies with real-time informational guidance products pertaining to the threat of small-scale flash flooding.	On-going	WMO
6	Enhanced Severe Weather Response utilizing an Integrated Typhoon Monitoring and Forecasting Platform in Lao PDR	- The objectives of the project are to enhance response capacity to typhoon hazards, reduce economic damage, and improve safety of people in Lao PDR by monitoring and forecasting typhoons with Typhoon Operation System (TOS) and GEO-KOMPSAT-2A (GK2A) receiving and analysis system. GK2A[6] is Korea's second geostationary meteorological satellite launched in 2018.	2020 - 2023	KMA
7	Strengthening Agro-climatic Monitoring and Information System (SAMIS)	- The project aims to strengthen agro-climatic monitoring, analysis, communication, use of data and information, and knowledge management and dissemination for agriculture and food security, as well as boosting the institutional and technical capacities involved in the services.	2018 – 2022 with expansion in the pipeline	LDCF, GEF, GCF, FAO, DMH, MONRE, DALaM, MAF
8	Reinforcing the capacities of meteorological and hydrological services and enhancing the early warning systems in Cambodia and Lao People's Democratic Republic (PDR) (CREWS Cambodia and Lao PDR)	- The project aims to enhance the capacities of national and regional stakeholders/institutions to provide hydromet, early action and response services to ensure that vulnerable populations in Cambodia and Lao PDR are reached through effective and inclusive risk-informed early warning services.	2021 - 2025	WMO, WB and UNDRR
Integrated Water Resource Management				
1	Irrigated Agriculture Improvement Project	- The project aims to enhance the efficiency and climate resilience of irrigation systems and to improve the water resource management in Cambodia.	2019-2025	MOWRAM with ADB support
2	Water Resources Management and Agroecological Transition for Cambodia (WAT4CAM)	- The program consists of 4 components: (1) Rehabilitation and completion of irrigation and drainage infrastructures; (2) Improvement of irrigation management; (3) Support water resources monitoring and management. This component will provide specific modelling studies, capacity building to MOWRAM on IWRM processes, river basins planning and management, spatial hydrology and climatic services; (4) Support innovative farming practices and support to rice value chain.	2019 - 2023	MOWRAM, MAFF, MEF with support from Agence Francaise de European Union

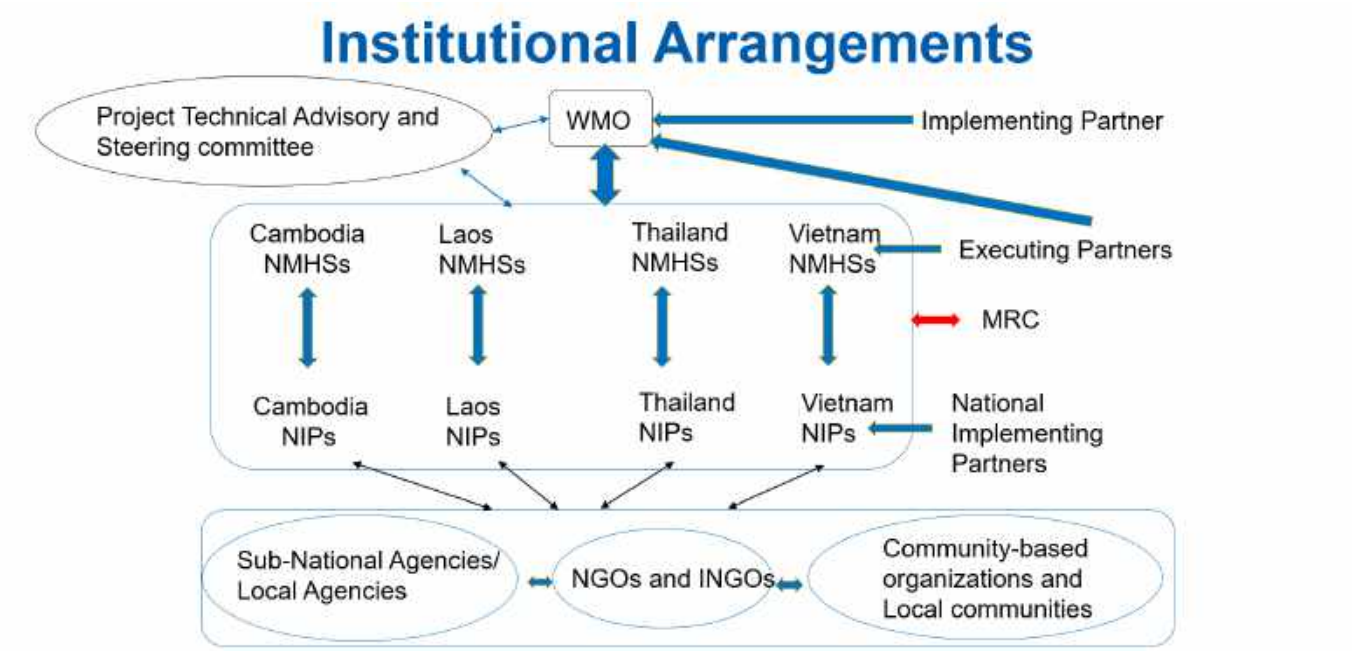
	Title	Details	Period	Institutions Involved
3	Uplands Irrigation and Water Resources Management Sector Project	-The project aimed to help the RGC increase agricultural production, modernizing, and climate-proofing selected irrigation systems in Kampong Thom and Battambang provinces. Subprojects were undertaken to (i) enhance efficiency and climate resilience of irrigation systems, and (ii) improve water resource	2016 - 2022	MOWRAM and ADB
4	Mekong Integrated Water Resources Management Project	-The program development objective is to establish key examples of integrated water resource management practices in the LMB at the regional, national, and sub-national levels, thus contributing to more sustainable river basin development in the Lower Mekong	2012 - On-going	The World Bank
5	Additional Financing for Mekong Integrated Water Resources	-The development objective of the First Phase of Mekong Integrated Water Resources Management Project of Lao People's Democratic Republic is to improve water resource and fisheries management in selected areas of the Lower Mekong Basin.	2017 - On-going	The World Bank
6	Groundwater resources in the Greater Mekong Subregion: Collaborative management to increase resilience (Cambodia, Lao People's Democratic Republic, Thailand, Viet Nam)	-The project aims to benefit around 1.5 million people indirectly, it also targets to create a groundwater community of practice (CoP) of around 20 experts, equipped with the skills to ensure technical and management capabilities. Additionally, it will support the regulatory framework to manage resources and expand new groundwater-based resilience strategies and practical interventions by proposing either primary or secondary legislations in the targeted countries.	2022 - 2026	United Nations Educational, Scientific and Cultural Organization
Climate Change Adaptation				
1	Identifying Climate Adaptation Investment Priorities (Subproject 4)	-The knowledge and support technical assistance (TA) cluster on Supporting the Implementation of ADB's Climate Change Operational Framework 2017-2030 (CCOF2030) was approved by the President on 7 December 2018 with an amount of $4.55 million. The TA cluster is aligned with the Asian Development Bank's (ADB) Strategy 2030 Operational Priority 3 on tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability.	2022 - 2024	ADB
2	Climate Change Adaptation through Protective Small-scale Infrastructure Interventions in Coastal Settlements of Cambodia	-The main objective of the project is to enhance climate change adaptation and resilience of the most vulnerable coastal human settlements of Cambodia through concrete climate change adaptation actions, particularly in areas where ecotourism has the potential to sustain such interventions. To achieve	2021 - 2025	UN Habitat and Adaptation Fund

