



ADAPTATION FUND

REGIONAL PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Mekong EbA South: Enhancing Climate Resilience in the Greater Mekong Sub-region through Ecosystem-based Adaptation in the Context of South-South Cooperation
Countries:	Thailand and Vietnam
Thematic Focal Area:	Transboundary water management
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	United Nations Environment Programme (UN Environment)
Executing Entities:	UN Environment-International Ecosystem Management Partnership (UNEP-IEMP) ¹ . Ministry of Natural Resources and Environment of Thailand. Ministry of Natural Resources and Environment of Vietnam.
Amount of Financing Requested:	US\$ 7,000,000

¹ UNEP-IEMP is a collaborating centre of UN Environment and is hosted by the Institute of Geographic Sciences and Natural Resources Research (IGSNRR) in the Chinese Academy of Sciences. IGSNRR is a multidisciplinary research institute under the Chinese Academy of Sciences. The research conducted by the institute focusses on, amongst other topics, global change, water resources, ecosystem network observation and modelling, natural resources, human geography and regional development. IGSNRR is active in international and domestic cooperation and has established cooperative arrangements with academic institutions in more than 50 countries, including Thailand and Vietnam.

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List of abbreviations and acronyms

AAD	Average Annual Damage
ADB	Asian Development Bank
AF	Adaptation Fund
ALivE	Adaptation, Livelihoods and Ecosystems planning tool
APAN	Asia-Pacific Adaptation Network
ARCC	Adaptation and Resilience to Climate Change
BUR	Biennial Updated Report
CAEC	China ASEAN Environmental Cooperation Centre
CAS	Chinese Academy of Sciences
CEP	Core Environment Programme
CERN	Chinese Ecosystem Research Unit
CSO	Civil society organisation
CTA	Chief Technical Advisor
DLA	Department of Legal Affairs
DWR	Department of Water Resources
EbA	Ecosystem-based adaptation
EHIA	Environmental and Health Impact Assessment
EIA	Environmental Impact Assessment
ESERN	Environmental, Social and Economic Review Note
ESP	Environmental and Social Policy
EU	European Union
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GMS	Greater Mekong Sub-region
GoT	Government of Thailand
GoV	Government of Vietnam
IGSNRR	Institute of Geographic Sciences and Natural Resources Research
ILO	International Labour Organisation
INC	Initial National Communication
IPCC	Intergovernmental Panel on Climate Change
IT	Information Technology
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
Lao PDR	Lao People's Democratic Republic
LDCF	Least Developed Country Fund
LMB	Lower Mekong River Basin
LMC	Lancang-Mekong Cooperation
LMEC	Lancang-Mekong Environmental Cooperation Centre
M&E	Monitoring and Evaluation
MASAP	Mekong Adaptation Strategy and Action Plan
MASL	Metres above sea-level
MEP	Ministry of Environmental Protection
MIE	Multilateral Implementing Entity
MoNRE	Ministry of Natural Resources and Environment
MRB	Mekong River Basin
MRC	Mekong River Commission
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NDC	Nationally Determined Contribution
NGO	Non-governmental organisation
NIE	National Implementing Entity

NPD	National Project Director
NSFC	Natural Science Foundation of China
NSEDP	National Socioeconomic Development Plan
NTFP	Non-timber forest product
NTP-RCC	National Target Programme to Respond to Climate Change
PM	Project Manager
PMU	Project Management Unit
PPR	Project Progress Review
PSC	Project Steering Committee
RAAMEGC	Responses and Adaptation of Asian Mountain Ecosystems to Global Change
RBC	Young River Basin Committee
RCPs	Representative Concentration Pathways
RPSC	Regional Project Steering Committee
SDG	Sustainable Development Goal
SLR	Sea-level rise
SNC	Second National Communication
ToR	Terms of Reference
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment
UNEP-IEMP	UN Environment-International Ecosystem Management Partnership
UNESCO	UN Educational, Scientific and Cultural Organisation
UNFCCC	UN Framework Convention on Climate Change
VRM	Vulnerability Reduction Measure
WWF	World Wildlife Fund

Project Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve, including both the regional and the country perspective. Outline the economic social, development and environmental context in which the project would operate in those countries.

Project Overview

The natural ecosystems of the Greater Mekong Sub-region (GMS)² are of critical importance to the ~75 million people living within the region who rely upon natural resource-based livelihoods. Of the region's natural systems, the Mekong River^{3,4} is arguably the most essential to supporting rural livelihoods and maintaining the functionality of associated ecosystems⁵. As the Mekong flows from its origin at the Lasagongma Spring in China through the GMS countries and into the South China Sea, it delivers numerous ecosystem goods and services⁶ to some of South-East Asia's poorest people⁷. Although cultural, historical, socio-economic, geographic and environmental disparities exist among the GMS countries, the Mekong River serves as a transboundary resource and support system shared by millions of people across the region.

Despite their regional importance, the ecosystems of the GMS face a multitude of anthropogenic pressures that threaten their capacity to provide goods and services for local communities. For example, damming for hydropower generation and the extraction of water to irrigate ~10 million hectares⁸ of rice paddies has led to substantial changes in the flow and ecosystem dynamics of the Mekong River and its tributaries⁹. Subsequently, sediment and nutrient transfer have been impeded, and the production of one of the world's largest and most diverse inland fisheries has decreased¹⁰. Additionally, the GMS has undergone extensive deforestation in past decades, which has reduced the supply of important ecosystem goods and services to poor communities. From 1973–2009, the GMS¹¹ lost approximately 33% of its forest cover, mainly because of extensive unsustainable logging and agricultural conversion¹². Given anticipated increases in the demand for electricity, land and water in Asia, as well as the complexities associated with managing transboundary water resources, ecosystem degradation is expected to continue across the GMS into the future¹³ to the detriment of the region's people.

The above-mentioned baseline problems in the GMS are exacerbated by a climate that has undergone considerable change in recent decades and is expected to continue changing

² – consisting of the Yunnan Province and Guangxi Autonomous Region of China, Myanmar, Lao PDR, Thailand, Cambodia and Vietnam –

³ , known as the Lancang river in China,

⁴ and its tributaries

⁵ like forests and mangroves

⁶ including *inter alia*: i) food and nutrition; ii) fibre; iii) biomass; iv) medicines; v) fresh water; vi) regulation of air and water quality; vii) nutrient cycling; viii) regulation of natural hazards; and ix) recreation and tourism

⁷ Approximately 20% of the 326 million people in the GMS live below the poverty line.

⁸ According to the Mekong River Commission.

⁹ Dugan, P., Barlow, C., Agostinho, A., Baran, E., Cada, G., Chen, D., Cowx, I., Ferguson, J., Jutagate, T., Mallen-Cooper, M., Marmulla, G., Nestler, J., Petrere, M., Welcomme, R., and Winemiller, K. (2010). Fish Migration, Dams, and Loss of Ecosystem Services in the Mekong Basin. *AMBIO: A Journal of the Human Environment* 39:344-348.

¹⁰ Dugan, P., Barlow, C., Agostinho, A., Baran, E., Cada, G., Chen, D., Cowx, I., Ferguson, J., Jutagate, T., Mallen-Cooper, M., Marmulla, G., Nestler, J., Petrere, M., Welcomme, R., and Winemiller, K. (2010). Fish Migration, Dams, and Loss of Ecosystem Services in the Mekong Basin. *AMBIO: A Journal of the Human Environment* 39:344-348.

¹¹ excluding China

¹² WWF – 2013 – Ecosystems in the Greater Mekong: Past trends, current status, possible futures.

¹³ WWF – 2013 – Ecosystems in the Greater Mekong: Past trends, current status, possible futures.

throughout the 21st century. Since the 1960s, the mean annual temperature of South-East Asia has risen by $-0.14-0.20^{\circ}\text{C}$ per decade¹⁴ and rainfall patterns have become increasingly erratic. These changes in climate have been associated with an increased intensity and incidence of both floods and droughts¹⁵, leading to impacts on local communities such as: i) insufficient water for livelihoods activities; ii) reduced agricultural productivity; iii) soil erosion and landslides; iv) saltwater intrusion into agricultural lands; and v) the destruction of property and the loss of life. As temperature and rainfall patterns in South-East Asia continue to change in the future¹⁶, the livelihoods of people in the region will come under enhanced stress. Although the effects of climate change may differ spatially and temporally across the GMS, it is likely that communities reliant on ecosystems for their livelihoods will experience similar challenges in adapting to climate change.

Without appropriate adaptation interventions, it is likely that a large proportion of the GMS's population will remain extremely vulnerable to the interacting effects of climate change and ecosystem degradation. National¹⁷ and regional¹⁸ institutions in the GMS are aware of this threat. Accordingly, several regional and national adaptation plans and frameworks have been developed or are under development. For instance, the *Mekong Adaptation Strategy and Action Plan* (MASAP) is a regional climate change adaptation plan developed by the Mekong River Commission (MRC) – one of the primary transboundary water management institutions in the region – for the section of the GMS covering Cambodia, Lao PDR, Thailand, Vietnam. Additionally, the Lancang-Mekong Cooperation (LMC) mechanism – a relatively new, China-based transboundary water management body in the GMS – is developing the *Lancang-Mekong Environmental Cooperation Strategic Framework* which will include a focus on climate change adaptation and ecosystem management across the GMS. At a national level, most GMS countries have existing climate change adaptation plans and strategies¹⁹ and/or are in the process of developing National Adaptation Plans (NAPs)²⁰. It is, therefore, apparent that the countries of the GMS are committed to enhancing the climate resilience of their people.

The implementation of regional and national adaptation plans, frameworks and strategies is, however, insufficient. There are few examples of on-the-ground adaptation interventions – particularly ecosystem-based adaptation (EbA) – in the GMS. Subsequently, many people in the region remain vulnerable to the effects of climate change and environmental degradation. Additionally, where concrete implementation does exist, there is inadequate dissemination of knowledge and lessons learned. This limited knowledge on how to implement climate change adaptation interventions, particularly EbA, and thereby put policies and plans into practice is a significant barrier to the further effective development and implementation of regional and national adaptation plans. Given the transboundary nature of many GMS natural ecosystems, as well as the common threat that climate change poses to a diverse group of people across the

¹⁴ WGI AR5 Chapter 2 / WGI AR5 Section 14.8.12/ WGI AR5 Section 2.6.1.

¹⁵ China National Climate Centre – Beijing - 2015 – unpublished data.

¹⁶ IPCC. 2007. Climate Change 2007. Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press.

¹⁷ For example, government institutions such as the Ministry of Natural Resources and Environment in Thailand and Ministry of Natural Resources and Environment in Vietnam

¹⁸ such as the Lancang-Mekong Cooperation Mechanism, the Mekong River Commission and the Asian Development Bank Greater Mekong Sub-region

¹⁹ For example, Vietnam has a National Climate Change Strategy and Mekong Delta Master Plan, and China has a National Adaptation Strategy.

²⁰ The final draft of Thailand's NAP is expected to be finalised and published in 2018 once the public consultation process has been completed.

region, there is a need and opportunity for South-South cooperation among the countries of the GMS to share knowledge and technologies for adapting to climate change.

The **proposed AF project** will implement innovative, on-the-ground adaptation technologies and share implementation lessons across the GMS. Adaptation technologies will be demonstrated in the middle (in the Young Basin in Thailand) and lower (surrounding Tram Chim National Park in Vietnam) reaches of the Mekong River basin to build climate resilience and generate adaptation knowledge from diverse environmental and socio-economic contexts. These adaptation technologies will complement existing or planned interventions taking place in the upper reaches (China and Myanmar) as well as ongoing LDCF²¹ and AF projects in Cambodia and Lao PDR. The proposed project will increase the resilience of beneficiary communities to the effects of droughts and floods by implementing a suite of adaptation interventions²² including *inter alia*: i) climate-resilient agriculture interventions ii) interventions to improve drought and flood management; and iii) additional, climate-resilient livelihood options. A monitoring programme established by the project will collect information on the cost-effectiveness of project interventions in different socio-ecological contexts in the GMS which will be shared with both local communities and regional stakeholders. Additionally, knowledge-sharing and awareness-raising in local communities surrounding project beneficiaries will be accomplished through *inter alia*: i) knowledge-sharing days; ii) local field visits; and iii) the dissemination of awareness-raising and training materials.

The knowledge generated at the country level will be shared regionally on ways to combat drought and flood risk – specifically EbA – across the GMS in the different ecosystems of the GMS. Scaling up such measures at a Basin scale could reduce the impacts of climate change in the Mekong River Basin. Discussions on a scaling up adaptation strategy will be promoted under Component 3 linking the project experience with the available scientific information on climate change risks and the political processes in the GMS. A cost-effectiveness assessment will be undertaken to inform future decisions on EbA to combat the impacts of droughts and floods in the GMS under different socioeconomic and environmental conditions. Additionally, relevant knowledge to EbA in the GMS will be collated to produce policy briefs to inform the development and implementation of future adaptation projects and strategies across the region. In addition, these knowledge products, as well as the results of monitoring and evaluation at implementation sites, will be made widely available through existing online information platforms related to the GMS and climate change adaptation²³. Knowledge-sharing and project coordination across the GMS – including China, Cambodia, Lao PDR and Myanmar – will be achieved through participation in regional climate change adaptation forums. The knowledge gained through the proposed project will be used to strengthen regional coordination on climate change adaptation and incorporated into future versions of regional and national adaptation plans across the GMS²⁴ through: i) continuous sharing of information to national and regional stakeholders; ii) participation in regional training events; and iii) the provision of policy briefs and papers.

²¹ Least Developed Countries Fund

²² Guided by regional and national adaptation and development plans.

²³ Including platforms operated by: i) the MRC; ii) ADB-GMS; iii) Lancang-Mekong Cooperation Mechanism; and iv) other regional projects, such as EbA South.

²⁴ Such as the MASAP and NAPs.

Background context

Geographical context

The Greater Mekong Sub-region (GMS) covers portions of southwest China – specifically the Yunnan and Guangxi provinces – and five countries of Southeast Asia, namely Cambodia, Lao PDR, Myanmar, Thailand and Vietnam (Figures 1 and 2). From its source in southwest China, the Mekong River flows south for ~4,800 km, dropping ~4,500 m to the Mekong Delta in Vietnam. With a mean annual discharge of 475 cubic kilometres, the Mekong ranks tenth among the world's rivers based on mean annual flow at the mouth²⁵ and drains a total catchment area of 795,000 km² into the South China Sea (Table 1). The GMS can be divided into two parts: i) the 'Upper Mekong Basin' in China – where the river is called Lancang Jiang – and Myanmar; and ii) the 'Lower Mekong Basin' from the border between Myanmar and Lao PDR to the South China Sea.



Figure 1: Map of the GMS²⁶.

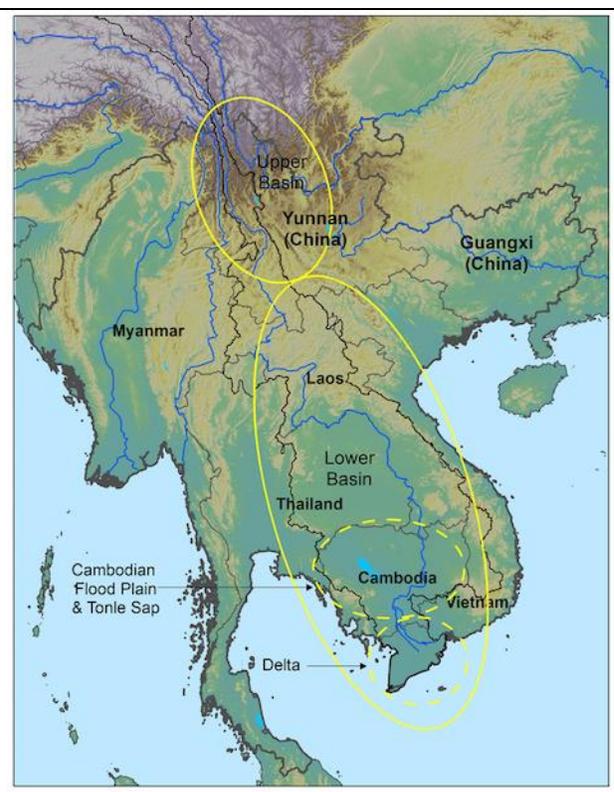


Figure 2: Broad geographical regions of the GMS²⁷.

The Upper Basin makes up 24% of the total catchment area and contributes 15 – 20% of the water that flows into the Mekong River. The catchment in this region is steep and narrow,

²⁵ Mekong River Commission. 2005. Overview of the Hydrology of the Mekong Basin. Mekong River Commission, Vientiane. Available at: <http://www.mekonginfo.org/assets/midocs/0001968-inland-waters-overview-of-the-hydrology-of-the-mekong-basin.pdf>

²⁶ Source: http://www.gms-eoc.org/uploads/map/archives/lores/GMS-Topography_28_Lo-Res_28.jpg

²⁷ Mekong River Commission. 2005. Overview of the Hydrology of the Mekong Basin. Mekong River Commission, Vientiane. Available at: <http://www.mekonginfo.org/assets/midocs/0001968-inland-waters-overview-of-the-hydrology-of-the-mekong-basin.pdf>

resulting in extensive soil erosion. Consequently, the Upper Basin is responsible for ~50% of the sediment that enters the river²⁸. As the river flows into the subtropical Simao and Xishuangbanna Prefectures of Yunnan, China, the topography changes, opening out into wider floodplains and the flow rate of the river decreases. From this point, the Lower Basin continues southwards, fed by several tributaries. These tributaries are separated into two groups, specifically: i) tributaries that drain the high rainfall regions of Lao PDR, contributing to major wet season flow; and ii) tributaries that drain the low relief regions of northeast Thailand. The final stretch of the river through Cambodia and Vietnam is relatively flat and water levels rather than flow volumes determine the direction of water flow across the landscape. Phnom Penh marks the beginning of the delta system of the Mekong River. In the delta, the main stream of the river breaks up into multiple branches that ultimately flow into the South China Sea. Agriculture in the delta is well developed and the population density is the highest found anywhere within the GMS.

Table 1: Area of the Greater Mekong Sub-region countries, and their contribution within the Mekong River Basin Catchment²⁹.

	Cambodia	China	Lao PDR	Myanmar	Thailand	Vietnam	Total
Area (km²)	181,354	619,501	229,878	669,252	514,055	328,385	2,542,425
% of GMS Total Area	7	24	9	26	20	13	100
Catchment as a % of GMRB	20	21	25	3	23	8	100
Flow as % of GMRB	18	16	35	2	18	11	100

The GMS is characterised by highly variable climatic and topographical features, dividing it into six smaller sub-catchments classified as hydro-geographic zones (Figure 3) based on the hydrology, physiography, land use and vegetation in each zone. The diversity of landscapes is largely attributed to the monsoon climate, a complex biophysical environment with an elevational gradient >5,500 meters, and a long history of human interventions. This has led to the establishment of a highly diverse and heterogeneous patchwork of ecosystems and land-use mosaics, including: i) high-elevation pastures; ii) temperate and tropical forests; iii) rubber and oil palm plantations; iv) home gardens; v) diverse croplands; vi) mixed farming wetlands; vii) lakes; and viii) mangroves. Such diverse ecosystems, across a range of elevations, provide ecosystem goods and services that support the livelihoods of more than 75 million people.