	Title	Details	Period	Institutions Involved
		this objective, the project focuses its actions on highly vulnerable settlements in Kep Province and Prey Nob District of Preah Sihanouk Province.		
3	DE-RISK Southeast Asia	-The DE-RISK project will develop climate risk management systems, best practices and insurance products that will shield smallholder farmers and businesses engaged in producing coffee, sugar, rice, cassava, rubber, dairy, and grazing across the agricultural value chain in key Southeast Asian countries from physical and financial disaster associated with climate change.	2018 - 2022	WMO
4	Greater Mekong Subregion Climate Change and Environmental Sustainability Program	-The TA is aligned with the following impact: environment sustainability and climate-compatibility of economic growth and propensity in the GMS improved, as stated in GMS Core Environment Program Strategic Framework and Action Plan. The TA will have the following outcome: climate resilience, green growth, and environmental quality in the GMS enhanced.	2019 - 2025	ADB
5	Building capacity in Lao PDR to understand, anticipate and adapt to climate change impacts	-Five southern provinces of Laos PDR, namely: Savannakhet, Salavanh, Attapeu, Champasak, and Sekong, all face increased drought risk due to climate change. The project promotes strengthening capacity in the implementation areas to comprehend, predict, and adapt to growing climate risks and consequences, particularly on drought. Utilizing impact-based predictions to provide anticipatory actions prior to an extreme weather event will enable this effort to affect a national paradigm change.	Concept Note submitted	GCF, WFP
Cross-cutting				
1	Enhancing Integrated Water Management and Climate Resilience in Vulnerable Urban Areas of the Mekong River Basin	-Output 1. Inclusive assessment of water-related climate risks completed in the priority river Basins. -Output 2. Enabling environment for gender-responsive climate risk-informed integrated water resources management developed.	2021 - 2025	UNDP
2	Mekong EbA South: Enhancing Climate Resilience in the Greater Mekong Sub-region through Ecosystem-based Adaptation in the Context of South-South Cooperation (Thailand, Viet Nam)	-The overall objective of the proposed project is to strengthen awareness and action of governments and communities in the GMS to adapt to climate change using ecosystem-based adaptation (EbA).	2021 - 2024	UNEP
3	Feasibility Study on Water Supply Measure and Flood Mitigation for the Prek Neal River	-The project's objective is to make a basic plan for flood mitigation and water supply and carry out a feasibility study in Svay Rieng area.	2021 - 2023	KOICA

	Title	Details	Period	Institutions Involved
	Basin, Svay Rieng Province, Cambodia			
4	Building resilience of urban populations with ecosystem-based solutions in Lao PDR	- The project aims to test an alternative approach to flood control in urban Laos, moving away from a traditional focus on grey infrastructure, such as dams and concrete drainage systems. It will implement ecosystem-based adaptation in urban areas. One of the first examples of this adaptation approach in developing countries, it could serve as a model for other nations facing similar climate challenges.	2019 - 2025	GCF
5	Integrated Water Resource Management and Ecosystem-based Adaptation (EbA) in the Xe Bang Hieng River Basin and Luang Prabang City	- Promote integrated management of sites in the Mekong River Basin for increased climate resilience of Savannakhet Province and Luang Prabang communities vulnerable to floods and droughts, which are expected to worsen under future scenarios.	2022	GEF
6	Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR	- The objective of this project is to build climate resilience in small towns along the east-west economic corridor in the central region of Lao PDR. This will be achieved through the provision of climate resilient water infrastructure and the mainstreaming of climate change into urban planning.	2020 - 2024	Adaptation Fund

Annex 2: The institutional arrangements for the ECR-Mekong is presented below and will be refined based on discussion with the national agencies of the targeted four countries and regional entity (MRC).

Institutional Arrangements



PRE-CONCEPT FOR A REGIONAL PROJECT/PROGRAMME

Title of Project/Programme: Enhancing Climate Adaptation and Resilience of Mekong River 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 Area[1]**:** Disaster risk reduction and early warning systems

Type of Implementing Entity: Multilateral Implementing Entity

Implementing Entity: World Meteorological Organization

Executing Entities: Mekong River Commission (MRC) and in Cambodia: Department of Meteorology (DOM) and Department of Hydrology and River Works (DHRW) under the Ministry of Water Resources and Meteorology (MOWRAM) and Ministry of Environment
In Lao PDR: Department of Meteorology and Hydrology (DMH), Ministry of Natural Resources and Environment (MoNRE).
In Thailand: Thai Meteorological Department (TMD), Ministry of Digital Economy and Society (MDES).
In Viet Nam: Viet Nam Meteorological and Hydrological Administration (VNMHA), Ministry of Environment (MONRE).

Amount of Financing Requested: 12,466,575 (in U.S Dollars Equivalent)

Project Formulation Grant Request: Yes ☒ No ☐

Amount of Requested financing for PFG: 20,000 (in U.S Dollars Equivalent)

Letters of Endorsement (LOE) signed for all countries: Yes ☒ No ☐

NOTE: LOEs should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: https://www.adaptation-fund.org/apply-funding/designated-authorities

Stage of Submission:

☒This pre-concept note has been submitted before

☐This is the first submission ever of the concept note

In case of a resubmission, please indicate the last submission date: 21 December 2023

[1] Thematic areas are: Food security; Disaster risk reduction and early warning systems; Transboundary water management; and Innovation in adaptation finance.

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 River 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 Area[2]:	Disaster risk reduction and early warning systems
Type of Implementing Entity:	Multilateral Implementing Entity (MIE)
Implementing Entity:	World Meteorological Organization (WMO)
Executing Entities:	Mekong River Commission (MRC) and In Cambodia: Department of Meteorology (DOM) and Department of Hydrology and River Works (DHRW) under the Ministry of Water Resources and Meteorology (MOWRAM) and Ministry of Environment. In Lao PDR: Department of Meteorology and Hydrology (DMH), Ministry of Natural Resources and Environment (MoNRE). In Thailand: Thai Meteorological Department (TMD), Ministry of Digital Economy and Society (MDES). In Viet Nam: Viet Nam Meteorological and Hydrological Administration (VNMHA), Ministry of Environment (MONRE).
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 are expected to continue to increase over the next decades (IPCC Sixth Assessment Report). Based on WMO assessments conducted during 2019-2022, 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 especially through more severe and frequent droughts and floods., Moreover, in the past three decades, droughts and floods have affected more than 100 million people in these countries (Asian Development Bank; WMO 2021). The report published by the Mekong River Commission (MRC)[3] suggest that the Lower Mekong Basin has been experiencing severe drought hazards, especially through the reduction in rice yields and other lifeline crops plummeting due to water shortages and saltwater intrusion in the Mekong Delta. The low flow observed in the Mekong River during the 2019–2020 drought was estimated to have a return period of 50–100 years. In the recently concluded rapid assessment study of the UN Early Warning for All (UNEW4All), it is found that both Cambodia and Lao PDR (two of the priority Global countries for UNEW4All) require support for developing Hydro-Meteo impact-based forecasting systems and capacity for warning services. Also in Vietnam, reports highlight the need for effective, innovative approaches for flood and drought monitoring, preparedness and management measures are important for growing populations and economies. In addition, the Nationally Determined Contributions (NDCs) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) by the Participating Countries indicate the need to strengthen drought and flood early warning systems (EWSs), especially improving warning services, and risk-informed decision making for the agriculture, energy and water sectors.

Figure 1: Targeted Participating Countries of the Mekong Basin where EWS and risk profiles will be developed, including tentative vulnerable pilot locations where locally led adaptation and risk reduction measures will be implemented.

The Mekong is a transboundary river that runs through the Participating Countries. The river flow 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%), Cambodia (27%), Thailand (32%) and 29% in Vietnam. As such, timely warning and risk-informed weather, water and climate-smart decision-making (supported by the local community experience and traditional knowledge) on agriculture and water management will offer major opportunities to improve proactive climate change adaptation and disaster risk management strategies and increase economic productivity. In the last ten years, the lower Mekong River countries faced around 100 reported meteorological and hydrological hazardous events leading to the deaths of more than 1000 people and affecting socio-economic activities of more than 24 million (EM-DAT/CRED). In Lao PDR, during 2018, there was a dam outbreak leading to loss of lives, property and infrastructure damage, and population displacement[4].The impact of drought on vulnerable communities in the Participating Countries has been demonstrated using the disastrous consequences of the El Niño phenomenon 2015-2016 and the latest of 2023[5]. Based on a 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, with 1.1 million people experiencing food insecurity and more than 2 million facing damaged or lost their livelihoods.

Presently, each National Meteorological and Hydrological Services (NMHSs) and other competent authorities of the Mekong River basin are managing water related hazards and issues in silos and there is no mutual cooperation, tools, and technical support shared by each other. The NMHSs have the responsibility in each country to install, maintain and collect information related to the Hydro-meteorological situation, carry out modelling and forecasting and issue alerts and advisories to various stakeholders. Disaster Management and other agencies (Agriculture, Irrigation, Water Resources, Environment, Power, Energy, hydro power etc.) are the users of the warning or advisory services provided by the NMHSs and support them in making decisions related to informing population, advisories for supporting livelihoods, operations of infrastructure