²⁸ Mekong River Commission. 2005. Overview of the Hydrology of the Mekong Basin. Mekong River Commission, Vientiane. Available at: <http://www.mekonginfo.org/assets/midocs/0001968-inland-waters-overview-of-the-hydrology-of-the-mekong-basin.pdf>

²⁹ Mekong River Commission. 2005. Overview of the Hydrology of the Mekong Basin. Mekong River Commission, Vientiane. Available at: <http://www.mekonginfo.org/assets/midocs/0001968-inland-waters-overview-of-the-hydrology-of-the-mekong-basin.pdf>

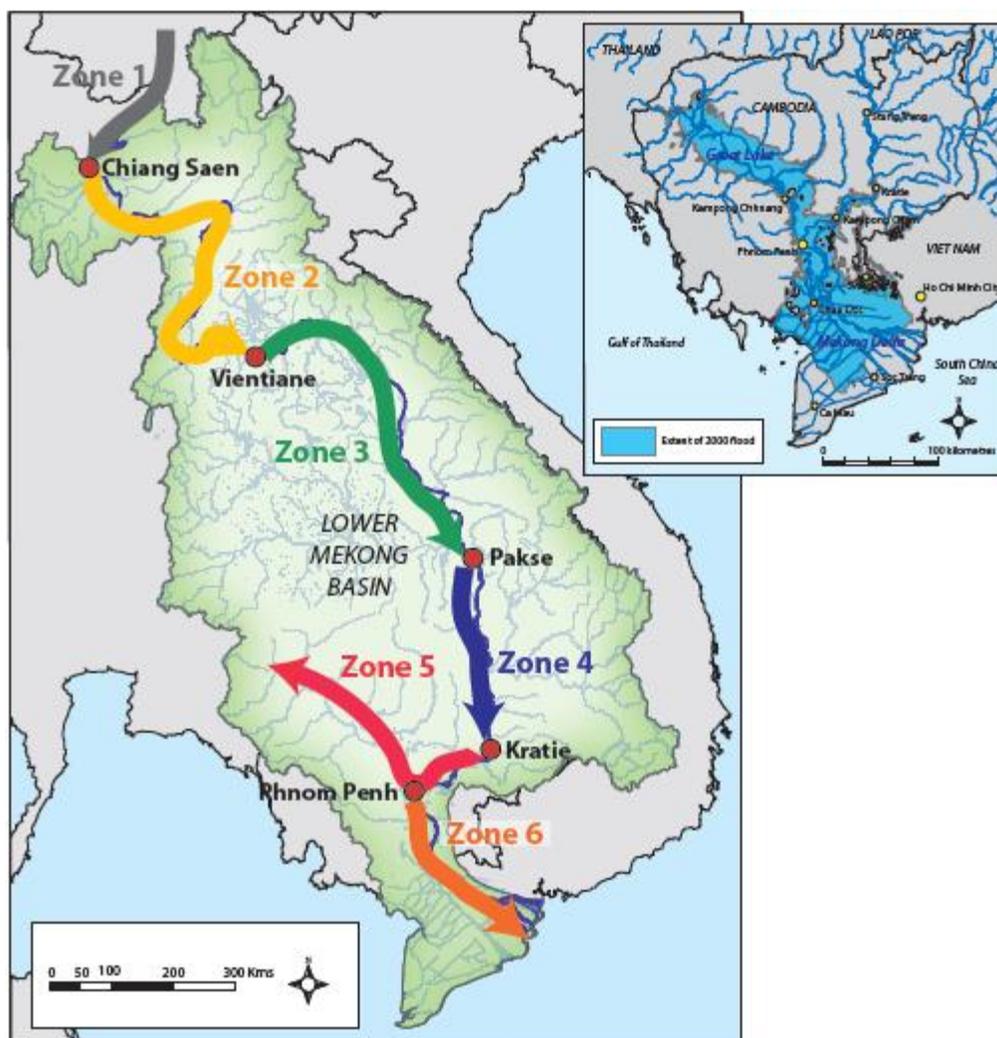


Figure 3: Major hydrogeographic zones of the Mekong River in the Lower Mekong Basin³⁰.

Socio-economic context

Some of Asia's poorest countries are located within the GMS, but the region has experienced rapid growth and development over the last few decades. The various national economies of the sub-region have been growing at fast rates, although there is substantial variation between countries and sectors. Rising living standards, together with rapid population growth, are creating new transboundary challenges to the sub-region in terms of water and river basin management, livelihood options and regional/sub-national migration flows. There are currently major initiatives being implemented and planned throughout the GMS to promote further regional economic growth and employment. Such initiatives include the development of more roads, railways, dams (mainly for hydropower) and other infrastructure, particularly in areas previously dominated by natural resource- and agriculture-based livelihoods³¹.

³⁰ Mekong River Commission. 2005. Overview of the Hydrology of the Mekong Basin. Mekong River Commission, Vientiane. Available at: <http://www.mekonginfo.org/assets/midocs/0001968-inland-waters-overview-of-the-hydrology-of-the-mekong-basin.pdf>

³¹Source: http://d2ouvy59p0dg6k.cloudfront.net/downloads/greater_mekong_ecosystems_report_020513.pdf

Most of the GMS's rural population are dependent on subsistence agriculture for food and income generation. However, the agricultural sector in the sub-region is shifting from one that is traditionally subsistence-based to one that is more commercialised. Although such commercialisation is progressing at varying rates between the different countries of the GMS, the process is generally one of specialisation, intensification and increased agrochemical use because of mechanisation. As a result of commercialisation, agricultural production has steadily increased in all GMS countries over the past 20 years³². For example, the production of commodities, such as rice, oil crops (soybean, groundnut, sesame, and sunflower) and coarse grains (maize, millet, and sorghum), has more than doubled³³. Such increases in agricultural production in the GMS – combined with economic growth, population growth and rapid urbanisation – have stimulated the demand for land, water, energy and food.

The effects of agricultural expansion, accompanied by the overexploitation of natural resources in the GMS, has led to: i) increased competition and costs for resources and land; and ii) a growing number of ecological constraints. Consequently, agricultural livelihoods and food security in the GMS, although currently on the rise, are expected to be threatened in the long-term³⁴. Similarly, the amount of water required for food and energy production, as well as for domestic and industrial use, is increasing exponentially. The overexploitation and degradation of ground and surface water sources are, therefore, commonplace. Such transformations in the food-water-energy nexus create new and exacerbate old, livelihood challenges for agrarian communities throughout the GMS.

Subsistence livelihoods in the GMS are also threatened by environmental degradation resulting from regional development. Such degradation is negatively affecting terrestrial, freshwater, estuarine and marine ecosystems in the region. As a result, the supply of ecosystem goods and services to local communities reliant on them for livelihoods is being compromised. The primary ecosystem services on which rural communities throughout the GMS predominantly rely include:

- provisioning services (food, fibre, water);
- regulating services (carbon sequestration, waste decomposition, flood regulation, water supply and purification, sediment and nutrient retention, erosion control);
- supporting services (nutrient cycling, seed dispersal, biodiversity conservation, primary production); and
- cultural services (ecotourism, aesthetic value, recreation, education).

Major human-ecosystem interactions related to local livelihoods within the sub-region include:

- fisheries along the length of the Mekong River, especially downstream from China;
- aquaculture in the Mekong Delta;
- intensive rice production (paddy agriculture) in the lowlands;
- shifting cultivation in the uplands of the humid tropics;
- rice terraces and tea/coffee plantations in sub-tropics;
- rubber, cassava and palm oil plantations over large areas of the GMS; and
- agro-pastoral systems associated with the higher elevations of the upper basin.

³² R. M. Johnston et al. 2010. Rethinking Agriculture in the Greater Mekong Subregion. IWMI. Colombo, Sri Lanka.

³³ R. M. Johnston et al. 2010. Rethinking Agriculture in the Greater Mekong Subregion. IWMI. Colombo, Sri Lanka.

³⁴ Rosegrant. et al. 2012. Water and Food Security in the Mekong Subregion: Outlook to 2030-2050. Proceedings of the International Conference on GMS 2020, Bangkok, Thailand, February.

Environmental context

Although rapid development within the GMS reflects political stabilisation and economic growth - it is resulting in widespread environmental change. This environmental change negatively impacts people who rely on ecosystem goods and services for their livelihoods. The major types of environmental change in the GMS are detailed below.

- The international demand (particularly from China) for agricultural products (including sugar, rice, coffee, rubber, cassava and fruit) from the GMS is transforming the traditionally subsistence-based agricultural sector to one that is commercial and export-orientated³⁵. Across the GMS, agricultural land is expected to expand over the next 30–50 years, predominantly replacing natural forest. The negative effects of this agricultural intensification and expansion include: i) land degradation; ii) deforestation; iii) biodiversity losses; iv) habitat losses; v) water quality and quantity declines; and vi) the deterioration of aquatic ecosystems.
- Rapid deforestation, attributable to agricultural and civil development, is reducing the supply of ecosystem services and non-timber forest products (NTFPs) to communities. Between 1973 and 2009, the total forest cover within the GMS (excluding China) has declined by ~32%, with losses of 22% in Cambodia, 24% in Lao PDR and Myanmar, and 43% in Thailand and Vietnam.
- Poor land management and agricultural practices across the GMS are resulting in: i) soil fertility declines; and ii) soil loss through erosion. As deforestation, and agricultural and urban expansion rates increase across the GMS, erosion of exposed soils caused by runoff will intensify. This will result in a rise in the amount of suspended sediment in the Mekong River, which will decrease water quality across the basin. Furthermore, increased erosion will continue to reduce the water carrying capacities of rivers and streams across the GMS, aggravating floods during the wet season and water shortages during the dry season³⁶.
- Large-scale hydropower development and irrigation are threatening freshwater ecosystems within the GMS and the livelihoods dependent on them. Over 875,000 tonnes of freshwater fish are harvested in the Mekong Basin annually. This accounts for up to 25% of the global freshwater fish catch and provides livelihoods for at least 60 million people³⁷ while providing valuable contributions to regional food security and economies. In addition to supporting livelihoods, the Mekong River is second only to the Amazon River in terms of freshwater biodiversity. At least 1,200 freshwater fish species are found in the GMS including the giant freshwater stingray and Mekong giant catfish³⁸. The Mekong River is also home to some of the last remaining populations of the endangered Irrawaddy river dolphin³⁹.
- The MRB is a major transboundary basin with a complex hydrological regime driven by yearly rainfall events in its different catchment areas. Local floodplains play an important role in attenuating floods in the middle and lower parts of the basin. Changes in upstream characteristics, attributable to hydropower development for example, can result in the progressive loss of floodplain, increasing the intensity of and damage caused by floods⁴⁰.

³⁵ Source: http://d2ouvy59p0dg6k.cloudfront.net/downloads/greater_mekong_ecosystems_report_020513.pdf

³⁶ Al-Soufi, R. 2004. Soil erosion and sediment transport in the Mekong Basin. In: Proceedings of 2nd APHW Conference, Singapore, pp 47-56.

³⁷Source: <http://www.worldwildlife.org/places/greater-mekong>

³⁸Source: <http://www.mrcmekong.org/assets/Publications/report-management-develop/Mek-Dev-No2-Mek-River-Biodiversityfisheries-in.pdf>

³⁹ Minton, G., Smith, B.D., Braulik, G.T., Kreb, D., Sutaria, D. & Reeves, R. 2017. *Orcaella brevirostris*. The IUCN Red List of Threatened Species 2017: e.T15419A50367860. <http://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T15419A50367860.en>

⁴⁰ MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including

- Extensive levels of hunting and poaching, over-exploitation of natural resources and habitat loss have resulted in only ~5% of natural habitats within the GMS remaining in a healthy condition⁴¹. Consequently, the biodiversity supported within the sub-region, which includes over: i) 430 mammal species; ii) 800 reptile and amphibian species; iii) 1,200 bird species; and iv) 20,000 species of plants, is among the most threatened globally.

Climate change context

Past and present climate change

The GMS is amongst the most climate-vulnerable regions of the world, with a wide range of climate change effects already documented⁴². Climate change is expected to exacerbate the impacts of existing threats to the region's inhabitants and its various ecosystems. The effects of climate change on the GMS include increased: i) temperatures; ii) rainfall variability; iii) frequency of extreme weather events – such as droughts and floods; and iv) saltwater intrusion related to sea-level rise (SLR). These climate change-related effects are discussed further below.

Across the GMS, mean annual temperatures have been increasing at a rate of 0.14°C to 0.20°C per decade since the 1960s, with average temperatures rising by between 0.5°C and 1.5°C from 1951 to 2000⁴³. Such climate change-related temperature increases have resulted in the sub-region's highest average daytime temperatures for the month of April being recorded in Thailand in 2016⁴⁴. Furthermore, increases in maximum and minimum daytime temperatures have resulted in more hot days and warm nights being recorded across the GMS since 1950^{45,46}.

Although temperature increases attributable to climate change are consistent across the GMS, the observed effects on rainfall are more complicated. The effects of climate change on rainfall patterns across the sub-region are extremely variable because of the influence of the sub-region's numerous topographical and marine features. In general, the length of the sub-region's rainfall seasons has decreased. However, the intensity of and the amount of rain falling during rainfall events, have increased (particularly in the middle and lower sections of the GMS)³⁰. For the sub-region overall, annual total wet-day rainfall has increased by 22 mm per decade since the 1950s^{47,48}. An exception to this trend is the upper section of the GMS (Yunnan Province, China), which has experienced an 11 mm decrease in rainfall per decade, with high inter-annual

Impacts of Mainstream Hydropower Projects. Flood Sector Key Findings Report: Flood Protection Structures and Floodplain Infrastructure.

⁴¹Conservation International. 2007. Biodiversity hotspots. Arlington, USA.

⁴² IPCC. 2007. Climate Change 2007. Impacts, Adaptation and Vulnerability. M.L. Parry, et al. Working Group II: 4th AR IPCC. Cambridge: Cambridge University Press.

⁴³ WWF. 2009. The Greater Mekong and climate change: biodiversity, ecosystem services and development at risk.

⁴⁴ Thirumalai K, DiNezio PN, Okumura Y & Deser C. 2017. Extreme temperatures in Southeast Asia caused by El Niño and worsened by global warming. *Nature Communications*. 8: 15531. DOI: 10.1038/ncomms15531.

⁴⁵ WGI AR5 Chapter 2 / WGI AR5 Section 14.8.12/ WGI AR5 Section 2.6.1.

⁴⁶ Hijioka, Y., et al., 2014: Asia. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., et al (eds.)]. Cambridge University Press, Cambridge, United Kingdom, pp. 1327-1370.

⁴⁷ Hijioka, Y., et al., 2014: Asia. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., et al (eds.)]. Cambridge University Press, Cambridge, United Kingdom, pp. 1327-1370.

⁴⁸ WGI AR5 Chapter 14 / WGI AR5 Sections 14.4.12, 14.8.12

rainfall variability and an increase in the frequency of prolonged droughts⁴⁹. In terms of extreme rainfall events, while an increasing frequency has been reported in most of Southeast Asia, the opposite is true for the GMS. Between 1961 and 1998, the sub-region experienced a decrease in the number of extreme rainfall events per annum, however, the amount of rain falling during these events increased by 10 mm per decade during this period^{50,51}.

Conversely to extreme rainfall events, the frequency of other extreme weather events has increased. Such extreme weather events include heat waves⁵², tropical cyclones⁵³ as well as unusually widespread monsoon floods, which have overwhelmed large areas of Thailand, Lao PDR, Cambodia, and Vietnam including extensive areas of the Mekong Delta. Although flooding within the MRB is a frequently occurring natural process that provides ecosystems goods and services to the local people⁵⁴, it also results in the negative impacts of flood damage during extreme events⁵⁵.

In addition to the above-mentioned extreme weather events, climate change-related SLR and saltwater intrusion are threatening the sub-region's already climate-vulnerable coastal communities and ecosystems. SLR in the South China Sea was recorded at a rate of 5.5 mm per annum between 1993 and 2009⁵⁶, which is higher than the global rate of 3 mm per annum over the last decade⁵⁷. The coastal extent of the Mekong Delta is particularly at risk to the negative effects of SLR and salt-water intrusion.

Past and current effects of climate change

Climate change continues to exacerbate the impacts of existing threats on the region's numerous communities and ecosystems. Among the most prevalent effects of climate change on the GMS is the rapid melting of glaciers and permafrost caused by increasing temperatures. This is undoubtedly strengthening the supply of water to the source and upper parts of the basin in the short-term but will have negative effects on the availability of water within the basin in the long-term as glaciers, in particular, recede⁵⁸. Similarly, warmer winters caused by increasing temperatures are resulting in a shorter dormant period of many alpine plant species⁵⁹.

Droughts are also negatively affecting plant species which are endemic to the GMS through a

⁴⁹China National Climate Center – Beijing - 2015 – unpublished data.

⁵⁰ Manton, M. J., et al. 2001. Trends in extreme daily rainfall and temperature in Southeast Asia and the South Pacific: 1961-1998. *International Journal of Climatology* 21:269-284.

⁵¹ WGI AR5 Chapter 14 / WGI AR5 Sections 14.4.12, 14.8.12

⁵²IPCC. 2007. *Climate Change 2007. Impacts, Adaptation and Vulnerability*. M.L. Parry, et al. Working Group II: 4th AR IPCC. Cambridge: Cambridge University Press.

⁵³ Rosegrant. et al. 2012. *Water and Food Security in the Mekong Subregion: Outlook to 2030-2050*. Proceedings of the International Conference on GMS 2020, Bangkok, Thailand, February.

⁵⁴ These include fish and the deposition of nutrient rich sediment on agricultural lands.

⁵⁵ MRC. 2018. *The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects*. Flood Sector Key Findings Report: Flood Protection Structures and Floodplain Infrastructure.

⁵⁶ Feng W, Zhong M & Xu H. 2012. Sea level variations in the South China Sea inferred from satellite gravity, altimetry, and oceanographic data. *Science China: Earth Sciences*. 55(10): 1696–1701.

⁵⁷ADB. 2008. *GMS: Climate Makers or Climate Takers? Understanding and Responding to the Challenges of Climate Change*. Background Paper. GMS Development Dialogue. 21 May.

⁵⁸ WGI AR5 Chapter 14 / WGI AR5 Sections 14.4.12, 14.8.12

⁵⁹Yu H, E. Luedeling, and JC. Xu. 2010. Winter and spring warming result in delayed spring phenology on the Tibetan Plateau. *Proceedings of National Academy of Science* 107: 22151-22156.

decrease in water availability⁶⁰, leading to a decline in floral diversity. Water shortages related to droughts are resulting in decreased agricultural yields, which threaten food security through the sub-region. Furthermore, the income-generating capacity of water-dependant livelihood activities including freshwater fishing is reduced. Apart from declining incomes and livelihood options, decreased water availability in the GMS is detrimental to human and ecosystem health, leading to major humanitarian disasters in the region. An example of such a disaster in the GMS is the recent drought in 2016/2017, which resulted from reduced rainfall attributable to El Niño and was likely exacerbated by climate change. This drought compounded transboundary water shortages along the Mekong River, hampering agricultural production across the GMS, which threatened food security across the sub-region⁶¹. A decrease in the production of the region's main staple, rice, is particularly problematic and as a result, prices will rise, which will further impact the lives and livelihoods of the GMS's economically marginalised communities. Furthermore, economic growth in the sub-region, which is highly reliant on agriculture is declining. For example, economic growth in Vietnam dropped to 5.6% year-on-year (compared with 6.2% in 2015) because of the drought⁶². Apart from its effects on agricultural production in the sub-region, the 2016/2017 drought along with saltwater intrusion resulted in a lack of potable water, which has affected ~1 million people in central and southern Vietnam⁶³.

The 2016/2017 drought in the GMS contributed to the lowest recorded water levels in the lower Mekong River since 1926⁶⁴. As a result, saltwater intrusion occurred earlier and more extensively than usual. To date, saltwater intrusion has been recorded as far as 90 km inland, destroying at least 159,000 ha of rice paddies in the Mekong Delta, with a further 500,000 ha still at risk.

Climate change-related SLR is also threatening agricultural production in the coastal areas of the GMS. Densely populated parts of the Thai and Vietnamese coastlines are especially vulnerable to the effects of SLR. Between 1993 and 2010, rapid rates of SLR were recorded in the western tropical Pacific⁶⁵. During this period, sea levels increased by 6 mm per year in the Mekong Delta⁶⁶. This SLR has resulted in an increase in the frequency and intensity of storm surges (especially during the typhoon season) leading to the inundation of coastal agricultural land, as well as loss of life and property. Such coastal surges were experienced during Typhoon Linda (Vietnam, 1997) and Cyclone Nargis (Myanmar, 2008)⁶⁷.

Another common climate change threat that is also associated with typhoons and cyclones in the GMS is flooding, which is attributable to an increase in the intensity of extreme rainfall events. Floods are responsible for soil erosion throughout the sub-region and landslides in the mountainous areas. Furthermore, floods are responsible for the loss of human life, the destruction of property and infrastructure, and crop losses. The impacts of floods together with

⁶⁰ Qiu, J. 2010. China drought highlights future climate threats. *Nature* 463: 142-143.

⁶¹ Available at: <https://internationalwateranalysis.wordpress.com/>.

⁶² Available at: <https://www.forbes.com/sites/timdai/2016/05/25/why-vietnam-is-running-dry-worst-drought-in-nearly-100-years/#64bc9ba174b3>.

⁶³ Available at:

http://reliefweb.int/sites/reliefweb.int/files/resources/Vietnam%20Consolidated%20Report%20on%20Drought%202015-2016-Final_11%20Mar%202016.pdf.

⁶⁴ Available at: <https://internationalwateranalysis.wordpress.com/>.

⁶⁵ Rosegrant, et al. 2012. Water and Food Security in the Mekong Subregion: Outlook to 2030-2050. Proceedings of the International Conference on GMS 2020, Bangkok, Thailand, February.

⁶⁶ Ryvitski, J.P.M, et al. 2009. Sinking deltas due to human activities. *Nature Geosciences*. Published online: 20 September 2009, doi: 10.1038/ngeo629.

⁶⁷ ADB. 2012. GMS Atlas of the Environment 2nd Edition. Manila, Philippines.

those of other previously mentioned climate change-related threats, including droughts, are expected to increase in frequency and intensity according to future climate change scenarios⁶⁸. Traditionally, flooding in the MRB is managed through the development of resilience and adapting to 'Live with Floods'. In the long-term, however, the combined effects of climate change, changing socio-economic conditions and infrastructural development will increase the requirements for strengthening the climate-resilience and adaptative capacity of the MRB's population⁶⁹.

Future climate change

Under future scenarios, climate change is expected to accelerate current warming trends, with the entire GMS becoming hotter under all current emission scenarios projected by the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathways (RCPs). Under 2040 scenarios⁷⁰, maximum temperature increases are expected to occur in the upper MRB – up to 3 °C (Figure 4). The projected 2040 average increase across the basin of 1.1 °C is well below the 2 °C limit agreed upon at the 2016 Paris summit. However, it is predicted that temperatures will continue to rise after 2040, even if emission targets have been met. Mean annual temperatures across the GMS are predicted to increase by between 1.6 and 2.5 °C by 2050^{71,72}, and by 2 to 4 °C by the end of the century^{73,74}.

Regarding average annual rainfall, climate change models generally project slight to moderate increases over most of the GMS of up to 13% by 2030 from the 1951–2000 average⁷⁵. These increases will be predominantly attributable to an increase in the intensity of rainfall during the wet season, as well as during extreme rainfall events⁷⁶. Such increases are expected in the upper sections of the sub-region, where average annual rainfall is predicted to rise by 5–25% over the next two decades and by up to 50% across the whole of the MRB by 2100. Such rainfall increases are expected to be exacerbated by the projected rise in extreme rainfall events associated with cyclones on the coasts of the South China Sea, Gulf of Thailand and the Andaman Sea. The Mekong Delta, however, is an exception to this, as it is expected to receive 15% less rainfall by the end of the century.

Together with the projected rainfall variability during the wet seasons across the GMS, other impacts of climate change are likely to include: i) earlier springs; ii) longer dry and shorter wet seasons; iii) an increased risk of prolonged drought in the Mekong Delta; iv) SLR of up to 0.7 m

⁶⁸Hijjoka, Y., et al., 2014: Asia. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., et al (eds.)]. Cambridge University Press, Cambridge, United Kingdom, pp. 1327-1370.

⁶⁹MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Flood Sector Key Findings Report: Flood Protection Structures and Floodplain Infrastructure.

⁷⁰MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Climate Change Report: Climate Change Impacts for Council Study Sectors.

⁷¹ Available: <https://www.ipcc.ch/report/ar5/>

⁷²Hijjoka, Y., et al., 2014: Asia. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., et al (eds.)]. Cambridge University Press, Cambridge, United Kingdom, pp. 1327-1370.

⁷³ WWF. 2009. The Greater Mekong and climate change: biodiversity, ecosystem services and development at risk.

⁷⁴ADB. 2009. The Economics of Climate Change in Southeast Asia: A Regional Review. Manila..

⁷⁵ ADB. 2012. GMS Atlas of the Environment 2nd Edition. Manila, Philippines.

⁷⁶ ADB. 2012. GMS Atlas of the Environment 2nd Edition. Manila, Philippines.

by 2100 in South East Asia, compared with those recorded in 1990⁷⁷; and iv) the northward shifting of bioclimatic zones, particularly within the mountainous areas of the GMS⁷⁸. Such climate change-related impacts are expected to negatively affect the countries in the GMS, which are already vulnerable to climate change.

⁷⁷IPCC. 2007. Climate Change 2007. Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press.

⁷⁸Zomer, R.J.; Trabucco, A.; Wang, M.; Xu, J.C., 2016. Projected Climate Change Impact on Hydrology, Bioclimatic Conditions, and Terrestrial Ecosystems in the Asian Highlands. ICRAF Working Paper 222. World Agroforestry Centre East and Central Asia, Kunming, China. 56 pp.

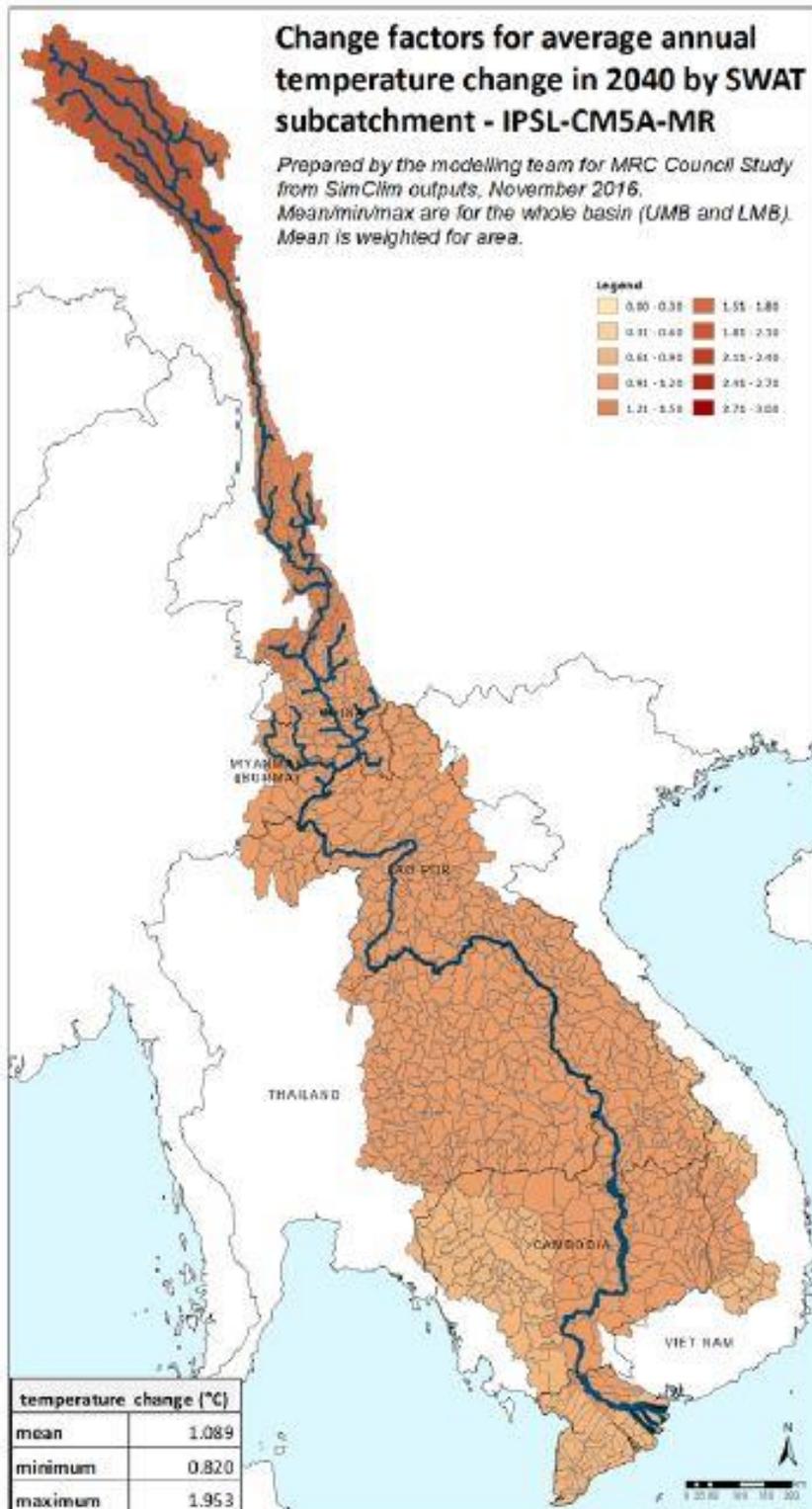


Figure 4: Projected changes in average annual temperatures across the MRB under 2040 scenarios⁷⁹.

⁷⁹ MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Climate Change Report: Climate Change Impacts for Council Study

Future effects of climate change

Worldwide, four of the 16 countries that are categorised as being ‘extremely vulnerable’ to climate change are found in the GMS (including Thailand and Vietnam)⁸⁰. The predicted impacts of future climate change mentioned above will exacerbate the effects of existing threats resulting from *inter alia* land use change, habitat loss and environmental degradation on the region’s numerous communities and ecosystems⁸¹. Additionally, the climate-resilience and adaptive capacity of the communities of the GMS dependent on local ecosystems for the supply of goods and services will be negatively affected by climate change⁸².

Future climate change is expected to have negative impacts on agriculture in the GMS. Such impacts will include *inter alia*: i) declining yields, as common crop varieties (particularly staples such as rice) will be pushed beyond their thermal limits; ii) crop losses resulting from droughts and flood damage; iii) the loss of arable land in low-lying areas because of SLR and saltwater intrusion; iv) decreasing soil water content as a result of increased potential evapotranspiration, which will decrease agricultural production; and v) the spoilage of stored agricultural products (such as rice), attributable to increased fungal growth and insect activity⁸³. These impacts will severely affect agriculturally-based livelihoods, food security, economies, trade, as well as regional and national political stability in the GMS⁸⁴.

The gross domestic products (GDPs) of GMS countries are projected to be negatively affected under several future climate change scenarios (Table 2)⁸⁵. Under a drier scenario (C3 dry) the GDP of Cambodia will be particularly impacted. Such impacts could seriously hinder the prospects of member countries obtaining/sustaining middle-income status⁸⁶.

Table 2: Projected reductions in GDP across the GMS by 2040 under climate change conditions⁸⁷.

Scenario	Cambodia	Lao PDR	Thailand	Vietnam
	Average reduction (%)			
M3CC	3	0	-2	1
C2 (Wet)	8	1	-1	4
C3 (Dry)	9	1	-1	5

Sectors.

⁸⁰ Maplecroft, Climate Change Vulnerability Index 2011. Available at: <https://maplecroft.com/about/news/ccvi.html>

⁸¹ WWF. 2009. The Greater Mekong and Climate Change: Biodiversity, Ecosystem Services and Development at Risk. WWF Greater Mekong Programme.

⁸² R. Edward Grumbine and Jianchu Xu. 2011. Mekong Hydropower Development. Science 332: 178-179.

⁸³ Available at: <http://www.extension.umn.edu/agriculture/small-grains/harvest/management-of-stored-grain-with-aeration/>

⁸⁴ Sivakumar, M. V. K., H. P. Das, and O. Brunini. 2005. Impacts of present and future climate variability and change on agriculture and forestry in the arid and semi-arid tropics. Climatic Change 70: 31–72.

⁸⁵ Three scenarios to 2040. Each scenario has similar temperature increases, but differing changes in rainfall, which is where the main uncertainties for climate predictions lie in terms of water resources. These three scenarios were modelled to cover the likely range of climate changes within the GMS, assuming a medium level of GHG emissions (RCP4.5). The expected sea level rise is also included and is similar for each climate change scenario.

⁸⁶ MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Climate Change Report: Climate Change Impacts for Council Study Sectors.

⁸⁷ MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Climate Change Report: Climate Change Impacts for Council Study Sectors.

Flooding, which is necessary in paddy fields for successful rice production (through the deposition of nutrient-rich sediment), is expected to increase in both frequency and intensity in the middle and upper GMS. This effect of climate change will, however, be detrimental rather than advantageous to rice production, as entire crops are expected to be lost in some severe events and infrastructure necessary to store produce and access markets is expected to be damaged⁸⁸. Maize, another grain cultivated in the sub-region, is predicted to suffer losses in production of 3–12% by 2050 because of increases in mean annual rainfall and temperature⁸⁹. The projected annual costs of damages floods under a moderate climate change scenario modelled to 2040 against baseline conditions (including socio-economic and water infrastructure development) are presented in Table 3. Also included in Table 3 are the projected costs of extreme flood events under both baseline and future climate change conditions for countries (Cambodia, Lao PDR, Thailand and Vietnam) of the MRB. These data show, that under continued socio-economic and water infrastructure development, as well as future climate change conditions in the MRB the costs of flood damage will increase considerably.

Table 3: Costs of flood damages in MRB countries under baseline and future development, and climate change conditions⁹⁰.

Country	Socio-economic development (year)	Water infrastructure (year)	Climate Change (year)	AAD ⁹¹ total (USD) ⁹²	Damage cost of extreme flood event (USD)
Cambodia	2010	2007	–	8.7 million	21.3 million
	2040	2040	2040	53.1 million	325 million
Lao PDR	2007	–	–	5.3 million	49.5 million
	2040	–	2040	45.5 million	144.1 million
Thailand	2007	–	–	9.6 million	82.6 million
	2040	–	2040	206 million	638.8 million
Vietnam	2010	2007	–	30.2 million	155 million
	2040	2040	2040	382.7 million	3.2 billion

In the lower parts of the sub-region, an increase in the frequency and duration of droughts are expected to result in major shortfalls in agricultural production, particularly paddy rice. Furthermore, water levels in the lower Mekong River are expected to continue decreasing as a result of the development of hydropower dams in the middle and upper sections and the continued extraction of water to irrigate ~10 million hectares of rice paddies⁹³. This will lead to a loss of livelihoods reliant on the associated goods (such as fish) and services (including natural flooding of agricultural lands), as well as a decrease in potable and underground water supplies. Climate change is expected to limit increases in rice production over and above that which

⁸⁸ TKK & SEA START RC. 2009. Water and Climate Change in the Lower Mekong Basin: Diagnosis and recommendations for adaptation. Water and Development Research Group, Helsinki University of Technology (TKK), and Southeast Asia START Regional Center (SEA START RC), Chulalongkorn University. Water & Development Publications, Helsinki University of Technology, Espoo, Finland.

⁸⁹ USAID. 2013. Mekong Adaptation and Resilience to Climate Change. Mekong ARCC Task 2 Synthesis Report. Bangkok, Thailand.

⁹⁰ Adapted from: MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Flood Sector Key Findings Report: Flood Protection Structures and Floodplain Infrastructure.

⁹¹ Average Annual Damage.

⁹² Without investment in flood defences.

⁹³ Dugan, P., Barlow, C., Agostinho, A., Baran, E., Cada, G., Chen, D., Cowx, I., Ferguson, J., Jutagate, T., Mallen-Cooper, M., Marmulla, G., Nestler, J., Petrere, M., Welcomme, R., and Winemiller, K. (2010). Fish Migration, Dams, and Loss of Ecosystem Services in the Mekong Basin. *AMBIO: A Journal of the Human Environment* 39:344-348.

would occur because of development alone⁹⁴. Additionally, the various terrestrial and aquatic ecosystems reliant on water to function optimally will be placed under immense stress because of future climate change-related droughts.

The productivity of low-lying agricultural land – predominantly rice paddies – on the coast of the GMS is predicted to decrease because of the combined climate change impacts of saltwater intrusion (related to SLR) and increasing temperatures (which will result in heat stress of rice plants)⁹⁵. The loss of agricultural land caused by the impacts of climate change is expected to be particularly widespread in the Mekong Delta floodplain. Paddy rice production in Vietnam will be especially hard hit by such agricultural land losses in the future, which will force farmers to seek alternative livelihoods such as those reliant on goods supplied by local ecosystems, such as fish.

Climate change is also expected to affect the fisheries of the GMS. Fish migration routes, spawning and feeding grounds, and fishing seasons are all likely to change, with impacts on fishing communities being uncertain. Rising seas, more severe storms and saltwater intrusion in the delta will negatively impact the GMS's fishing sector, which is reliant on species with limited saline tolerance, such as catfish⁹⁶. A recent survey of the impacts of climate change on freshwater fisheries in 130 countries concluded that Cambodia and Vietnam are among the most vulnerable because of their heavy dependence on the fishing sector, high exposure to climate risks and limited adaptive capacity⁹⁷. Under future climate change scenarios⁹⁸, the productivity of fisheries across the MRB is expected to decline by up to 43% by 2040⁹⁹. This is over and above declines which are expected to occur as a result of socioeconomic development in the basin alone. While considerable socioeconomic development is expected to take place in the MRB by 2040 (including the large-scale migration of people to urban areas and improvements in the standard of living) the poor in the most vulnerable rural communities will remain dependent on natural resources for food and income generation. Consequently, strengthening the climate resilience of vulnerable rural communities, as well as the ecosystems that they are reliant on, is a priority.

Climate change is expected to severely impact the functioning of terrestrial ecosystems, which will include decreases in biodiversity and the supply of goods and services. Such impacts will predominantly result from the spatial shifting of bioclimatic conditions across the GMS by 2050, which will initiate a period of prolonged biophysical and biological perturbation¹⁰⁰. Even the most conservative estimates indicate that by as early as 2050, most of the sub-region may

⁹⁴ MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Climate Change Report: Climate Change Impacts for Council Study Sectors.

⁹⁵ Source: <http://www.sciencemag.org/news/2016/04/mekong-mega-drought-erodes-food-security>

⁹⁶ WWF. 2009. The Greater Mekong and climate change: biodiversity, ecosystem services and development at risk.

⁹⁷ Allison, E.H., A.L. Perry, M-C. Badjeck, W.N. Adger, K. Brown, D. Conway, A.S. Halls, G.M. Pilling, J.D. Reynolds, N.L. Andrew and N.K. Dulvy. 2009. Vulnerability of national economies to the impacts of climate change on fisheries. Fish and Fisheries. Blackwell Publishing Ltd. DOI: 10.1111/j. 1467-2979.2008.00310.x.

⁹⁸ Three scenarios to 2040. Each scenario has similar temperature increases, but differing changes in rainfall, which is where the main uncertainties for climate predictions lie in terms of water resources. These three scenarios were modelled to cover the likely range of climate changes within the GMS, assuming a medium level of GHG emissions (RCP4.5). The expected sea level rise is also included and is similar for each climate change scenario.

⁹⁹ MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Climate Change Report: Climate Change Impacts for Council Study Sectors.

¹⁰⁰ Felkner, J., et al. 2009. Impact of Climate Change on Rice Production in Thailand. American Economic Review. 99. pp. 205-210.

experience novel climatic conditions attributable to climate change¹⁰¹. These climate change-related impacts are expected to directly influence biodiversity across the GMS by causing shifts in species distributions, which will have knock-on effects on ecosystem structure, composition and functioning^{102,103}. Although some species will be able to adapt to the effects of climate change without dispersing, many will not, resulting in high rates of extinction, particularly of rare and endemic species that are specific to certain habitats^{104,105,106}. Furthermore, these negative impacts will disrupt the viability and effectiveness of the many protected areas and conservation efforts across the GMS.

Indicative results from MRC studies (such as MASAP) suggest that climate change will impact on all sectors and that adaptation needs to be integrated into development plans and policies across the GMS. The Mekong River Delta is especially vulnerable to the impacts of climate change, including extreme flood and drought events, and sea level rise. Conversely, an increase in rainfall under future climate change conditions – as projected by some models – may strengthen regional water supply potentially having positive outcomes for agriculture and hydropower production. However, it is more likely that an increase in rainfall (during a shorter rain season) will result in a rise in the number of people in the GMS that are affected by floods and droughts¹⁰⁷.

Project / Programme Objectives:

List the main objectives of the project/programme.

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 EbA.

This objective will be achieved through three complementary outcomes:

1. Climate change adaptation interventions implemented by vulnerable communities in Thailand and Vietnam to manage climate change impacts, particularly droughts and floods.
2. Enhanced knowledge and awareness of adaptation measures, including EbA, to shared climate change impacts in different ecosystems to promote regional cooperation, planning and implementation of adaptation in the GMS.
3. Strengthened regional cooperation on climate change adaptation, particularly in response to floods and droughts, in the GMS.

¹⁰¹ Mora C, et al. 2013. The projected timing of climate departure from recent variability. *Nature* 502(7470):183–187.

¹⁰² Williams, J.W., S.T. Jackson, and J.E. Kutzbach, 2007: Projected distributions of novel and disappearing climates by 2100 AD. *Proceedings of the National Academy of Sciences of the United States of America* 104: 5738-5742.