[2] Thematic areas are: Food security; Disaster risk reduction and Early Warning Systems (EWS); Transboundary water management; Innovation in adaptation finance.
[3] https://www.mrcmekong.org/our-work/topics/flood-and-drought/#:~:text=The%20LMB%20has%20been%20experiencing,intrusion%20in%20the%20Mekong%20Delta
[4] 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.
[5] https://bkktribune.com/el-nino-likely-increasing-later-this-year-wmo/ and https://community.wmo.int/en/activity-areas/climate/wmo-el-ninola-nina-updates

and services such as power, telecommunication, transports etc. Presently, in each country of the Mekong River basin, there is a lack of operational hydrological monitoring and observation networks, insufficient weather, water and climate databases, and unavailability of models and forecasting tools, leading to limited data and information for impact-based forecasting and advisories for weather, water, and climate-related status and outlook. Apart from the unavailability of technical instruments or tools, lack of or inadequate/outdated climate change (adaptation) and disaster risk 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 (change) adaptation. Therefore, this project will examine (enhance) data collection, monitoring and forecasting; co-production of affordable, sustainable, and tailored warning services and advisories; their 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. The project will allow a platform for co-designing tools, sharing experiences and build an environment of trust, following the already defined procedure for data sharing, monitoring of water resources to support the implementation of the 1995 Mekong Agreement on water cooperation. As a result, all of these improvements will provide stakeholders in the agriculture, irrigation, energy, and water sectors, in cross-sectoral disaster risk management and in local communities with weather-, water- and climate-related information for saving lives and livelihoods, adapting to climate change, and creating social, economic and environmental benefits. while the impact of climate change is difficult to forecast, below are climate change projections for the Mekong River Basin for the next 20 to 30 years[6], 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 an 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 Basin countries. This will make it increasingly difficult to meet the demand for natural resources from the growing population. Implementing climate change adaptation and related strategies and improving the management of water resources are recognized by the lower Mekong River Basin countries as major challenges. This project proposal responds to addressing these needs through WMO-led coordination of partnership and cooperation between the MRC and NMHSs in the Participating Countries, and through jointly providing technical support to strengthen their day-to-day work and services. MRC is an inter-governmental organization established in 1995 that serves as a regional platform for water diplomacy and a knowledge hub of water resources management for the sustainable development of the region. It is committed to successfully implement the Basin Development Strategy for the Mekong River Basin 2021–2030 & MRC Strategic Plan 2021–2025 through an integrated basin-wide forecasting and warning system, management of water resource, transboundary cooperation for sharing of climate, weather and water information, etc., thus ensuring social, economic and environmental improvements that will lead to better living standards for all the Mekong Basin countries population. The proposed project will involve other national agencies (such as those responsible for disaster management, environmental protection, water resources, irrigation, agriculture, private dam operating companies, local authorities etc.), academia, international and national non-governmental organizations (NGOs), etc. to provide support in identifying issues, needs and then co-design and development of outcomes related to EWS, risk mapping, community-based flood and drought management including locally led adaptation and disaster risk reduction strategies. It will be developing synergies and complementarities with other on-going and completed projects to efficiently strengthen EWS and integrated water resources management, leading to increased preparedness and resilience to climate- and climate change-related hazard events.

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 the local, national and regional level”. The overall objective of the project is to reduce vulnerability and exposure from the climate hydro-meteorological hazards, therefore, strengthening the adaptation and resilience of communities in the Participating Countries (with capacity development of the NMHSs and other national agencies) to climate variability and change. Furthermore, the project will develop local, national and regional adaptation strategies, plans and implementation mechanisms based on integrated monitoring and management of water resources for supporting socio-economic developments. It will also support the United Nations (UN) Early Warnings for All initiative (EW4All), which is co-led by the World Meteorological Organization (WMO) and other international partners to cover everyone on the planet with EWS by the end of 2027. Cambodia and Lao PDR are two of the initial 30 priority countries receiving targeted support under the EW4All initiative. In this regard, Cambodia and Lao PDR are currently being supported through the Systematic Observation Financing Facility (SOFF) initiative (a UN Multi-Partner Trust Fund co-created by UNDP, UNEP and WMO) and the Climate Risk and Early Warning Systems (CREWS) initiative (a multi-donor Financial Intermediary Fund hosted by the World Bank). The Adaptation Fund is a member of the SOFF Advisory Board. SOFF’s 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 Producing Centres for Long-Range Forecasts (GPC-LRFs, such as the European Centre for Medium-Range Weather Forecasts (ECMWF) in developing high-quality meteorological and hydrological monitoring and forecasting products. Even though support has been provided for strengthening the monitoring aspects, there is a need to develop capacities and capabilities to improve impact-based forecasting, warning, and advisory services to various stakeholders of Mekong Basin countries. . The project will support in monitoring of water resources and hydro-power infrastructures which are critical for socio-economic wellbeing of the population as well as building biological diversity. Through the proposed project, national(NMHSs, Disaster Management, Agriculture, water resources etc.) and regional (MRC, South-East Asia Regional Climate Centre (SEA-RCC)) agencies tools and products will be developed for forecasting of weather, and water events, enhancing sector-specific (energy, irrigation, water resources, agriculture etc.) advisories for risks informed decision making, increasing collaboration among agencies in disseminating advisories/warnings and emergency response, developing self-help capabilities of the communities prone to hydro-meteorological hazards to better adapt, respond and develop resilience.