¹⁰³ Zomer, R.J.; Trabucco, A.; Wang, M.; Xu, J.C., 2016. Projected Climate Change Impact on Hydrology, Bioclimatic Conditions, and Terrestrial Ecosystems in the Asian Highlands. ICRAF Working Paper 222. World Agroforestry Centre East and Central Asia, Kunming, China. 56 pp.

¹⁰⁴ Stork, N.E., J. Balston, G.D. Farquhar, P.J. Franks, J.A.M. Holtum, and M.J. Liddell. 2007. Tropical rainforest canopies and climate change. *Austral Ecology*. 32: 105–112.

¹⁰⁵ Malcolm, J.R. C. Liu, R.P. Neilson, L. Hansen, and L. Hannah. 2006. Global warming and extinctions of endemic species from biodiversity hotspots. *Conservation Biology*. 20: 538-548.

¹⁰⁶ Such species include *inter alia*: including the Asian elephant, tiger, douc langur, gaur, banteng, Eld's deer, serow, clouded leopard, pygmy loris, imperial pheasant and Edwards's pheasant.

¹⁰⁷ MRC. 2018. The Study on the Sustainable Management and Development of the Mekong River Basin, including Impacts of Mainstream Hydropower Projects. Climate Change Report: Climate Change Impacts for Council Study Sectors.

Project / Programme Components and Financing:

Fill in the table presenting the relationships among project components, outcomes, outputs and countries in which activities would be executed, and the corresponding budgets.

Project Components	Expected Outcomes	Expected Outputs	Countries	Amount (US\$)
Component 1: Demonstration of climate change adaptation interventions, with a focus on drought and flood management, in vulnerable communities and different ecosystems.	Outcome 1: Climate change adaptation interventions implemented by vulnerable communities in Thailand and Vietnam to manage climate change impacts, particularly droughts and floods.	<i>Output 1.1:</i> A suite of climate change adaptation interventions, including EbA, implemented at Young River Basin in Thailand.	Thailand	2,000,000
		<i>Output 1.2:</i> A suite of climate change adaptation interventions, including EbA, implemented in communities living around Tram Chim National Park in Vietnam.	Vietnam	2,000,000
		<i>Output 1.3:</i> Monitoring programme established to collect information on the cost-effectiveness of project interventions in different socio-ecological contexts in the GMS.	Thailand and Vietnam	250,000
		<i>Output 1.4:</i> National level knowledge-sharing strategy implemented in Thailand and Vietnam.	Thailand and Vietnam	350,000
Component 1 Total				4,600,000
Component 2: Regional knowledge base on climate change adaptation expanded in the	Outcome 2: Enhanced knowledge and awareness of adaptation measures, including EbA,	Output 2.1: GMS-specific cost-effectiveness analysis undertaken on climate change adaptation interventions that reduce the impact of floods and droughts.	GMS-wide	150,000

GMS.	to shared climate change impacts in different ecosystems to promote regional cooperation, planning and implementation of adaptation in the GMS.	Output 2.2: Policy briefs – and paper for the Lancang-Mekong Cooperation Outlook Report series – developed on: i) good practice in managing shared climate change impacts in the GMS; ii) integrating climate change adaptation into transboundary water management; and iii) cost-effectiveness of EbA for reducing vulnerability to climate change.	GMS-wide	138,709
		Output 2.3: Knowledge on EbA that has been generated and collated through the project shared on the main regional knowledge platforms, presented at regional adaptation forums and shared through different media.	GMS-wide	150,000
		Output 2.4: Guidelines for the design and implementation of EbA monitoring and evaluation systems, including simplified methods for collecting comparable information in different socio-ecological contexts.	GMS-wide	50,000
		Output 2.5: Regional training events on ecosystem-based adaptation conducted with technical government staff from all GMS countries.	GMS-wide	300,000
Component 2 Total				788,709

Component 3: Political cooperation on climate change adaptation.	Outcome 3: Strengthened regional cooperation on climate change adaptation, particularly in response to floods and droughts, in the GMS.	Output 3.1: Recommendations for regional cooperation on the scaling up of climate change adaptation interventions – based on the results of the project – developed and presented at: i) Lancang-Mekong policy dialogues; ii) MRC regional stakeholder forums; iii) Thailand NAP stakeholder forum; and iv) Vietnam National Climate Change Strategy stakeholder forum.	GMS-wide	150,000
		Output 3.2: Regional cooperation and relationship building on climate change adaptation promoted through exchange of information, knowledge and site visits for practitioners, policy-makers and planners.	GMS-wide	300,000
Component 3 Total				450,000
6. Project Execution cost (9.5%)				612,903
7. Total Project Cost				6,451,612
8. Project Cycle Management Fee charged by the Implementing Entity (8.5%)				548,388
Amount of Financing Requested				7,000,000

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	March 2019
Mid-term Review (if planned)	July 2021
Project/Programme Closing	August 2023
Terminal Evaluation	March 2023

PART II: PROJECT/PROGRAMME JUSTIFICATION

A. Project Components

Describe the project / programme components, particularly focusing on the concrete adaptation activities, how these activities would contribute to climate resilience, and how they would build added value through the regional approach, compared to implementing similar activities in each country individually. For the case of a programme, show how the combination of individual projects would contribute to the overall increase in resilience.

The proposed AF project will implement innovative, on-the-ground adaptation technologies and share implementation lessons across the GMS. Adaptation technologies will be demonstrated in the middle (in the Young Basin in Thailand) and lower (surrounding Tram Chim National Park in Vietnam) reaches of the Mekong River basin to build climate resilience and generate adaptation knowledge from diverse environmental and socio-economic contexts. The theory of change for the proposed project is presented in Figure 5 below.

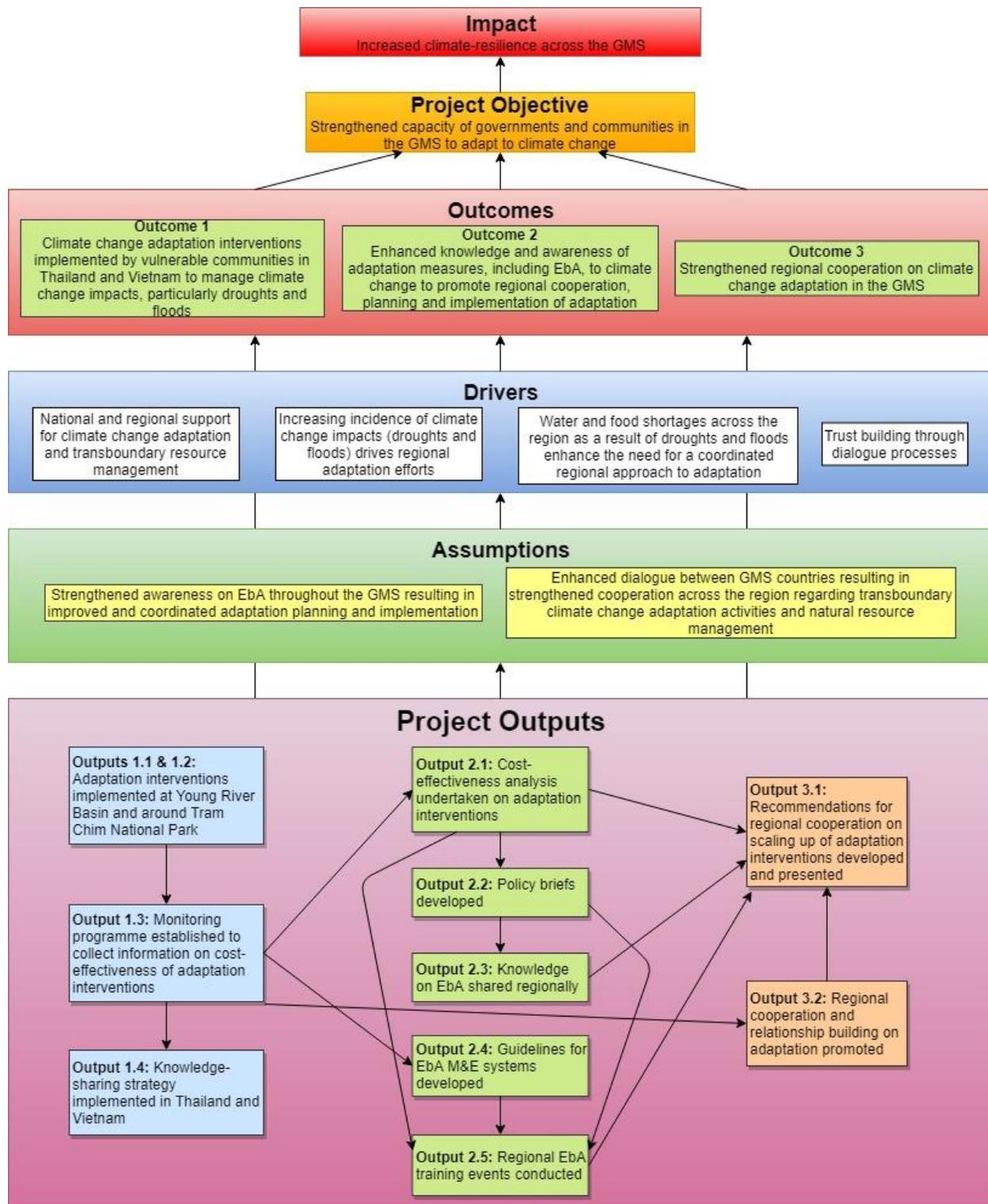


Figure 5: Theory of Change for the proposed project.

Component 1: Demonstration of climate change adaptation interventions, with a focus on drought and flood management, in vulnerable communities and different ecosystems.

Dependence on shared transboundary water resources can expose people from varied socio-ecological¹⁰⁸ contexts to a common set of climate change threats. In the GMS, people from different contexts who rely on the ecosystems of the GMS to support their livelihoods are united in their shared exposure to the region's primary climate threats: droughts and floods. However, the way these threats manifest to impact livelihoods differs according to the specific context of the affected communities, and therefore, a one-size-fits-all approach to climate change adaptation is unlikely to be effective. In such a scenario, context-specific adaptation measures are appropriate and could be used to demonstrate drought and flood adaptation strategies to people from similar socio-ecological contexts across the GMS.

The first component of the proposed project will increase the resilience of people vulnerable to droughts and/or floods in two areas in the GMS through the implementation of concrete climate change adaptation interventions. Monitoring programmes will be established to collect information on the cost-effectiveness of adaptation interventions in different socio-ecological contexts, and knowledge-sharing events to promote the upscaling of the climate change adaptation interventions will be conducted.

Component 1 of the proposed project will be executed by Department of Water Resources (DWR), Ministry of Natural Resources and Environment (MoNRE) in Thailand, and Department of Legal Affairs (DLA), Ministry of Natural Resources and Environment (MoNRE) in Vietnam.

Outcome 1: Climate change adaptation interventions implemented by vulnerable communities in Thailand and Vietnam to manage climate change impacts, particularly droughts and floods.

Concrete adaptation interventions – with a focus on EbA – will be implemented in the middle (Thailand) and lower (Vietnam) reaches of the Mekong River. These adaptation technologies will complement existing or planned interventions taking place in the upper reaches (China and Myanmar), as well as ongoing LDCF¹⁰⁹ and AF projects in Cambodia and Lao PDR. These locations represent a diverse array of socio-ecological contexts but are united by the common climate change threats of floods and droughts.

The specific countries for the implementation of adaptation interventions were selected during the preparation phase of the project through extensive stakeholder consultation. Thailand and Vietnam were selected as they are both vulnerable to climate change impacts, particularly increasing frequency and intensity of floods and droughts. Furthermore, as non-Least Developed Countries they do not receive support for adaptation from the LDCF, as well as other major bilateral funding mechanisms. Thailand and Vietnam also have not yet implemented projects financed by the Adaptation Fund. Therefore, these countries will particularly benefit from a project demonstrating on-the-ground climate change adaptation interventions.

Specific sites have been chosen in each of the target countries through stakeholder consultation during the project development phase. The sites are: i) Young River Basin in Thailand; and ii) communities living around Tram Chim National Park in Vietnam. The criteria used to select these sites were as follows:

¹⁰⁸ Including different economic, administrative, political and environmental contexts.

¹⁰⁹ Least Developed Countries Fund.

- representativeness of critical vulnerable ecosystems in the GMS;
- evidence of climate change impacts on people's livelihoods;
- evidence of climate change impacts on biodiversity, including endangered species;
- potential linkages to the transboundary context; and
- presence of good practices harmonising biodiversity conservation and livelihoods.

A description of each site is presented below.

Young River Basin (Thailand)

The Young River Basin demonstration site will extend over the whole basin, including the upper, middle and lower reaches. The whole river basin is selected to promote integrated water resources management, as floods and droughts threaten livelihoods throughout the basin.

Located in northeast Thailand, the Young River Basin is a sub-basin of Chi River Basin, which is one of the main basins of the LMB (Figure 6). It covers an area of ~415,000 ha which includes 23 districts in the Kalasin, Roi-Et, Mukdahan, Yasothon and Sakon Nakhon provinces. The basin's 23 districts are home to ~540,000 people, ~55% of which are female. Most (~81%) of these inhabitants are farmers, with farmland per household averaging 3.1 ha. Monthly income per household is relatively low, averaging US\$ 465, compared to the national average of US\$ 788. The primary income source of Young River Basin inhabitants is agriculture.

The majority of the basin's land (69%) is used for agriculture¹¹⁰. Rainfed rice (~207,000 ha; 50% of agricultural land) and cassava (~72,000 ha; 17% of agricultural land) farming dominate agricultural activities in the Young River Basin¹¹¹. In terms of rice production, farmers grow sticky rice for household consumption and jasmine rice for export. Average rice production per rai¹¹² of 350 kg is relatively low. This is mainly attributable to soil degradation across the basin related to poor agricultural and soil conservation practices and is being exacerbated by the effects of climate change (floods and droughts). Declining rice production has resulted in some farmers: i) preferring to grow cassava and sugarcane over rice; ii) practising integrated farming (a combination of crop and livestock farming); and iii) converting the remaining natural habitats to farmland. The conversion of most of the basin's land to cultivated areas resulted in considerable declines in its natural forests (mainly upstream), the coverage of which decreased from 37 to 23% between 2002 and 2015. Of the basin's remaining land, 2% is covered by wetlands and the rest by water storage infrastructure (such as ponds and reservoirs).

One main river, the Young, traverses the basin, receiving an annual run-off of 1,336 million m³. Most of this run-off, 308 million m³ is received during the monsoon season in August and September, often resulting in flash floods. Maximum monthly rainfall, ~295 mm, is experienced in August, with annual rainfall across the basin averaging 1,384 mm. In recent years, especially since 2010, rainfall between the upper (Kalasin Province) and lower (Roi-Et Province) Young River Basin has varied considerably (Figure 7). The Young River Basin Committee (RBC) manages water resources within the basin¹¹³. Water resource development strategies formulated by the RBC include: i) restoring headwater forest; ii) conserving natural resources

¹¹⁰ Including the cultivation of rice, crocus, cassava, rubber, sugar cane and various fruits.

¹¹¹ Only 0.65% is under irrigation (including ~2,700 ha rice crops).

¹¹² 1 rai = 0.16 ha.

¹¹³ Established in 2010 by the Government of Thailand's Department of Water Resources of the Ministry of Natural Resources and Environment (DWR-MoNRE).

and soil quality; iii) monitoring water quality; and iv) improving watershed management. However, limited financial resources have resulted in these strategies being largely unimplemented, while links to climate change and vulnerability are weak.

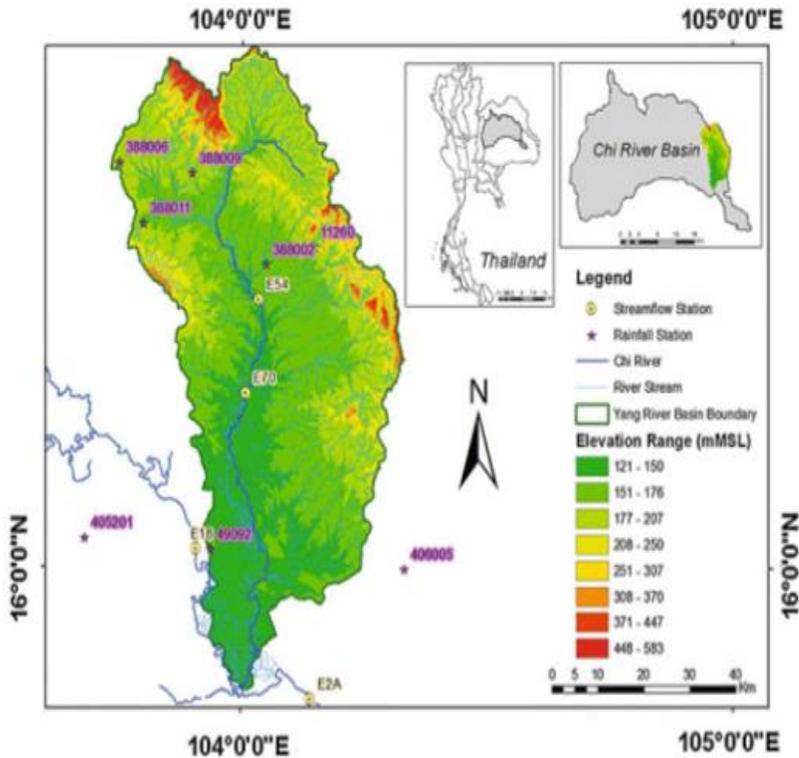


Figure 6: Location of the Young River Basin, north-eastern Thailand.

Current vulnerability

Main climate-related vulnerabilities identified across the Young River Basin include: i) water security; ii) food security; iii) income generation; and iv) farming systems¹¹⁴. More specifically, communities in the upper basin commonly face water shortages during the dry summer months, resulting in the limited availability of drinking water and a reduction in crop production (particularly rice). This adversely impacts income generation, ultimately leading to debt as farmers borrow money to buy food and cover monthly expenses. In the lower basin, communities are faced with severe floods during the monsoon season. These floods result in the inundation of agricultural land (especially rice), causing declines in production and income generation. Consequently, farmers are forced to purchase food and seek work in other parts of the country as migrant workers.

¹¹⁴ DWR-MoNRE. 2011. Climate Change Adaptation Initiative (CCAI).

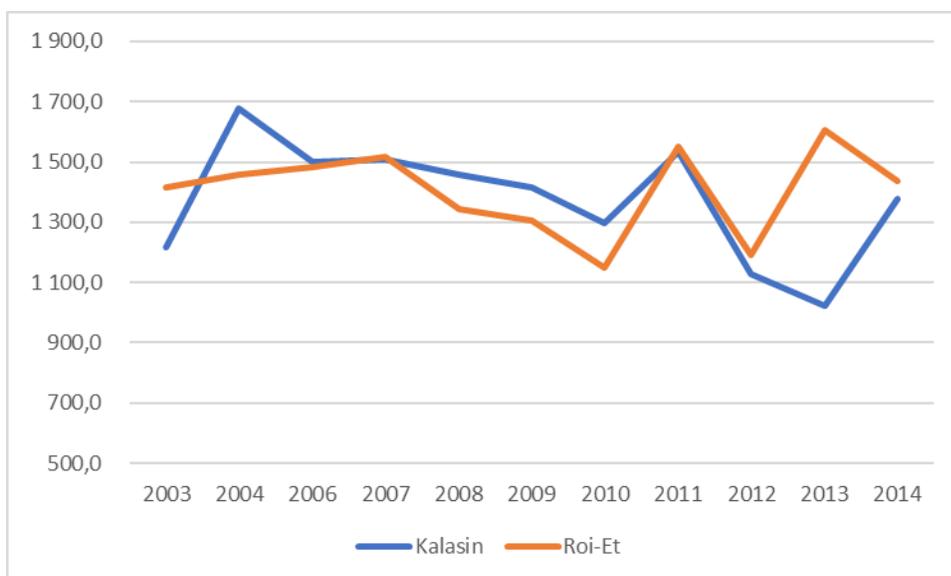


Figure 7: Annual rainfall (mm) variations between the upper (Kalasin Province) and, middle and lower (Roi-Et Province) Young River Basin during the period 2003 to 2014¹¹⁵.

Climate change impacts

The Young River Basin is expected to experience temperature increases of up to 3.3°C by 2060 as well as a rise in the annual maximum number of consecutive dry days by 2099 (Figure 8). Similarly, annual maximum daily rainfall is projected to increase in variability and amount across the basin under both medium- (2040; Figure 9) and long-term scenarios (2099; Figure 10). Rainfall increases are predicted to be limited to the rain season, with less rain falling during the hot dry season¹¹⁶. These changes are expected to result in rises in both the intensity and frequency of droughts in summer and floods during the monsoon period. These impacts will negatively affect the mostly agriculture-based livelihoods of local communities. Yields for the main crops – rice and cassava – will decline, with rice production in particular expected to severely impacted by floods and droughts.

Climate change simulation studies on jasmine rice yields in northeast Thailand (including Roi-et Province, middle and lower Young River Basin) project significant declines over time¹¹⁷. These include declines of up to 18, 28 and 24% by the 2020s, 2050s and 2080s, respectively. Water demand for the production of jasmine rice under future climate scenarios was also modelled, projecting increases of up 92 and 77% under the RCP 4.5 and 8.5 scenarios, respectively¹¹⁸. These results exemplify the need for the implementation of climate change adaptation measures to strengthen the resilience and productivity of agricultural production across the Young River Basin in the long-term.

¹¹⁵ Thailand Department of Meteorology. 2018.

¹¹⁶ Chinvano, S. and Kerdsuk, V. 2013. Mainstreaming Climate Change into Community Development Strategies and Plans: A Case Study in Thailand, Adaptation Knowledge Platform, Partner Report Series No. 5. Stockholm Environment Institute, Bangkok.

¹¹⁷ Babel, M.S., Agarwal, A., Swain, D.K., Herath, S., 2011, Evaluation of climate change impacts and adaptation measures for rice cultivation in Northeast Thailand, *Climate Research*, 46 (137–146).

¹¹⁸ Shrestha, S., Chapagain, R., Mukand S. and Babel, M.S., 2017, Quantifying the impact of climate change on crop yield and water footprint of rice in the Nam Oon Irrigation Project, Thailand, *Science of the Total Environment* (599–600): 689–699.

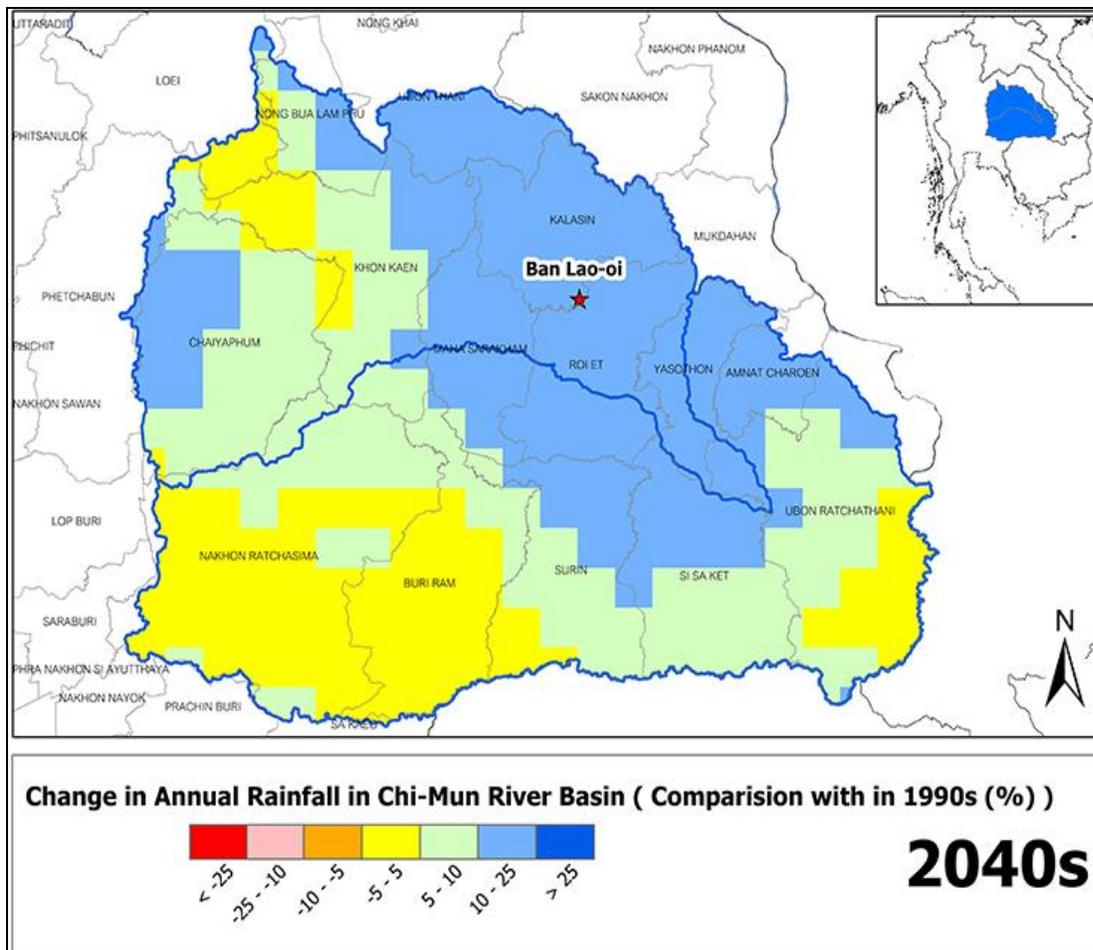


Figure 8: Project increase in annual rainfall (relative to 1990) of the Chi River Basin by 2040¹¹⁹. The Kalasin (upper Young River Basin) and Roi-Et (middle and lower Young River Basin) Provinces are expected to experience an increase of 10 to 25% in annual rainfall.

Drought vulnerability and risk classifications for the Young River Basin are moderate to severe (Figures 11 and 12). In terms of floods, the vulnerability of the Young River Basin is projected to rise under future climate change scenarios (Figure 13). By 2060, it is predicted that the extent of the Chi River Basin (of which the Young River Basin is a sub-basin) that is impacted by floods will increase by ~7% (141,000 ha) and ~17% (365,000 ha) under moderate and extreme climate change scenarios, respectively.

¹¹⁹ Chinvano, S. and Kerdsuk, V. 2013. Mainstreaming Climate Change into Community Development Strategies and Plans: A Case Study in Thailand, Adaptation Knowledge Platform, Partner Report Series No. 5. Stockholm Environment Institute, Bangkok.

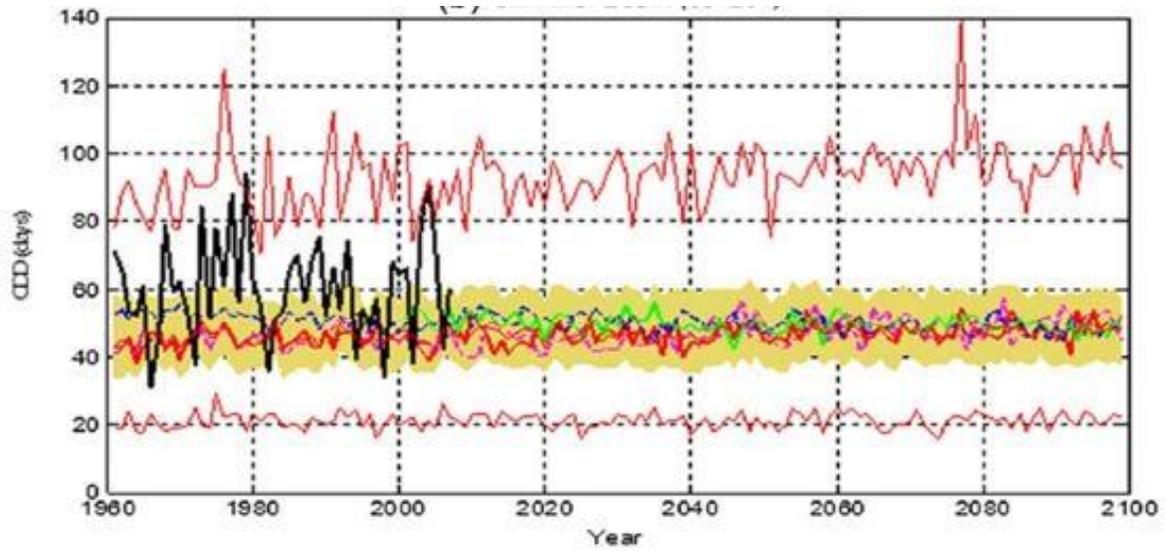


Figure 9: Project annual maximum number of consecutive dry days for the Chi River Basin, of which the Young River Basin is a sub-basin.

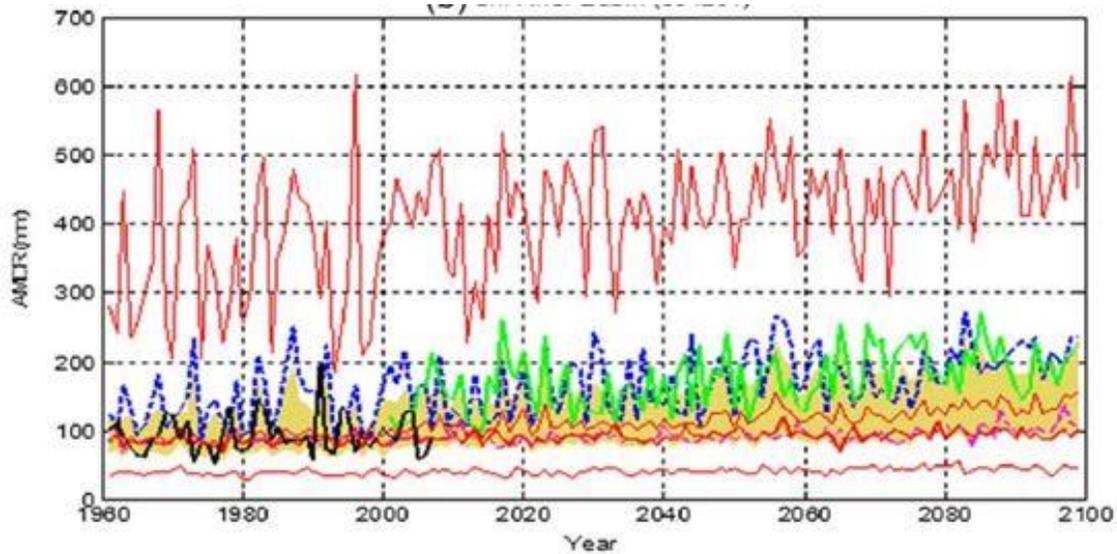


Figure 10: Projected annual maximum daily rainfall for the Chi River Basin, of which the Young River Basin is a sub-basin.

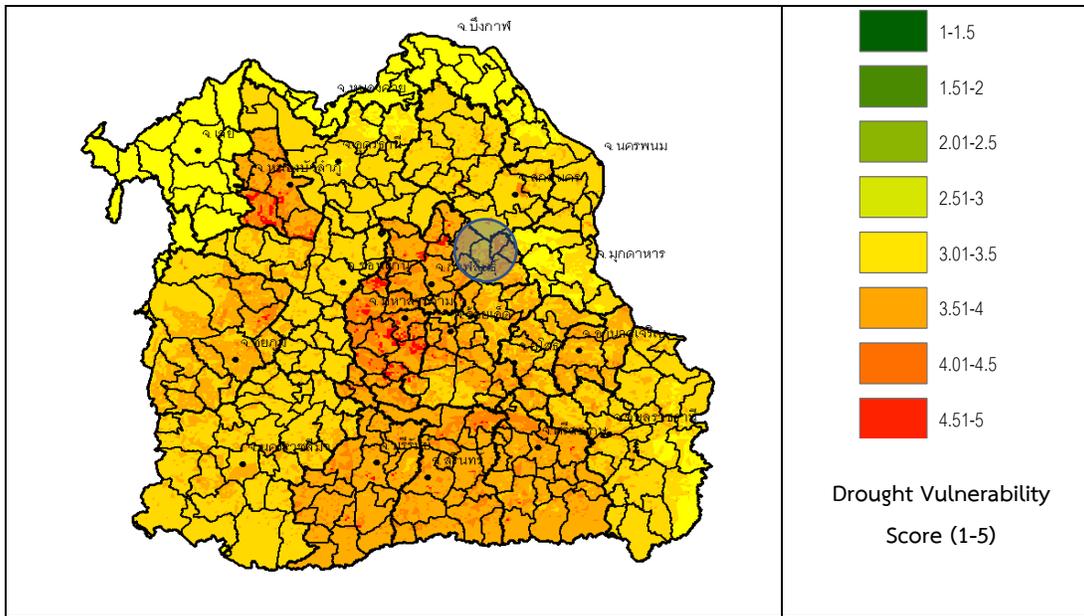


Figure 61: Drought vulnerability map of northeastern Thailand (the circle highlights the Young River Basin)¹²⁰.

¹²⁰ MRC. 2017. Drought Management Strategy for the Lower Mekong Basin 2019-2023, December 2017.

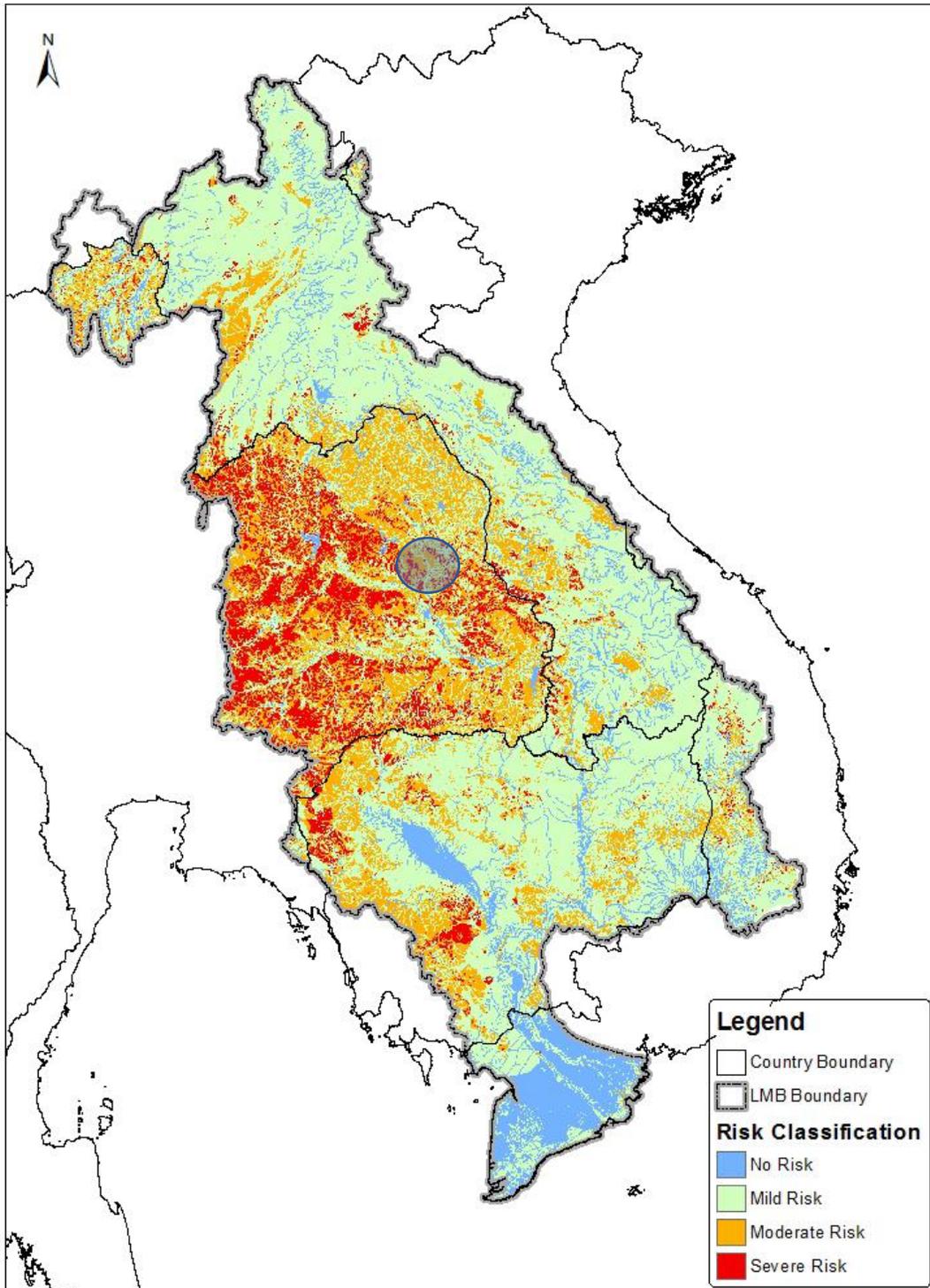


Figure 12: Drought risk map of the Lower Mekong River Basin (LMB; the Young River Basin is highlighted by the circle).

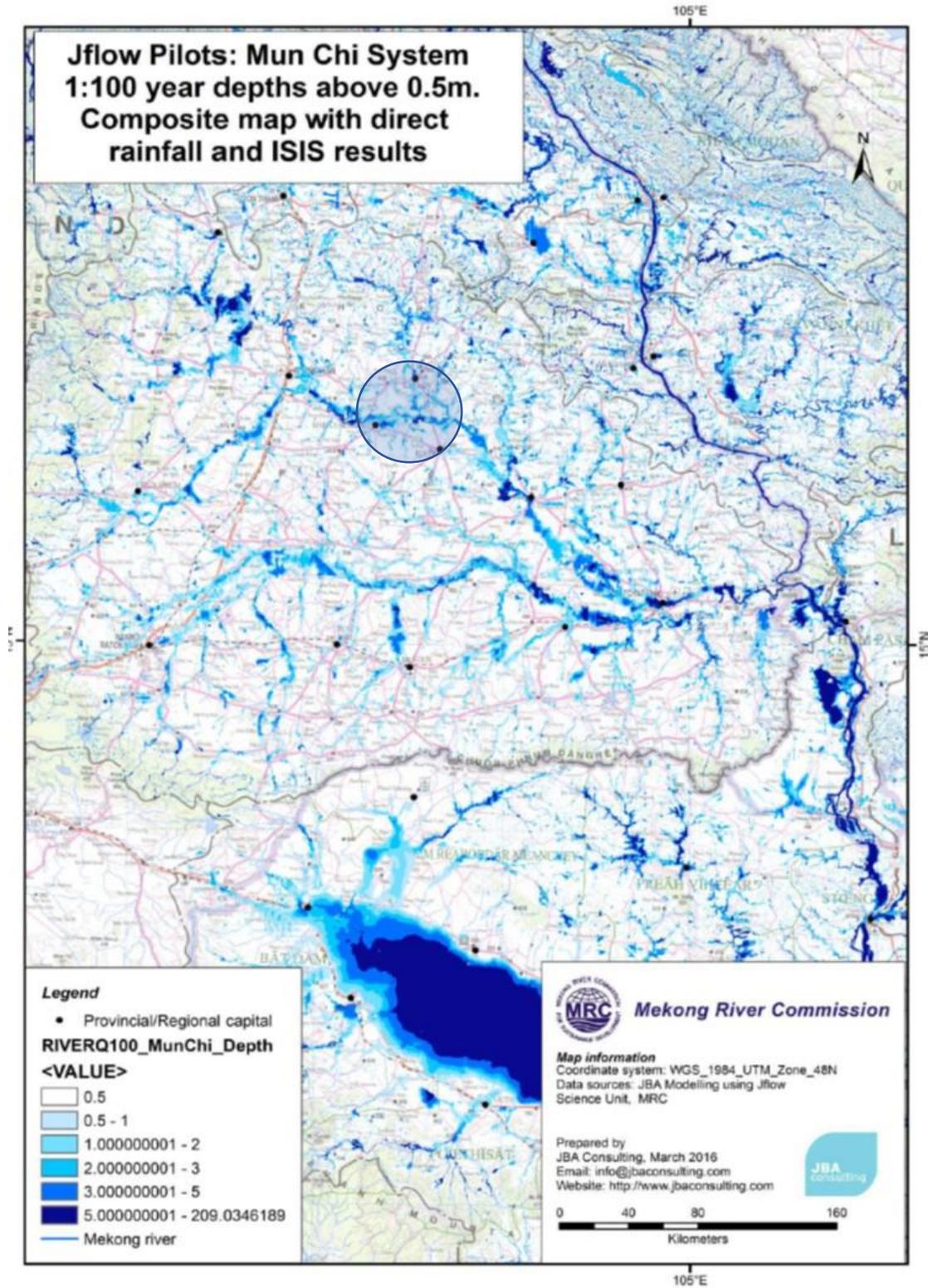


Figure 13: Map of projected flooding for the Mun Chi river basin (part of the LMB; the Young River Basin is highlighted by the circle).