Project/ Programme Components	Expected Outcomes	Expected Outputs	Countries	Amount (US$)
1. Risk Preparedness and adaptation through user-	Outcome 1.1 Risk informed decision making at regional, national and local levels for disaster risk reduction and	Output 1.1.1 Strengthen observation networks and social-structural databases, drought and flood risk maps for current and future predicted climate are developed/updated for decision making and specific advisories for stakeholders including communities	Cambodia Lao PDR Thailand Viet Nam	3,150,000

[6] https://www.mrcmekong.org/about/mekong-basin/climate/

Project/ Programme Components	Expected Outcomes	Expected Outputs	Countries	Amount (US$)
centred and integrated national early warning systems (EWS) for drought and floods	climate change adaptation measures improving socio-economic and environmental stats	Output 1.1.2 Develop capacity and established frameworks at the local, national, and regional levels to ensure risk informed decision-making to various stakeholders		
		Output 1.1.3 Long-term risk management strategies are identified and integrated into development plans (economic, social, environmental aspects)		
	Outcome 1.2: Operational web-based multi-hazard EWSs are established/strengthened to support warning and advisory services at (regional) national, provincial, and local levels.	Output 1.2.1 Hydrological and meteorological status and outlook products within the EWSs are developed and operationally used by the NMHSs	Cambodia Lao PDR Thailand Viet Nam	2,700,000
		Output 1.2.2 EWSs and concrete adaptation measures are tested in selected vulnerable communities during the monsoon and dry seasons.		
2. Established Locally led adaptation and disaster risk reduction strategies to counter the adverse impact of drought and floods	Outcome 2.1 Preparedness and resilience to climate change is increased/promoted through innovative and community-based initiatives.	Output 2.1.1 Implementation of community-based floods and drought management strategies and plans (including adaptation measures such as raising of house levels, changing agriculture and cropping patterns, water resources management, green infrastructures, etc.) in the vulnerable sites and different ecosystems	Cambodia Lao PDR Thailand Viet Nam	2,700,000
		Output 2.1.2 Enhanced local stakeholder's and communities capacities to adapt to climate change by understanding and proactively applying warning information or advisories tailored to their needs for strengthening livelihoods and risk management and adaptation policies and plans, including national Adaptation Plans (NAPs), NAPA, and Nationally Determined Contributions (NDCs).		
	Outcome 2.2: Strengthened awareness of vulnerable communities and agencies on hydro-meteorological risks through education programmes.	Output 2.2.1 Enhanced knowledge and awareness of stakeholders on nature-based solutions and mainstreaming gender for managing climate-related hazard events.	Cambodia Lao PDR Thailand Viet Nam	
		Output 2.2.2: Strengthened capacity of stakeholders to improve management of climate change adaptation and disaster risk reduction measures including innovative learnings and experience sharing		
3. Water, Weather and Climate resilient regional and national cooperation arrangements together with stakeholders including community involvement	Outcome 3.1 regional cooperation mechanisms (Regional Hydrological and Climate Outlook Forums (RHCOFs,)) among the NMHSs and stakeholders are strengthened and have updated policies, plans and guidelines	Output 3.1.1 Updated regional and national plans/policies on climate change adaptation and disaster risk reduction/management and sustained capacity building through regional transboundary strategic alliances and partnerships coordinated by the Mekong River Commission (MRC)	Cambodia Lao PDR Thailand Viet Nam	1,800,000
		Output 3.1.2 Established regional technical working groups with the NMHSs, agriculture, energy, water sectors and disaster management agencies including the South-East Asia RCC Network and other partners to analyse and develop regional and national water and climate change adaptation and disaster risk reduction policies, plans and actions.		
	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				12,466,575

Project Duration: 5 years (2024 – 2028)

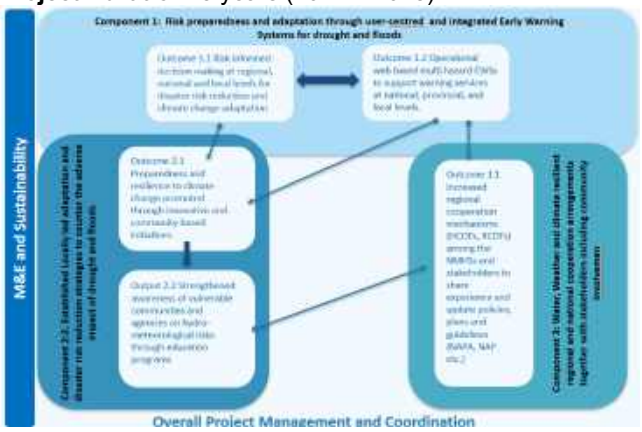


Figure 2: Linkages between components, outcomes and outputs of the project

Interconnections between the three project components are shown in Figure 2. At this pre-concept stage, the proposed activities in the Participating Countries are indicative and broadly described. A detailed list of activities will be provided after planned consultations with additional stakeholders (including other national actors and beneficiaries) and aligning with the roadmap/action plan developed for the Early Warning for All (EW4All).

The proposed project through Components 1 and 2 will implement activities to address the climate change-influenced climate variabilities and events mainly through the risk maps, impact based EWS and warning/advisory production and delivery to various stakeholders including locally led adaptation and disaster risk reduction strategies.

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

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 (hydro-meteo, agriculture, irrigation, energy, and water utility) approach to support their day-to-day operational activities and minimize the vulnerability and exposure of the Participating Countries communities and to increase their adaptive capacity to climate change, variability and extremes.