Upper Young River Basin

The upper Young River Basin (up to 500 MASL¹²¹) is mainly made up of headwaters, with the landscapes dominated by natural forests (Figure 14). Climate change adaptation demonstration sites of the proposed project in the upper Young River Basin are located in the Kalasin province. Approximately 30% of Kalasin province's population live under the poverty line, with most households relying on agriculture-based livelihoods for food and income. Rain-fed rice production dominates agriculture in the province, while irrigated lands are uncommon (making up just 2.3% of agricultural land). Food and income generated from agriculture are often supplemented by natural resources supplied by local ecosystems, such as NTFPs collected in remnant forests and fish caught in freshwater sources (including rivers, reservoirs and ponds). The dependence of local households on natural resources to make ends meet has contributed to the degradation of the Kalasin province's ecosystems, most notably forests, rivers and wetlands. This degradation and consequent reduction in the availability of ecosystem goods and services have contributed to ~20% of the province's rural population migrating to urban areas for work. Ecosystem degradation in the Kalasin province is and will continue to be compounded by the impacts of climate change, which include a greater frequency and intensity of droughts and flash floods. This is expected to result in an increase in the number of people migrating out of rural areas in search of alternative income-generating activities.

Vulnerabilities related to current socio-economic conditions are and will continue to be exacerbated by the effects of climate change. During consultations in the Sai Na Wang sub-district of the Kalasin Province, communities identified several climate change impacts and associated vulnerabilities. These are listed below.

- The contrasting impacts of droughts and flood over recent years have limited agricultural productivity and forced the need for adjustments to traditional agricultural practices, often with little success.
- Heavy flooding and extended droughts have adversely impacted rice yields, reducing the income generating capacity of this crop type.
- Water shortages for both household and agricultural use are becoming more frequent.
- Communities lack the knowledge and experience required to adapt to the impacts of climate changes – particularly in terms of increasing the climate-resilience of agricultural practices.
- Policies and planning related to climate change adaptation are lacking at the provincial and district level.

A climate change case study of the Lao-oi sub-district, Kalasin Province, found that increases in the frequency and intensity of annual floods between 2003 and 2013 caused the destruction of ~40% (~3,200 ha) of land used for rice farming¹²². To make up for the resulting losses, community members were forced to cultivate rice during the dry season, often under drought conditions and the risk of damage attributable to crop pests. The lack of any climate adaptation or resilience policy for the area means that community members have to rely on the often-insufficient amount of compensation money received from government or travel to other parts of the country to work as migrant labourers¹²³.

¹²¹ Metres above sea-level.

¹²² Chinvanno, S. and Kerdasuk, V. 2013. Mainstreaming Climate Change into Community Development Strategies and Plans: A Case Study in Thailand, Adaptation Knowledge Platform, Partner Report Series No. 5. Stockholm Environment Institute, Bangkok.

¹²³ Chinvanno, S. and Kerdasuk, V. 2013. Mainstreaming Climate Change into Community Development Strategies and Plans: A Case Study in Thailand, Adaptation Knowledge Platform, Partner Report Series No. 5. Stockholm Environment Institute, Bangkok.

Other than a small pilot project implemented by DWR-MoNRE with support from the MRC, there have been no climate change adaptation projects in the Kalasin province. Therefore, the adaptive capacity and climate-resilience of the sub-district's communities is underdeveloped. A primary reason behind DWR-MoNRE's decision to pilot an adaptation project in the province is the presence of active and responsive community groups. These groups, including the Sai Na Wang Sub-District Water Resource Management Committee¹²⁴ and Community Conservation Group, are important stakeholders in the upper Young River Basin.

The Sai Na Wang Sub-District Water Resource Management Committee played the main role in the development of local water resource strategies. The objectives of these strategies are to: i) map local water resources; ii) explore various ways to conserve local water resources; iii) develop a plan for the mixed use of surface and groundwater; and iv) negotiate financial support from district, provincial and central authorities to support the development of a district water management plan. The activities related to the attainment of these objectives are still in the early stages of implementation. However, the continued implementation of these activities requires additional financial resources and technical support.

Middle and Lower Young River Basin

The middle and lower sections of the Young River Basin (Figure 14) are characterised by cultivated lowlands (as low as 130 MASL). Climate change demonstration sites of the proposed project in the middle and lower Young River Basin are located in Roi-Et province. Approximately 79% of the population of Roi-Et province is dependent on rice farming as a livelihood. Most rice farming in the province is rain-fed. As a result, this livelihood activity is threatened by local climate change conditions – namely droughts and flash floods. Floods also damage infrastructure and have resulted in the loss of life.

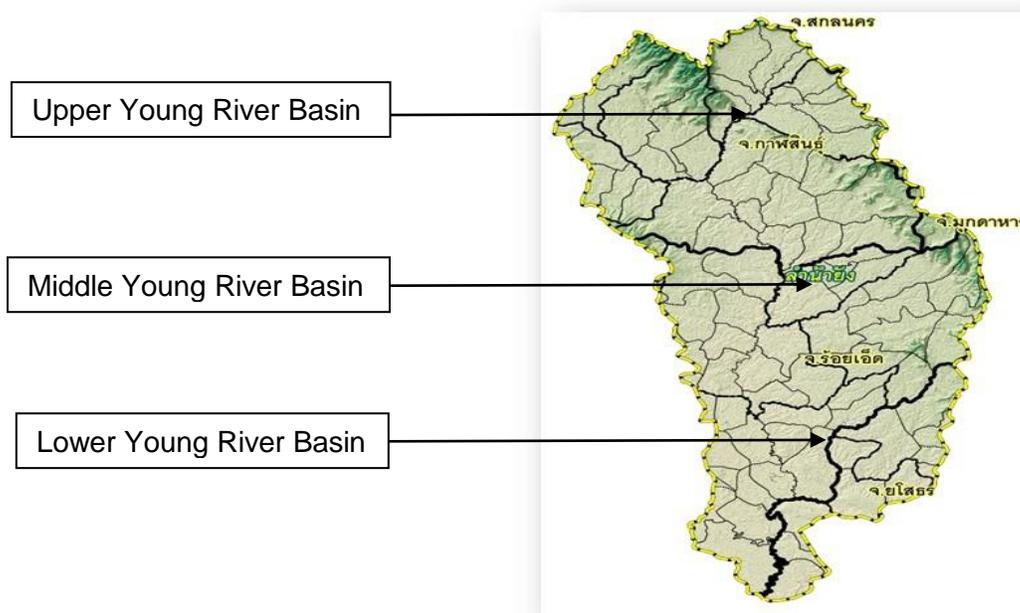


Figure 14: Map showing upper, middle and lower sections of Young River Basin.

¹²⁴ Established in 2012 by the Sai-Na Wang Sub-District Organisation, Kalasin province.

Vulnerabilities related to current socio-economic conditions are and will continue to be exacerbated by the effects of climate change. During consultations and the conduction of a household survey in the Wang Luang sub-district of the Roi-et Province, communities identified several climate change impacts and associated vulnerabilities (more details are presented in Annex I). These are detailed below.

- Heavy flooding in the rainy season often destroys most of the rice crop. This has led some farmers to shift their cultivation to the dry season, where water shortages subsequently impact it.
- Water shortages, decreasing agricultural yields and a reduction in household incomes (and the associated reduction in living standards) were identified as the primary climate vulnerabilities.
- Approximately 87% of households have been affected by damages caused by floods (regarding agricultural production), with ~49% being affected biennially.
- At least 47% of farmers reported being affected by heavy crop losses (across most of their land) caused by flooding, while ~45% had experienced flood damage to at least half of their cultivated area.
- Debt caused by flood damage to farmland was moderate for ~39% of households and heavy for 37%. In addition, less than half (~47%) of the household survey participants received financial aid from the government to cover the costs of agricultural losses caused by flood damages.
- In terms of household responses to the negative impacts of floods on agriculture: i) ~65% of households waited for floodwaters to recede; ii) ~20% stopped growing rice in the wet season, shifting production to the dry season; and iii) ~5% attempted to pump excess floodwater out of their rice paddies.
- Drought negatively impacted the agricultural production of ~44% of respondents, while ~46% stated that droughts were occurring more frequently.
- Approximately 32% of households have been affected by heavy crop losses attributable to droughts, while ~49% reported losing at least half of their crop during previous drought periods.
- Financial debt resulting from droughts was high and moderate in ~22 and 39% of cases, respectively. About 60% of respondents received some form of drought relief aid from the government, with the rest not receiving any form of financial assistance.
- Drought responses amongst survey participants include: i) constructing a farm pond (~19% of participants); and ii) drilling for groundwater (~14% of participants).
- Approximately 61 and 44% of households that participated in the survey worry about the impacts of future floods and droughts, respectively.
- Regarding the impacts of climate change (including temperature rises, increased rainfall and flooding, prolonged drought periods and seasonal shifts), ~86% of respondents indicated being highly or moderately worried about negative effects of future conditions. Only ~3% of households are actively attempting to adapt to changing climatic conditions.
- Approximately 82% of survey participants identified the need for additional support from national and local government, and development agencies for climate change adaptation. The type of support needed by vulnerable households includes: i) assistance in developing adaptation plans and measures (almost 100% of participants); ii) improved access to knowledge and information (~64% of participants); and iii) access to adaptation training and skills development (~30% of participants).

To date, there have been no climate change adaptation initiatives implemented in the Roi-Et province (middle and lower Young River Basin) other than a DWR-MoNRE investment to support the development of a vulnerability and adaptation strategy. This strategy is still in the

early stages of development. Consequently, the adaptive capacity and climate-resilience of the local communities remain limited.

Tram Chim National Park and surrounding communities (Vietnam)

Tram Chim National Park and its surrounding communities are located in the Tam Nong district of Vietnam's Đồng Tháp Province (Figure 15). The district is ~ 46,100 ha in size and is traversed by the Tien River. Communities surrounding the national park (situated in its buffer zone) are comprised of five communes¹²⁵ and one town¹²⁶ (Figure 16). These communities along with Tram Chim National Park cover an area of ~37,830 ha¹²⁷.

First established as a nature reserve in 1994¹²⁸, Tram Chim was officially recognised as a national park in 1998. The park supports one of the last remaining remnants of the 'Plain of Reeds' wetland ecosystem and covers an area of 7,588 ha in Tam Nong district, Dong Thap province in the Mekong Delta region of Vietnam. The park is located in 5 communes (including Phu Duc, Phu Hiep, Phu Thanh B, Phu Tho and Tan Cong Sinh) and Tram Chim town. In 2012, Tram Chim National Park was recognized as the World's 2000th Ramsar site and the 4th Ramsar site in Vietnam.

The park is divided into five management zones, A1, A2, A3, A4, A5 (Figure 16), and Zone C as an administrative area. These zones are traversed by canals with a total of 60 km in length. The Park consists of 2,808 ha of forested land (*Melaleuca cajuputi* stands mainly aging from 10 to 18 years, grown on sand and clay soils), 4,307 ha of grassland and 472 ha of other habitat types. The dominant flora species include *Eleocharis* spp. grass, *Panicum* spp., *Ischaemum* spp, grass, wild rice, and lotus. The site is inundated annually to a depth of 1 to 3 meters during the wet season (peak level occurring sometime between September and November).

The ecosystems of Tram Chim National Park support 231 bird species (resident and migratory), including 15 species that are either endangered, threatened or of special concern¹²⁹. Of these bird species, the park is most well-known for the presence of the Eastern Sarus Crane, the primary reason for Tram Chim's original gazetting as a nature reserve. Even though the number of cranes has declined over the last two decades, the park remains an important site for their conservation. Other than bird species, the park's wetlands and canals provide food, spawning sites and migratory routes for 130 fish species, five of which are globally threatened.

¹²⁵ Phu Thanh B, Phu Tho, Phu Hiep, Phu Duc and Tan Cong Sing.

¹²⁶ Tram Chim town.

¹²⁷ 7,300 ha within the boundaries of the national park and 30,730 ha under the management of communities

¹²⁸ Decision No. 47/TTg, 2 February 1994, Prime Minister of Vietnam.

¹²⁹ Including the Comb Duck (*Sarkidiornis melanotos*), Grass Owl (*Tyto capensis*), Bengal Florican (*Houbaropsis bengalensis*), Eastern Sarus Crane (*Grus antigone sharpii*), Greater Spotted Eagle (*Aquila clanga*) and Oriental Darter (*Anhinga melanogaster*).

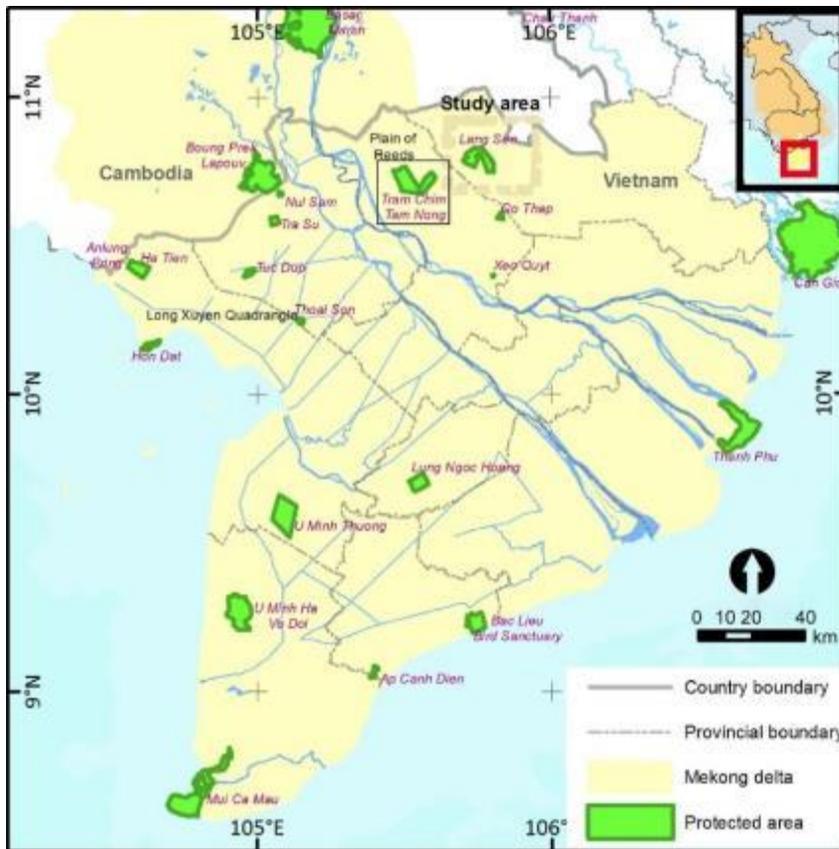


Figure 15: Location of Tram Chim National Park within Vietnam's Mekong Delta Region.

For the communities living around Tram Chim National Park, the protected area's fish are the most valuable and harvested resource (Table 4). Other goods harvested from the ecosystems of the park and its surroundings include terrapins, snakes and birds for meat, trees (*Melaleuca cajuputi*) for fuelwood and aquatic plants (such as lotus and water lily) for food. Wetland plants such as *Panicum repens* and *Eleocharis dulcis* are used as mulch by local vegetable farmers. Another common use of wetland plant species is in the production of handicrafts – an additional livelihood for local communities. Apart from ecosystem goods, the main service provided by local ecosystems is ecotourism, with Tram Chim National Park attracting more than 20,000 visitors per year.

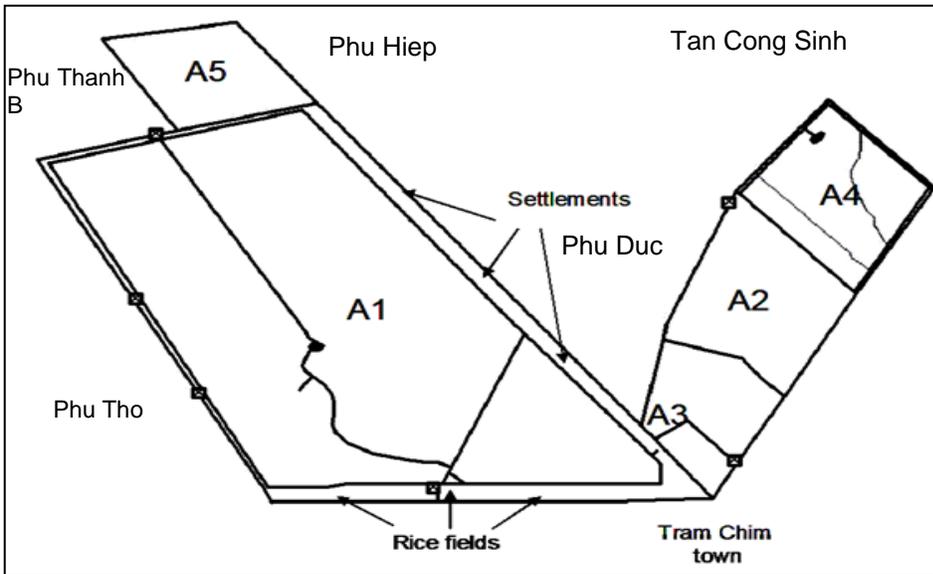


Figure 16: Schematic diagram of Tram Chim National Park and the surrounding communities.

Table 4: Goods and services provided by Tram Chim National Park.

Goods and services to local communities	Goods and services to the Delta
<ul style="list-style-type: none"> • Fish • Fuelwood • Grass/grazing • NTFPs (such as lotus and water lily) • Micro-climate regulation 	<ul style="list-style-type: none"> • Ecotourism • History and culture • Groundwater recharge • Prevention of saline intrusion • Carbon sequestration • Scientific (site study) • Biodiversity conservation

The communities living in the communes and town surrounding the national park are reliant on the local ecosystems for food production and income generation to supplement that from their main livelihood source, agriculture (dominated by rice cultivation)¹³⁰. Approximately 89% (~20,500 ha) of the land surrounding Tram Chim National Park is used for agriculture (dominated by crop production in the form of paddy rice)¹³¹. These areas are expected to expand as the local population grows, resulting in further degradation of natural areas and increased pressure on the ecosystems of Tram Chim National Park for goods and services. This has resulted in an increase in: i) illegal fishing activities where electricity and explosives (opposed to traditional methods) are used to maximise fish catches as fish stocks decrease¹³²; and ii) encroachment onto parkland as the areas outside the park become overpopulated, and natural resource extraction intensifies. To protect the park's ecosystems from illegal resource harvesting and encroachment, low-income families from surrounding communities are allowed to access certain zones of the park from August to December to catch fish and harvest NTFPs¹³³. This practice provides additional livelihood options for the beneficiary families and reduces the extent of illegal resource extraction within Tram Chim National Park.

¹³⁰ More than 80% of household depend on agriculture as their main source of income.

¹³¹ The remaining 11% of land is covered by houses, infrastructure and natural areas.

¹³² These methods often result in additional degradation to fresh water ecosystems and can cause wildfires.

¹³³ These include only approved resources, such as certain grasses, edible plants (e.g. water lily), dead trees and invasive species (including giant sensitive plant and golden snail).

In 2017 there were ~50,000 people living around Tram Chim National Park, ~5,500 more than in 2005. The insufficient capacity of local livelihood options (mainly agriculture) to support this growing population is reflected by ~20% of the local population living below the poverty line¹³⁴. Poverty has been exacerbated by recent increases in the frequency and intensity of drought, and extreme out of season rainfall events, which have reduced agricultural productivity and therefore income for farmers (Table 5).

Table 5: Total population, number of households and poverty rate of communities living around Tram Chim National Park¹³⁵.

Village/commune	Population	Household	Poverty rate (%)	Gender	
				Female	Male
Phu Hiep	10212	2766	23.15	50.1	49.9
Phu Duc	8409	2230	20.68	49.6	50.4
Phu Thanh B	4627	1168	22.72	50.2	49.8
Tan Cong Sinh	6330	1636	26.96	50.3	49.7
Tram Chim	11061	2899	17.55	49.8	50.2
Phu Tho	10946	2738	16.74	50.4	49.6
Total	51585	13437			

To address the effects of reduced food and income generation from farming activities around Tram Chim National Park, various alternative livelihood options have been introduced by initiatives supported by the World Wildlife Fund (WWF). Options include: i) mushroom farming; ii) tree planting (e.g. *Sesbania sesban*; Egyptian riverhemp) for the production of NTFPs; iii) beekeeping; iv) handicraft production from water hyacinth; and v) water lily production. These livelihood options have strengthened the climate-resilience of 160 people living around the park and have helped to alleviate the pressure on the park's natural resources. However, the demand for access to additional livelihood options amongst communities surrounding the park still needs to be met. Until this happens, degradation of the area's natural resources will continue to take place as communities struggle to adapt to a changing climate and the impacts of other existing threats intensify.