A central output of the project is the development of an innovative, tailored and integrated transboundary multi-hazard End-to-End Early Warning System covering the various areas at risks (generally in one part of the region, there is flooding and other part there is a drought issues) of floods and droughts (including flash floods and landslides) of the Participating countries as presented under the Figure 1. The system will allow to produce and disseminate warnings according to pre-defined levels of risks, using colour coding and icons for the different types of hazards, building upon the EWS largely established in a large number of countries and transboundary watersheds. The existing EWSs (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 project 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 hydropower dam operators, river basin authorities, MRC, irrigation, etc. for timely decision-making on water availability in river stream mainly it's status (current flow whether it is a normal situation, above normal (high flow) or low (below normal)), forecasts (0-7 days for floods and hydro-meteorological drought events), and sub-seasonal to seasonal outlooks (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 for irrigation, agriculture, aquatic bio-diversity, etc.. The project partners will ensure collaboration with government or private dam authorities in each targeted countries to identify cooperation needs, design tailored solutions to monitor and release of stored water from dams preventing the situation of flooding or providing water during dry season. The basin-scale approach is a suitable way to identify and implement cost-effective measures, as Mekong countries have similar challenges related to climate-related events (floods and droughts) that will be addressed by this project. There is a need for better, i.e. more effective and coherent regional, national and local strategies and decision-making frameworks to address water-related adaptation, 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 in a coordinated approach rather than in silos. Such a project will be useful to manage water resources, extreme events linked to climate change in a transboundary management framework and in an environment of mutual trust and confidence. A regional approach also provides scope for data sharing on a real time basis and facilitating disaster preparedness and response and execution of risk reduction measures at national and regional levels. 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. EWS can 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 (GCA) found that spending just US$800 million on such systems in developing countries would avoid losses of US$3 to 16 billion per year[7]. In consultation with the national and local stakeholders, it was agreed that the climate change adaptation non-structural measures (through EWS, community-based activities, risk maps for understanding potential impacts) to flood and drought hazards is more cost-effective than the baseline of disaster response and rehabilitation and implementation of structural measures such as the construction of reservoirs, dams, etc.

WMO surveys its Member countries via the Country Profile Database (CPDB), and results from the most recent baseline survey indicated that Mekong countries provide flood and drought warning services mainly based on global or regional products, having limited accuracy and precision. Only Thailand has a national drought monitoring system and policy. An important part of flood and drought risk management plans are to link the hazard monitoring and risk knowledge to community-led preparedness and response actions on the ground. Local communities will be consulted and engaged in the co-production of the early warnings of droughts and floods with adaptation measures, 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 (national data/information and knowledge from each country 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. The IE has initially supported to have the People's Republic of China (PRC) join as the project beneficiary country but there have not been any positive responses from the project partners while submitting this pre-concept. Also in Myanmar, the issue of political instability is not allowing for consultation with agencies and communities leading to a lack of participation in the project (hoping the situation will improve and there will be collaboration for the ECR-Mekong project). Further information on the involvement of the PRC (as Participating country or as a technical partner) will be presented during the concept note submission.

Expected innovative deliverables through this project include: : An integrated and state-of-the-art floods and drought risk maps and warning system, integrating environmental indicators to the impact on human and properties damage, will be open-source and thus facilitate mainstreaming of results into other initiatives relating to floods and drought management or generally supporting the development processes (raising of houses, cropping patterns, water resources management etc.) in the target countries. An integrated approach to floods and drought monitoring and early warning systems will support regional and national forecasters cooperating together to observe and generate useful early warning or advisory services to the stakeholders including agriculture, water management, and energy sectors. The project will promote nature-based solutions for adaptation and help maintain an ecological balance for the entire basin by ensuring systematic measures to improve restoration of wetlands or flood plains, mitigate land degradation and soil desertification are implemented. 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 lessons learned from the outcomes under components 1 and 2. This will allow developing or updating regional/transboundary water management, disaster risk reduction, and climate change adaptation strategies, 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. The successful implementation of the proposed ECR-Mekong project's planned outcome will support in receiving regular investments and increased budgets from the respective Ministries to maintain, sustain (increasing human resources), and improve their day-to-day operations and activities, which is currently a challenge and issue that requires immediate attention.

The cost-effectiveness analysis includes various short-term benefits such as prevention and minimisation of losses from hydro-

[7] 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.

meteorological hazards, availability and access to impact-based EWSs. In the medium-term, climate change adaptation and disaster risk management planning will be augmented through development of risk maps, sub-seasonal to season water resources information for irrigation facilities, climate-resilient cropping, renewable energy generation and development of local economy etc and through local initiatives, creation of new social institutions, tailored system for adaptation to climate change events. In the long-term perspective, there will be optimal use of water resources leading to prevention and mitigation of flood and droughts, ecological restoration, and formulation and implementation of policies for making communities adapt to climate change and natural hazards. Alternatives to the proposed measures, such as resettlement of vulnerable communities, involve much higher costs (costing 100-150 times more than the proposed project approach),, but with limited benefits and detrimental environmental consequences. Other Alternative solutions are often to construct dams and reservoirs or reconstruct or retrofit the vulnerable community which will approximately cost US$150-300 million. Given the relative costs and benefits of possible climate change adaptation and disaster risk reduction measures, the project has selected the three least-expensive interventions through EWSs, risk maps and knowledge/capacity building measures at all levels, to generate significant benefits in the form of increased safety and economic activities as opposed to significant investment in structural measures and degradation of the environment and associated ecosystem. 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.

The Project will be consistent with international, national and regional sustainable development, climate change adaptation and disaster risk management strategies, among them: *Cambodia*: Cambodia Climate Change Strategic Plan (2014-2023), the Agricultural Development Plan, the Climate Change Strategic Plan for Water Recourses and Meteorology, NDC. *Lao PDR*: The National Strategy on Climate Change, NAPA. *Thailand*: Thailand Climate Change Master Plan 2015-2050, 13th National Economic and Social Development Plan (NESDP) 2023-2027, 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, MRC Drought Management Strategy for the Lower Mekong Basin 2020-2025, MRC Strategy on Flood Management and Mitigation and the Lancang-Mekong Environmental Cooperation Strategic Framework (2019-2023), ASEAN Regional Plan of Action for Adaptation to Drought (ARPA-AD), and others. Also, the proposed project will contribute to the UN Sustainable Development Goal (SDG) 6, namely its target 6.5 to implement integrated water resources management at all levels, including through transboundary cooperation. It also contributes to SDG 1, namely its target 1.5 in building resilience through reduction in exposure and vulnerability for climate related extreme events; SDG 2, namely its target 2.4 to ensure sustainable food production through climate adaptation to drought, flooding, and other disasters; and SDG 11, namely its target 11.5 making human settlements inclusive, safe, resilient and sustainable; as well as the Sendai Framework for Disaster Risk Reduction 2015-2030.

A learning and knowledge management component to capture and disseminate lessons learned will be provided by WMO Regional and National Climate (Outlook) Forums (RCOFs/NCOFs) 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 among Participating countries. This learning and knowledge management component will target three different levels: 1) learning among the NMHSs and other competent authorities (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) mainly among specialists from all Participating Countries and regional/international organisations and development partners. Knowledge management tools and platforms will be developed for sharing experience and storing project documents, reports, voices from the field etc. and also a dedicated website for the project with a community of practice (online forum, in a different language if possible) will be designed for sharing experience and supporting stakeholders with information during and beyond the duration of the project.
This pre-concept note was developed based on the needs highlighted by existing activities and projects implemented by the national institutions, and inputs from WMO, Global Water Partnership (GWP), Food and Agricultural Organisation of the UN (FAO), RMIT University SPACE Centre, and Australian Bureau of Meteorology (BoM), including several consultations with the NMHSs, disaster management, environment agencies of Cambodia, Lao PDR, Thailand, and Viet Nam during WMO regular constituent or expert group meetings organised in WMO Region II (Asia). The first national consultations were undertaken in November 2019 at the ASEAN Regional Climate Outlook Forum (ASEANCOF) and then virtually during the COVID-19 pandemic. Other organisations such as the UN Development Programme (UNDP), World Food Programme WFP, Asian Disaster Preparedness Center (ADPC), and the World Bank (WB) were consulted during the implementation of the WMO CREWS project in Cambodia and Lao PDR. MRC was consulted as one of the main stakeholders of the project to understand the issues in managing floods and drought, transboundary cooperation, and challenges on the sustainability of developed solutions and tools. In addition, the discussions among five countries (China, Lao PDR, Cambodia, Thailand, and Viet Nam) facilitated by the Lancang-Mekong Water Resources Cooperation Centre (LMWRCC) in 2018 and 2019 have shown that climate variability and change make the urgency of climate information services over the upper and lower Mekong River basin even more prominent, thus requiring transboundary cooperation of all Mekong countries starting by data and information exchange on water, weather and climate information as the basis of integrated river basin planning in the region. Recent community consultations were carried out in Cambodia during August 2022 (check Annex 3 below) where issues and needs were provided (such 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 is required for increasing self-help capabilities and for taking preparedness and response measures. Internet connectivity is available with mobile phones and similarly local radio network can be useful for communication and dissemination. Activities related to water and soil conservation are required to improve agricultural production and improve food security. In the next project preparation phase (concept note stage), the IE and EEs have planned to carry out consultations workshop (concept note available here) with other agencies in the countries such as Agriculture, Irrigation, dam authorities, water resources, municipality chiefs etc. to identify their needs, gaps, capacities and gather support (including finalise the list of activities and pilot sites for testing the current and future EWSs, prepare for the EIA and SIA studies, determine the roles and responsibilities of the national and regional agencies, etc) for collaboration in the development and later implementation.
The participating government agencies are sustainable institutions within their national governments that have mandates for monitoring, forecasting and delivering advisory and warning services to stakeholders which have been a challenge until now or carried out with limitations. The project sustainability will be guaranteed by Cambodia's Ministry of Environment and DOM and DHRW, Lao PDR's DMH, Thailand's TMD, and Viet Nam's VNMHA in their roles as government agencies supported by public funding who will ensure adequate both financial and human resources (including staffs, infrastructure, capacities) are available not only during but also after the project period. The national agencies and regional entity (MRC) will ensure the availability of standardized interoperable hydro-meteorological data, especially on real-time basis, coordination of information channels and procedures for end-to-end EWSs, and increase in knowledge availability with community members on social-economic and environmental risks and their participation in decision making and the development of climate change

adaptation and disaster risk management strategies and will lead to the long-term sustainability of developed products, services and knowledge, which will be shared continuously between technical professionals of different agencies and at the local level among population groups. The official support and commitment letter from MRC (available here) and the national agencies has been secured, reflected from their participation in the project as the executing partners.

The project will indirectly benefit hundreds of thousands of people living in the targeted Mekong countries through the proposed strategy of community-based flood and drought management and by enabling local-level climate change adaptation and disaster risk reduction measures. The implementation of the project activities will support cohesion and experience sharing among communities to save lives, improve livelihoods, environment sustainability. A comprehensive description of social and environmental benefits will be provided in the concept note and 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. Additional consultations will be undertaken on aiding vulnerable and marginalized populations (will engage them in understanding existing adaptation and risk management strategies, priority needs, and co-design solutions (improving livelihoods through agriculture productivity, fishing, restoration of wetlands or flood plains etc,). and with regards to gender (women, youth, elderly, internally displaced populations, etc.) consideration will be provided in the consultation planned during the project concept and proposal preparation phase. In addition, private sectors such as those in agriculture, aquaculture, hydropower will be one of the important stakeholders and benefit from the project outcomes. From an environmental viewpoint, the International Union for the Conservation of Nature (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 approach 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 EWSs 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 (check Annex 1 on the AF project in Lao PDR, CREWS projects in South-East Asia, and De-Risk Southeast Asia, FAO's GCF PEARL and SAMIS, UN Environment Programme (UNEP)/Mekong Ecosystem-based Adaptation (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. Presently, there are no regional projects that bring Mekong River countries together to address the common climate-induced events and their impacts and that apply integrated approaches for drought and flood EWSs and for locally-led adaptation and disaster risk reduction.