Existing threats impacting Tram Chim National Park include: i) the presence of invasive species, such as giant sensitive plant (*Mimosa pigra*) and golden apple snail (*Pomacea canaliculate*), which negatively affect biodiversity and the supply of ecosystem goods and services; and ii) changes in river hydrology and sedimentation caused by upstream development in the GMS, especially hydropower. These threats will continue to be compounded by the impacts of climate changes in the MRB, such as droughts and floods, over the long-term.

An adverse effect of droughts in and around Tram Chim National Park is the frequent occurrence of wildfires because of an increase in dry vegetative biomass. The characteristics of the park's terrain, canals and its division into six zones makes the combating of fires and prevention of illegal burning by community members difficult. Between 2009 and 2013, 24

¹³⁴ Less than US\$ 44 per person per month.

¹³⁵ Tam Nong District. 2017. Statistical Data.

forest fires destroyed 427 ha of vegetation in the park (Figure 17)¹³⁶. Apart from droughts and unpredictable out of season extreme rainfall events, climate change in the region has led to: i) increased temperatures, which have caused a rise in evaporation rates and reduction in the availability of fresh water; and ii) decreased flood peaks, which have negatively affected fish stocks and the distribution of sediment over agricultural land.



Figure 17: Wildfire in Tram Chim National Park (grassland) in 2010.

Climate change predictions

- **Temperature**

A SIMCLIM model was used to project temperature changes in Dong Thap province up to 2100 corresponding to the B1, B2 and A1FI scenarios. The medium temperature in Dong Thap area tends to increase through the years according to different considered scenarios (Table 6). Higher temperatures will be experienced in the northwest and descending to the southeast of Dong Thap province. All scenario results showed the highest temperature increase during the dry months, which will lead to increased water shortages and droughts.

Table 6: Medium, maximum and minimum temperature projections for Dong Thap Province in the short- to long-term under three climate change scenarios¹³⁷.

Scenario	Temperature	2020	2030	2050	2070
B1	Medium	28.0	28.1	28.4	28.5
	Maximum	31.7	31.9	32.3	32.7
	Minimum	24.3	24.5	24.9	25.5
B2	Medium	28.1	28.1	28.5	29.4
	Maximum	31.8	32.0	32.5	33.0
	Minimum	24.4	24.6	25.0	25.5

¹³⁶ Duong Van Ni & Le Anh Tuan, 2015. Review and revision of the existing water management strategy in Tram Chim National Park with a focus on climate change.

¹³⁷ Dong Thap DONRE, 2011. Dong Thap Province Climate Change Action Plan, 2011–2020.

Scenario	Temperature	2020	2030	2050	2070
A1FI	Medium	28.0	28.1	29.4	30.3
	Maximum	31.8	32.1	33.0	34.1
	Minimum	24.3	24.6	25.5	26.6

- Rainfall

The SIMCLIM model was also applied to predict changes in rainfall in Dong Thap province up to year 2100 under B1, B2 and A1FI scenarios. Overall, average rainfall of Dong Thap area is predicted to increase (Table 7). However, this increase is not consistent throughout the year. The seasonal average rainfall in the wet period of July – August and September – November is predicted to increase compared to the base data, with the greatest predicted increase being 20.2% under A1FI scenario (2100). In contrast, the seasonal average rainfall in the dry period of December – February and March – May is predicted to decrease compared to the base data (1990), with the greatest predicted increase being 17.5% under A1FI scenario (2100).

Table 7: Predicted average rainfall in Dong Thap province under different scenarios.

Scenarios	2020	2030	2050	2070
B1	1483.4	1489.7	1503.3	1516.2
B2	1485.3	1492.8	1509.1	1527.0
A1FI	1484.6	1494.7	1527.6	1561.5

- Floods

The results from 3-D hydrodynamic modelling provides a basis for determining changes in the flood regime in the Mekong River delta. The model simulations show an increasing trend in the annual maximum water depth and flooded area during the average and driest water years (Figure 18). This clear trend is not visible in the wettest water years. These changes in flood regimes may have significant impact on both the agriculture and aquaculture¹³⁸.

¹³⁸ Tuan and Suppakorn, 2011. Climate Change in the Mekong River Delta and Key Concerns on Future Climate Threats

Tibetan plateau near the source of the Mekong (Iang Jiang) River, as well as an increase in the occurrence of tropical storms (monsoons) over the middle and lower Mekong River Basin. 3-D hydrodynamic models project increases in annual maximum water depth and flood peaks. This is expected to affect agriculture and aquaculture negatively and shorten the fishing season in the Dong Thap province¹⁴⁶.

- Sea-level rise (SLR) in the South China sea¹⁴⁷ may result in a 30 cm increase in water levels in the rivers and canals of Dong Thap province by 2050¹⁴⁸. This will further compound flooding in the province, negatively affecting livelihoods such as agriculture and aquaculture.

Climate change adaptation

To reduce the vulnerability of communities to the climate change threats described above, a suite of climate change adaptation interventions, including EbA, will be implemented in the Young River Basin in Thailand and in and around Tram Chim National Park in Vietnam

Output 1.1: A suite of climate change adaptation interventions, including EbA, implemented at Young River Basin in Thailand.

People in the Young River Basin in Thailand are vulnerable to climatic changes. This is because of: i) the dependence of a great proportion of the population on agriculture (~50% of which is rain-fed rice production), which is dependent upon reliable rainfall; and ii) their reliance on ecosystem goods and services that are threatened by both changes in climate and ongoing degradation.

As described previously (Part I), climate change is predicted to cause increased temperatures and increasingly variable rainfall in the Young River Basin. These changes are predicted to result in increases in both the intensity and frequency of droughts in summer and floods during the monsoon period. This will negatively affect the ~540,000 people living within the basin.

To reduce the vulnerability of communities living within the Young River Basin to climate change, the proposed project will implement a suite of adaptation interventions, with focus on EbA interventions. These adaptation interventions will be tailored to:

- increase the climate resilience of ongoing agricultural activities to secure food and income for farmers;
- enhance the provision of ecosystem goods and services to provide water, food and alternative sources of income;
- improve water infrastructure and management to reduce the negative impacts of floods and droughts; and
- provide additional, climate-resilient livelihood options to communities (especially women) to diversify income generation.

A vulnerability assessment conducted during the project development phase (see Annex I) identified adaptation interventions that meet the criteria listed above. During the initial phase of project implementation, additional assessments and consultations will be conducted – if

¹⁴⁶ Tuan & Suppakorn, 2011. Climate Change in the Mekong River Delta and Key Concerns on Future Climate Threats.

¹⁴⁷ Known as the East sea in Vietnam.

¹⁴⁸ Dong Thap DONRE, 2011. Dong Thap Province Climate Change Action Plan, 2011–2020.

necessary – to strengthen the information required to develop detailed implementation protocols for each intervention.

The information generated during these assessments – combined with that generated during the proposal development – will be used to develop training material for communities on the selected adaptation interventions. Training events will then be organised with relevant community groups, including women's groups, to teach them how to implement the various adaptation interventions. Indigenous knowledge will be incorporated into training material where relevant.

Activities to be implemented under Output 1.1. will include the following:

1.1.1 Develop detailed implementation protocols for the climate change adaptation interventions, including EbA, to be implemented in the Young River Basin.

Indicative sub-activities:

- *Conduct participatory planning workshops with relevant stakeholder groups (including Young River Basin Committee) to validate the climate change adaptation interventions identified in the vulnerability assessment and develop a detailed plan for the implementation of these interventions.*
- *Prepare Gender Action Plan to ensure that gender issues are integrated while implementing adaptation initiatives.*
- *Identify appropriate climate-resilient plant species for ecosystem restoration interventions.*
- *Identify appropriate climate-resilient crop species (particularly rice varieties) that are suitable to local conditions.*
- *Undertake a market assessment to validate/identify additional livelihood options.*
- *Develop detailed implementation protocols that will guide the on-the-ground implementation of the selected climate change adaptation interventions.*

1.1.2 Train communities in the Young River Basin to implement climate change adaptation interventions according to the implementation protocols developed through Activity 1.1.1.

Indicative sub-activities:

- *Develop a training course and materials for the implementation of climate change adaptation interventions, including EbA, using the information generated through the assessments conducted in Activity 1.1.1.*
- *Deliver training to communities on climate change adaptation interventions and additional climate-resilient livelihood options. The training program will ensure at least 50% women participation.*

1.1.3 Implement climate-resilient agriculture interventions in the selected sites within the Young River Basin.

Climate-resilient agriculture interventions will include:

- *Implement agroforestry in targeted villages through the planting of multi-use climate-resilient tree species to increase water infiltration, reduce erosion and diversify food and income generation.*
- *Introduce drip irrigation technologies on local farmland to increase production during drought periods.*
- *Pilot the use of flood- and drought-resistant crop varieties (particularly rice).*

1.1.4 Implement ecosystem-based adaptation interventions within the Young River Basin to maintain the supply of ecosystem goods and services to surrounding communities.

Ecosystem-based adaptation interventions will include:

- *Restore/stabilise the banks of the Kood Mek waterway (520 m in length) through the planting of multi-use climate-resilient tree species.*
- *Restore/stabilise the right bank of the Huay Ma No canal through the planting of multi-use climate-resilient tree species to increase water flow during the dry season.*
- *Restore 2.24 ha of community forest at the Na Kra Dao Village with multi-use climate-resilient tree species to increase water infiltration and provide NTFPs.*
- *Restore forest in the headwaters of the Young River Basin to increase infiltration and thereby reduce flooding.*
- *Restore riparian vegetation on the banks of the Young River through the planting of multi-use climate-resilient tree and plant species to attenuate flooding and provide NTFPs.*
- *Establish a Youth for Water and Soil Conservation Project, including a seed bank and nursery, to promote locally driven reforestation of the upper Young River Basin.*

1.1.5 Implement interventions to improve water infrastructure and water management to reduce the negative impacts of floods and droughts.

Flood and drought management interventions will include:

- *Construct small-scale living check dams in at least 20 villages to store water during drought periods, increase groundwater recharge and attenuate flash flooding during monsoons.*
- *Rehabilitate weirs¹⁴⁹ in at least 10 selected villages to increase water holding capacity during drought periods.*
- *Extend the water canal (by 2 km) from the Huay Ma No reservoir to five villages to increase water supply during drought periods.*
- *Construct a water canal (800 m in length) connecting the Sai Na Wang and Nong Koog reservoirs to improve water supply to Na Kra Dao village Moo 5 during drought periods.*
- *Restore the left bank (4 km in length) of the Huay Ma No reservoir's water diversion canal to maintain water supply to six local villages and to reduce the intensity of flooding during the monsoon season.*
- *Introduce innovative water harvesting techniques to households to increase water supply for domestic use.*

1.1.6 Establish additional, climate-resilient livelihood options in the communities within the targeted sub-districts in the Young River Basin.

Climate-resilient livelihood interventions will include:

- *Promote mushroom farming to diversify food and income generation under drought and flood conditions.*
- *Promote beekeeping to diversify food and income generation under drought and flood conditions.*
- *Establish multi-use home gardens in selected villages to diversify food and income generation.*
- *Construct farm ponds to store water for drought periods and use for fish farming during the monsoon season.*
- *Strengthen the capacity of local women to process NTFPs into products that can be sold locally to diversify income generation and empower women.*

Output 1.2: A suite of climate change adaptation interventions, including EbA, implemented in

¹⁴⁹ Currently weirs are in disrepair because of a lack of funding for their maintenance. Post-project, maintenance of these weirs will be the responsibility of the Young River Basin Committee in partnership with local communities. Local communities have committed to maintain the weirs even if government funding remains unavailable.

communities living around Tram Chim National Park in Vietnam.

Communities living around Tram Chim National Park are vulnerable to climatic changes. This is because of: i) the dependence of a great proportion of the population (89%) on agriculture (mainly paddy rice), which is dependent upon reliable rainfall; ii) high poverty levels – ~20% of the local population lives below the poverty line¹⁵⁰ – and therefore limited means to cope with extreme climatic events that damage crops or infrastructure; iii) their reliance on ecosystems goods and services that are threatened by both changes in climate and ongoing degradation.

The communities living around Tram Chim National park are dependent on good and services provided by the ecosystem in the park. These goods and services, including NTFPs, fish, grazing and fuelwood, provide communities with additional food sources and livelihood options. More people are becoming reliant on these ecosystem good and services for food and income generation as the impacts of climate change (droughts and floods) reduce the productivity of their primary livelihood source i.e. agriculture. Consequently, it is necessary to maintain the supply of ecosystem goods and services is necessary to strengthen the climate resilience of communities surrounding Tram Chim National Park.

As described previously, climate change is predicted to cause an increase in temperature and increasingly erratic rainfall at Tram Chim National Park. These climate change effects will lead to an increase in drought and flood events. This will negatively affect the ~50,000 people living around the national park.

To reduce the vulnerability of the communities living around Tram Chim National Park to climate change, the proposed project will implement a suite of adaptation interventions with focus on EbA interventions. These adaptation interventions will be tailored to:

- increase the climate resilience of ongoing agricultural activities to secure food and income for farmers;
- enhance the provision of ecosystem goods and services from Tram Chim National Park to provide water, food and alternative sources of income;
- improve water infrastructure and management to reduce the negative impacts of floods and droughts; and
- provide additional, climate-resilient livelihood options to communities (especially women) to diversify income generation.

A vulnerability assessment conducted during the project development phase (see Annex I) identified adaptation interventions that meet the criteria listed above. During the initial phase of project implementation, additional assessments and consultations will be conducted – if necessary – to strengthen the information required to develop detailed implementation protocols for each intervention.

The information generated during these assessments – combined with that generated during the proposal development – will be used to develop training material for communities on the selected adaptation interventions. Training events will then be organised with relevant community groups, including women’s groups, to teach them how to implement the various adaptation interventions.

Activities to be implemented under Output 1.2. will include the following:

¹⁵⁰ Less than US\$ 44 per person per month.

1.2.1 Develop detailed implementation protocols for the climate change adaptation interventions, including EbA, to be implemented in the communities living around Tram Chim National Park.

Sub-activities will include:

- *Conduct participatory planning workshops with relevant stakeholder groups (including Tram Chim National Park management and commune authorities) to validate the climate change adaptation interventions identified in the vulnerability assessment and develop a detailed plan for the implementation of these interventions.*
- *Prepare Gender Action Plan to ensure that gender issues are integrated while implementing adaptation initiatives.*
- *Identify appropriate climate-resilient plant species for ecosystem restoration interventions.*
- *Identify appropriate climate-resilient crop species (particularly rice varieties) that are suitable to local conditions.*
- *Develop detailed implementation protocols that will guide the on-the-ground implementation of the selected climate change adaptation interventions.*

1.2.2 Train communities living around Tram Chim National Park to implement climate change adaptation interventions according to the implementation protocols developed through Activity 1.1.1.

Sub-activities will include:

- *Develop a training course and materials for the implementation of climate change adaptation interventions, including EbA, using the information generated through the assessments conducted in Activity 1.1.1.*
- *Deliver training to communities living around Tram Chim National Park on climate change adaptation interventions and additional climate-resilient livelihood options. The training program will ensure at least 50% women participation.*

1.2.3 Implement climate-resilient agriculture interventions in the communities living around Tram Chim National Park.

Climate-resilient agriculture interventions will include:

- *Introduce climate-smart agricultural techniques, including agroforestry to diversify agricultural production.*
- *Pilot the use of climate-resistant crop varieties (particularly rice).*
- *Introduce alternative, climate-resilient agricultural practices in target communities, including aquaculture.*
- *Establish multi-use home gardens – to which biomass from the wetlands can be applied as mulch – to diversify food and income generation under drought and flood conditions.*
- *Design and implement an integrated crop pest and disease management plan in the communities surrounding Tram Chim National Park. This plan would focus on strengthening the resilience of local farmers to the effects of crop pests and disease that are expected to increase under conditions of climate change.*

1.2.4 Implement ecosystem-based adaptation interventions within Tram Chim National Park (Figure 19) to maintain the supply of ecosystem goods and services to surrounding vulnerable communities.

The ecosystem-based adaptation interventions will be aligned with management plan of Tram Chim National Park to improve the ecosystem good and services that the climate vulnerable communities depend upon. Ecosystem-based adaptation interventions will include:

- *Restore 200 ha of Melaleuca cajuputi forest – in zones A4 and A5 of the national park –to provide a sustainable supply of fuelwood to surrounding communities.*

- Restore 500 ha of *Eleocharis ochrostachys* grassland – in zones A1, A4 and A5 of the national park – to improve water filtration (and therefore water quality) and enhance ecotourism (by providing additional habitat for Sarus Crane).
- Restore 225 ha of grassland (70 ha of *Eleocharis dulcis* in A1; 70 ha of *Leersia hercandra* A2; 20 ha of *Xyris indica* in A2; 50 ha of *Eleocharis dulcis* in A4 and 5 ha of *Utricularia punctata* in A5) to improve water filtration (and therefore water quality)
- Establish a water quality monitoring system within Tram Chim National Park to regulate the supply of clean drinking water to surrounding communities.

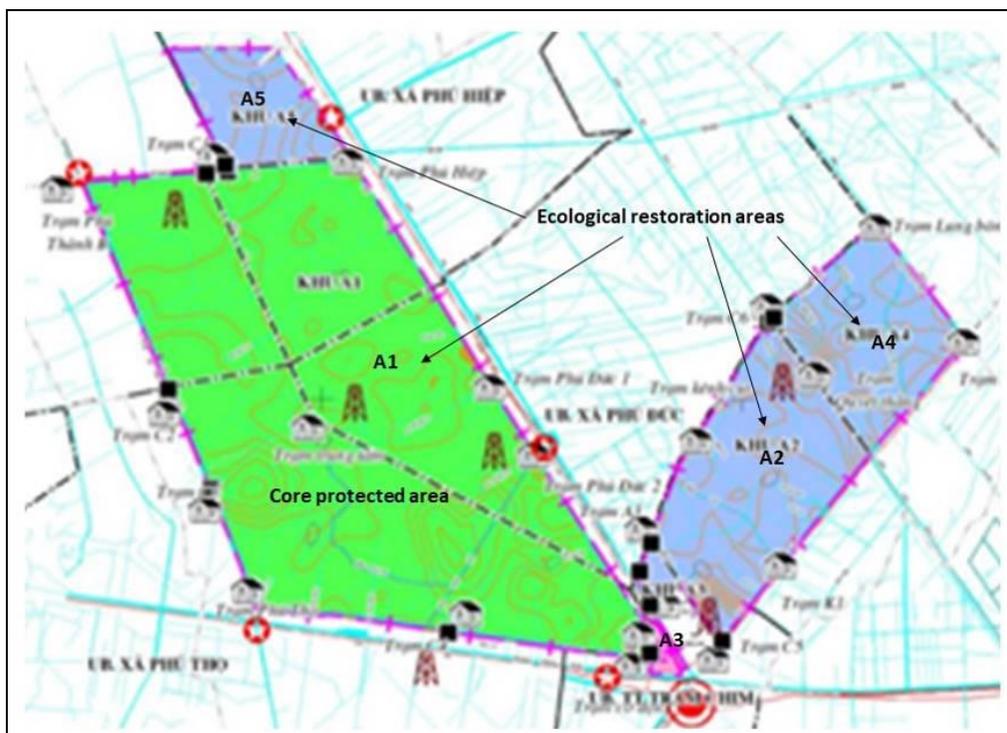


Figure 19: Schematic representation of Tram Chim National Park indicating EbA restoration activities will be implemented.

1.2.5 Implement interventions to improve water infrastructure and water management to reduce the negative impacts of floods and droughts.

Flood and drought management interventions will include:

- Construct living check dams in the six villages surrounding Tram Chim National Park to store water during drought periods, increase groundwater recharge and attenuate flash flooding during monsoons.
- Construct water-spreading weirs (as an extension of living check dams) to strengthen the distribution of water during drought periods and attenuate flooding.
- Restore/stabilise the banks of rivers and canals surrounding Tram Chim National Park through the planting of multi-use climate-resilient tree species.
- Improve the connectivity of Phu Hiep and Phu Hiep-Phu Duc canals through the construction of linking channels to enhance the drainage of water during flood events and the distribution/availability of water during droughts.
- Improve the connectivity of Phu Thanh 1,2,3 and Phu Thanh B-Phu Hiep canals through the construction of linking channels to enhance the drainage of water during flood events and the distribution/availability of water during droughts.
- Introduce innovative water harvesting techniques to households to increase water supply for

domestic use.