PART III: IMPLEMENTATION ARRANGEMENTS

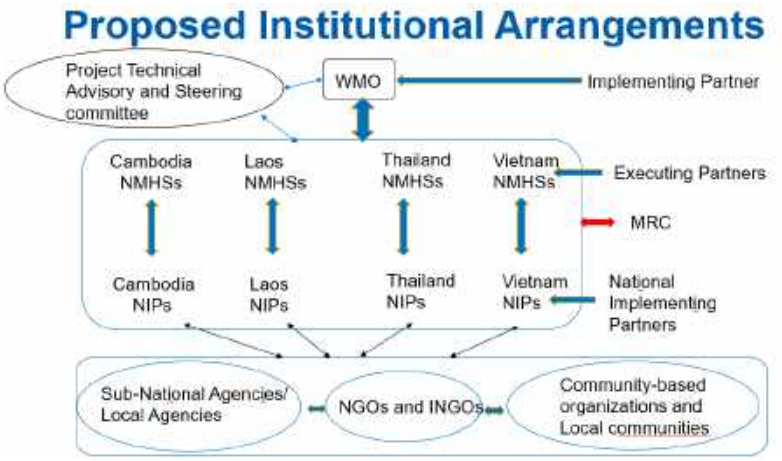
WMO will be the implementing entity for this project. WMO will indirectly implement this project through the NMHSs as national executing partners, regional executing partners (mainly MRC), and other technical organizations (e.g. partners of the WMO/GWP Associated Programme on Flood Management (APFM) and Integrated Flood and Drought Management (IDMP)) to execute 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's implementation by taking the lead on national consultations and co-production of various products or services related to the management of climate change events. The WMO GPC-LRF hosted by the Australian BoM and other WMO GPC-LRFs will be requested to provide global, regional, and national climate information (high-quality data and products for drought and flood monitoring and prediction) and support the NMHSs and other stakeholders mainly assisting them with advisory and decision-making tools for food production, hydro-power generation, irrigation, agriculture, and water management. . Considering lack of information available on water levels, flow measurements, etc from upstream Countries of the Mekong (In case of the non-participation of PDR China, WMO and EEs will identify and use satellite-based information to determine hydro-meteorological conditions upstream (including the impacts due to the hydro-power dams) and possible exposure and impacts in the downstream area. This approach will be taken into consideration until there is a possible involvement of China.). APFM and IDMP partners together with Global Service providers such as NASA, NOAA, and RMIT University SPACE Centre, drawing on its expertise in space-based observations and application of geographic information systems (GIS), will identify and 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, ADPC, the Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES), NMHSs and other relevant national institutions (Ministries of Climate Change, Agriculture, Irrigation, Environment and Water Management) would be appointed for implementing specific activities at the national and local/community level, based on their extensive experience in (i) assisting communities to make agriculture more productive and sustainable, (ii) enabling inclusive and efficient agricultural, irrigation and food systems, and (iii) increasing the preparedness and resilience of populations, and livelihoods to threats and emergencies.

A project steering committee and/or an advisory committee/group will be established with membership of national designated authority/agencies specialised in hydrology, meteorology, climatology, water resources, agriculture, irrigation, disaster management as well as relevant regional entities. An initial institutional /implementing arrangement can be found in Annex 2, with a description of the roles and responsibilities (organization chart showing how they report to each other) of the implementing and executing entities and stakeholders involved in the project. For coordination at all levels, a regional working strategy group (RWSG) (mainly to check the implementation progress of the activities, engage in policy dialogues and knowledge exchange, facilitate cooperation, and develop advocacy and joint strategies for dissemination at global platforms) and National Working Group (NWG) (supported by the appointed National Project coordinator of the Executing Entities) will be established in each country and will be responsible for the overall execution of the project and facilitating coordination with various stakeholders including IE and EEs of the project. The IE and EEs will provide overall guidance, assessing implementation progress with the intended objective and technical support during the implementation of the project activities. During the next phase of the project development, implementation cooperation and arrangements will be refined with additional stakeholders from global, regional, national and local levels. A Project Management Unit (PMU) will be established with the WMO, regional and national executing 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 and detailed role and responsibilities will be provided.



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

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.*

CHOUP Paris Secretary of State Ministry of Environment Cambodia	Date: 11 June 2024
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 Development Partnerships Office	
Date: 01 July 2024	Tel. and email: +41 22 730 8646, mchaponda@wmo.int
Project Contact Person: Ben Churchil	Tel. and email: bchurchill@wmo.int

KINGDOM OF CAMBODIA
Nation Religion King

Ministry of Environment
Nº :3340/0624 MoE

Phnom Penh, 11 June 2024

To: The Adaptation Fund Board Secretariat
c/o Global Environment Facility Secretariat
1818G 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 (Change) Adaptation and Resilience of Mekong River Communities through Strengthening of Weather, Water and Climate Services (ECR-Mekong)"

Dear Sir/Madam,

In my capacity, as designed 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 commitment to the Pentagonal Strategy Phase I, the Mekong Climate Change Adaptation Strategy and Action Plan (MASAP), Cambodia's Updated Nationally Determined Contribution (Updated NDC) in implementing adaptation activities to reduce adverse impact of, and risks, posed by climate change in the Mekong River Basin and the Circular Strategy on Environment 2023-2028 to ensure environmental sustainability and climate change preparedness, as well as promoting a green economy.

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

I sincerely hope that this proposal will be considered favorably by the Adaptation Fund.

Sincerely yours,
For Minister

CHUOP Paris
Secretary of State

Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

Ministry of Natural Resources and Environment
Department of Climate Change

No: 1065 -/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.

Address: 10 Ton That Thuyet street, South Tu Liem district, Ha Noi, Viet Nam
Tel: +84 24 37956868, Fax: +84 24 38359221, Email: icd-monre@monre.gov.vn, Website: http://www.monre.gov.vn

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,

Jatuporn Buruspat

(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