1.2.6 Establish additional, climate-resilient livelihood options in the communities living around Tram Chim National Park.

Climate-resilient livelihood interventions will include:

- *Promote mushroom farming to diversify food and income generation under drought and flood conditions.*
- *Promote beekeeping to diversify food and income generation under drought and flood conditions.*
- *Establish natural resource user groups among the communities surrounding Tram Chim National Park with clear mandates and responsibilities¹⁵¹. These may include fishing, beekeeping, handicraft, ecotourism and forestry groups.*
- *Establish natural resource handicraft groups (with at least 50% female representation) to advance this additional livelihood activity under climate change conditions. The responsibilities of the group will include: i) promoting the use of alien invasive plant species (including *Mimosa pigra* and *Pomacea canaliculate*) in the production of handicrafts; ii) identifying new handicrafts; and iii) training community members (with a majority – greater than 50% – female representation) to produce handicrafts.*
- *Promote ecotourism-related business development in communities surrounding Tram Chim National Park.*

Output 1.3: Monitoring programme established to collect information on the cost-effectiveness of project interventions in different socio-ecological contexts in the GMS.

Comprehensive monitoring programmes will be designed and executed at each demonstration site to collect information on the cost-effectiveness of concrete adaptation interventions implemented through the project. These monitoring programmes will be designed and implemented with local research institutions and will collect information on: i) socio-economic impacts of the adaptation interventions; ii) ecological impacts of the adaptation interventions, including impacts on ecosystem goods and services; and iii) benefits of the adaptation interventions to women and other vulnerable groups. The Chinese Ecosystem Research Network (CERN)¹⁵² will provide guidance during the design of monitoring programmes.

The information generated through the monitoring programmes will be used for the knowledge sharing and dialogue with other countries in the GMS on flood and drought management through regional activities in Components 2 and 3. Furthermore, this information will be used to expand the regional knowledge base on climate change adaptation in the GMS. Specifically, the accumulated information will contribute to the development of adaptation plans and policy briefs in Outcome 2. Additionally, the programmes will serve as an example of how to integrate M&E plans into adaptation projects and generate transferable knowledge and lessons learned (Output 2.4).

Activities to be implemented under Output 1.3. will include the following:

1.3.1 Design a monitoring and evaluation (M&E) plan – under the guidance of CERN – for

¹⁵¹ Mandates and responsibilities may include the development of: i) regulations governing the use of natural resources within and outside of Tram Chim National Park; ii) protocols to ensure the sustainable management and harvesting of natural resources; and iii) guidelines on the monitoring on natural resources.

¹⁵² CERN is an ecosystem research network with field stations throughout China covering the fields of agriculture, forest, grassland, lake and marine ecosystems.

each demonstration site that is context-specific but also allows for comparison among sites.

- 1.3.2 Implement the M&E plans to monitor the results, and collect information on the cost-effectiveness, of concrete adaptation technologies in different socio-ecological contexts. This information will be used to inform a cost-effectiveness analysis under Output 2.1.

Output 1.4: National level knowledge-sharing strategy implemented in Thailand and Vietnam.

National-level knowledge-sharing strategies will be designed and executed in Thailand and Vietnam to share the best practices and lessons learned from project interventions between project beneficiaries and surrounding communities. Strategies may include: i) exchange visits; ii) awareness-raising at temples and schools; and iii) awareness-raising using media such as posters, radio and television. This knowledge sharing will contribute to the autonomous upscaling and replication of project interventions beyond demonstration sites, thereby enhancing the climate resilience of non-beneficiary communities. The target group of the knowledge products are the local communities and will be developed in the local language. The products will be widely distributed among the relevant stakeholders.

Activities to be implemented under Output 1.4. will include the following:

- 1.4.1 Design knowledge-sharing strategies in Thailand and Vietnam that are locally appropriate and enhance the local transfer of applicable adaptation knowledge.
- 1.4.2 Implement the knowledge-sharing strategies in communities surrounding the project demonstration sites in Thailand and Vietnam.

Component 2: Regional knowledge base on climate change adaptation expanded in the GMS.

There are several policies, plans, strategies and frameworks that provide theoretical information on climate change adaptation in the GMS (see Part II:E). The *Mekong Adaptation Strategy and Action Plan* (MASAP) developed by the MRC for the region of the GMS covering Cambodia, Lao PDR, Thailand and Vietnam is the most recent example. However, these documents provide limited information on effective concrete adaptation interventions – particularly EbA – and how they should be implemented to build climate resilience across the region. Where knowledge about on-the-ground implementation does exist, it is generally project-specific and shared mainly within the implementing country. There are also no standardised methods for collecting lessons learned and best practice from projects implementing adaptation interventions, which limits the potential to compare the effectiveness of these interventions in different socio-economic and environmental contexts.

This deficiency of adaptation information, as well as inadequate knowledge sharing among GMS countries, impedes regional cooperation on transboundary water and river basin management and limits adaptation to shared climate change impacts.

Component 2 of the proposed project will expand the regional knowledge base on concrete adaptation solutions in the GMS. This component will be executed by UNEP-IEMP in Beijing, hosted by the Institute of Geographic Sciences and Natural Resources Research (IGSNRR) under the Chinese Academy of Sciences (CAS). Coordinating the knowledge generation and sharing component from Beijing will provide a strategic advantage to facilitate the South-South exchange of knowledge between CAS and other GMS countries, particularly lessons learned from CERN. UNEP-IEMP will execute the regional component in close collaboration with regional bodies and research institutions such as LMC, MRC, CERN etc.

Outcome 2: Enhanced knowledge and awareness of adaptation measures, including EbA, to shared climate change impacts in different ecosystems to promote regional cooperation, planning and implementation of adaptation in the GMS.

Climate change adaptation knowledge products will be prepared and transferred within and among GMS countries. They will focus on the implementation of concrete adaptation interventions that are effective in building resilience to climate impacts such as floods and droughts across various socio-ecological contexts. The knowledge products generated by the proposed project will be shared via existing knowledge platforms and forums across the GMS, as well as through regional knowledge-sharing events. The relevant knowledge products will be translated into local languages and shared with local stakeholders of the GMS countries.

Output 2.1: GMS-specific cost-effectiveness analysis undertaken on climate change adaptation interventions that reduce the impact of floods and droughts.

An analysis will be performed to determine the environmental and socioeconomic cost-effectiveness of climate change adaptation interventions – especially EbA – that reduce the impacts of floods and droughts in the GMS. The relative impact of different climate change adaptation interventions on women – and other marginalised and vulnerable groups – will be assessed as part of the socio-economic element of the cost-effectiveness analysis. The analysis will be conducted using several sources of information. Firstly, data and information generated through the monitoring programmes at the project demonstration sites (Output 1.3) will be used to provide examples of comparable on-the-ground adaptation interventions in different socio-ecological contexts across the GMS. Secondly, a comprehensive literature review of concrete adaptation interventions implemented through other projects in the GMS will be undertaken. Lastly, consultations and interviews with stakeholders involved in past and/or ongoing adaptation projects in the GMS will be conducted to gather first-hand knowledge on the cost-effectiveness of various adaptation measures. The results of the cost-effectiveness analysis will be shared among all countries in the GMS (Output 2.3) to inform best practice adaptation interventions to the shared climate change impacts of floods and droughts.

Activities to be implemented under Output 2.1 will include the following:

- 2.1.1 Collate information on cost-effectiveness generated through the monitoring programmes at each project demonstration site (Output 1.3).
- 2.1.2 Undertake a comprehensive literature review on the cost-effectiveness of different climate change adaptation interventions in the GMS.
- 2.1.3 Conduct interviews and consultations with stakeholders involved in climate change adaptation projects in the GMS on the cost-effectiveness of different climate change adaptation interventions.
- 2.1.4 Develop a cost-effectiveness analysis of climate change adaptations interventions that reduce the impacts of floods and droughts.

Output 2.2: Policy briefs – and paper for the Lancang-Mekong Cooperation Outlook Report series – developed on: i) good practice in managing shared climate change impacts in the GMS; ii) integrating climate change adaptation into transboundary water management; and iii) cost-effectiveness of EbA for reducing vulnerability to climate change.

Countries in the GMS are at various stages of developing and revising national climate change adaptation plans and transboundary water and river basin management strategies. Additionally, regional bodies (Mekong River Commission and Lancang-Mekong Cooperation (LMC) mechanism) are in the process of developing cooperative adaptation plans across the GMS. To

strengthen national and regional coordination during the development and revision of these plans and strategies, policy briefs will be developed to communicate the: i) shared climate issues in the GMS; ii) national and regional policy options to overcome these issues; and iii) recommended best policy options. The briefs will be generated using: i) knowledge and lessons learned from the demonstration sites of the proposed project; ii) collated information from other projects, programmes and strategies in the GMS; and iii) the results of the cost-effectiveness analysis (Output 2.1). The policy briefs will be shared with relevant stakeholders across the GMS (Output 2.3).

In addition to policy briefs, a paper on climate change adaptation strategies for the GMS – with a focus on EbA – will be developed for inclusion in the Lancang-Mekong Environmental Cooperation Centre Environmental Outlook Report series.

Under the umbrella LMC mechanism, the Lancang-Mekong Environmental Cooperation Centre (LMEC) was established in 2017 to, amongst other functions, provide a platform for environmental policy development and dialogue between member countries (see Part II: G for further information). Included in its strategy to promote policy dialogue is the production of an Environmental Outlook Report series every four or five years that will share information relating to its eight priority areas, one of which is climate change adaptation and mitigation. The proposed project will develop a paper on climate change adaptation strategies for the GMS for inclusion in this series. The paper produced will make use of information generated through the project demonstration sites (Output 1.3), as well as knowledge products (Outputs 2.1, 2.3, 2.4 and 3.1) that include information from other relevant projects. International experts will develop the paper with input from specialists within UNEP-IEMP and scientists within LMEC.

Activities to be implemented under Output 2.2 will include the following:

- 2.2.1. Identify policy barriers to climate change adaptation, upscaling and mainstreaming in the GMS, with a focus on policies relating to transboundary water and river basin management.
- 2.2.2. Develop one policy brief on good practice in managing shared climate change impacts (drought and floods) in the GMS.
- 2.2.3. Develop one policy brief on integrating climate change adaptation into transboundary water management.
- 2.2.4. Develop one policy brief on the cost-effectiveness of EbA for reducing vulnerability to climate change in the GMS.
- 2.2.5. Develop an original paper for LMEC Environmental Outlook Report series on climate change adaptation in the GMS with special reference to: i) concrete adaptation strategies – including EbA – for shared climate impacts like droughts and floods; ii) integrating climate change adaptation into transboundary water and river basin management; and iii) regional coordination on adapting to climate change.

Output 2.3: Knowledge on EbA that has been generated and collated through the project shared on the main regional knowledge platforms, presented at regional adaptation forums and shared through different media.

The knowledge generated and collated through this project will be shared extensively using existing online platforms as well as regional and international forums. There are several existing online platforms for knowledge sharing identified during stakeholder consultations for the

proposed project. These include the ADB GMS CEP data portal¹⁵³, the MRC data portal¹⁵⁴ and EbA South portal¹⁵⁵. The knowledge products generated through the proposed project – as well as other relevant information collected during the generation of these knowledge products¹⁵⁶ – will be shared on these existing platforms. Additionally, the products will be shared on the Lancang-Mekong Information Sharing Platforms that are currently under development. The knowledge products will be widely shared in various media both at national, regional and international level.

The knowledge products generated through the proposed project (Outputs 2.1, 2.3, 2.4 and 3.1) will also be presented at regional adaptation forums, such as the: i) CGIAR-WLE Greater Mekong Forum¹⁵⁷; and ii) Asia Pacific Adaptation Network. Sharing the knowledge generated, best practices and lesson learnt at these regional platforms and forums will increase the outreach in the participating countries as well as the other four GMS countries. This GMS-wide knowledge sharing approach will help achieve coordination on climate change adaptation at a regional level.

A regional knowledge coordinator based at UNEP-IEMP will be responsible for the implementation of this Output.

Activities to be implemented under Output 2.3 will include the following:

- 2.3.1. Share knowledge products generated and collected by the proposed project on at least three regional online knowledge platforms.
- 2.3.2. Present cost-effectiveness analysis (Output 2.1), policy briefs (Output 2.2), and M&E guidelines (Output 2.4) at three regional forums.

Output 2.4: Guidelines for the design and implementation of EbA monitoring and evaluation systems developed, including simplified methods for collecting comparable information in different socio-ecological contexts.

M&E activities form an essential part of project implementation strategies. Effective M&E systems can allow project practitioners to assess the progress of a project and identify potential barriers preventing the achievement of project objectives. In doing so, M&E can support adaptive management. Additionally, M&E can help generate best practices and lessons learned that might apply to other adaptation projects. The effectiveness of M&E systems for inter-project knowledge-sharing is, however, undermined if the systems are too complicated, too project-specific and/or are designed without a focus on generating broadly-relevant data and information.

The proposed project will involve the development of guidelines for the design and implementation of M&E systems for climate change adaptation (including EbA) projects across the GMS. Methods to monitor the impact of climate change adaptation interventions on women and other vulnerable groups will be included. The guidelines on cost-effective, comparable and simplified M&E systems will be developed using the lesson learned through implementing the M&E plans developed in Output 1.3. Additionally, M&E plans of other adaptation projects will be

¹⁵³ <http://portal.gms-eoc.org/>

¹⁵⁴ <http://portal.mrcmekong.org/index>

¹⁵⁵ <http://www.ebasouth.org>

¹⁵⁶ For instance, knowledge products such as the Adaptation, Livelihoods and Ecosystems planning tool (ALivE) generated through the EbA South project will also be shared by the proposed project.

¹⁵⁷ <https://wle-mekong.cgiar.org/>

reviewed to identify design features that encourage the generation of knowledge applicable to different socio-ecological contexts across a transboundary and shared natural resource like the Mekong River.

The development of these M&E guidelines is in line with specific actions identified in the draft Lancang-Mekong Environmental Cooperation Strategic Framework, specifically ‘to promote the formulation of good practice guidelines for climate change and disaster prevention’. LMEC will, therefore, review and contribute to the development of M&E guidelines. The collection of comparable data from a range of projects using the methods stipulated in the guidelines will allow for the generation of best practice adaptation interventions to shared climate change impacts in different ecosystems, which will promote regional cooperation, planning and implementation of adaptation in the GMS.

Activities to be implemented under Output 2.4 will include the following:

- 2.4.1 Collate and evaluate lessons learned from the implementation of M&E plans at each project demonstration site.
- 2.4.2 Review M&E plans from other adaptation projects to identify design features that encourage cost-effective, simplified and comparable M&E systems.
- 2.4.3 Develop guidelines for the design and implementation of M&E systems for climate change adaptation (including EbA) projects in the GMS.

Output 2.5: Regional training events on ecosystem-based adaptation conducted with technical government staff from all GMS countries.

Regional training events on ecosystem-based adaptation will be organised for technical government staff from all the GMS countries, namely Cambodia, China, Lao PDR, Myanmar, Thailand and Vietnam. These training events will take place in China to promote the exchange of knowledge between CAS and other GMS countries, particularly lessons learned from the Chinese Ecosystem Research Network (CERN). The training events will focus on the implementation of EbA, capacitating government officials to transition regional adaptation plans and strategies into concrete, on-the-ground actions.

The training will be developed taking into account lessons learned through the implementation of climate change interventions in Thailand (Output 1.1) and Vietnam (Output 1.2). It will also incorporate the findings of the cost-effectiveness analysis (Output 2.1) and M&E guidelines (Output 2.5). A module on conducting gender analyses and incorporating gender considerations into the design of climate change adaptation interventions will also be presented.

Activities to be implemented under Output 2.5 will include the following:

- 2.5.1 Develop and/or update training material on best-practice ecosystem-based adaptation interventions in the GMS.
- 2.5.2 Host three regional training events on ecosystem-based adaptation for technical government staff from all GMS countries.

Component 3: Political cooperation on climate change adaptation.

This component will focus on strengthening regional cooperation on climate change adaptation by sharing knowledge on the implementation of climate change adaptation interventions in response to climate change risks common to all the GMS countries. This will promote the harmonisation of regional and national policies and plans through the inclusion of similar, best-practice climate change adaptation interventions.

Component 3 will be executed by UNEP-IEMP, which is based in Beijing. This will encourage regular engagement with the Lancang-Mekong Cooperation (LMC) mechanism, also hosted in Beijing. The LMC mechanism is an emerging instrument working across all six countries of the GMS on topics that include transboundary water management and climate change adaptation. The LMC mechanism is, therefore, well positioned for fostering coordination on adapting to shared climate impacts relating to transboundary water resources across all six countries of the GMS.

Outcome 3: Strengthened regional cooperation on climate change adaptation, particularly in response to floods and droughts, in the GMS.

Regional cooperation on climate change adaptation in the GMS will be strengthened through several knowledge-sharing and relationship-building activities at national and regional levels. Activities under this outcome will encourage a coordinated policy-driven approach to adapting to floods and droughts in the GMS, with a focus on scaling up EbA into transboundary water and river basin management in the region. To strengthen the alignment of policies and cooperation at the desired regional scale, activities under Outcome 3 will use existing national and regional institutions, committees and mechanisms as conduits for sharing the knowledge with, and building relationships between, relevant high-level stakeholders across the GMS.

Output 3.1: Recommendations for regional cooperation on the scaling up of climate change adaptation interventions through policy alignment – based on the results of the project – developed and presented at: i) Lancang-Mekong policy dialogues; ii) MRC regional stakeholder forums; iii) Thailand NAP stakeholder forum; and iv) Vietnam National Climate Change Strategy stakeholder forum.

Planning and policy development for climate change adaptation takes place at both the regional and national level within the GMS. At the regional level, the Lancang-Mekong Environmental Cooperation Centre under the LMC mechanism is developing the *Lancang-Mekong Environmental Cooperation Strategic Framework*, which will include cooperation on climate change adaptation. In addition, the centre plans to lead policy dialogues on regionally relevant topics, including climate change adaptation. Also, at the regional level, the Mekong River Commission (MRC) is finalising the *Mekong Adaptation Strategy and Action Plan (MASAP)* for the portion of the GMS covering Cambodia, Lao PDR, Thailand, and Vietnam. At a national level, most GMS countries have existing climate change adaptation plans and strategies¹⁵⁸ and/or are in the process of developing National Adaptation Plans (NAPs)¹⁵⁹.

Under Output 3.1, recommendations for strengthening regional cooperation – with a focus on policy-making and alignment – and the scaling up of climate change adaptation interventions into these regional and national planning processes will be developed and compiled into a summary report. These will be based on the experience gained from the proposed project, as well as lessons learned from other adaptation and transboundary resource management projects in the GMS¹⁶⁰ and elsewhere¹⁶¹. The recommendations on regional cooperation will be shared with stakeholders at the primary national and regional climate change adaptation policy

¹⁵⁸ For example, Vietnam has a National Climate Change Strategy and Mekong Delta Master Plan.

¹⁵⁹ The final draft of Thailand's NAP is expected to be finalised and published in 2018 once the public consultation process has been completed.

¹⁶⁰ For example, ADB GMS CEP works on the management of terrestrial transboundary natural resource areas.

¹⁶¹ For example, GIZ is implementing a transboundary water management project in southern Africa.

dialogues and forums across the GMS. The targeted stakeholders will include representatives from the countries involved directly in the proposed project, as well as from China, Cambodia, Lao PDR and Myanmar.

Activities to be implemented under Output 3.1. will include the following:

- 3.1.1. Develop recommendations for strengthening regional cooperation on implementing climate change adaptation interventions – with a focus on policy-making and alignment – using information generated through: i) the proposed project; and ii) a review of past and ongoing projects on regional climate change adaptation and transboundary water and river basin water management within and beyond the GMS.
- 3.1.2. Present the set of recommendations at primary national and regional climate change adaptation policy dialogues and forums, including: i) Lancang-Mekong policy dialogues; ii) the MRC regional stakeholder forum; iii) the Thailand NAP stakeholder forum; and iv) the Vietnam National Climate Change Strategy stakeholder forum.

Output 3.2: Regional cooperation and relationship building on climate change adaptation promoted through exchange of information, knowledge and site visits for practitioners, policy-makers and planners.

Representatives from each project country will conduct intra- and inter-country exchange visits to project demonstration sites. Participants may include representatives of: i) national government institutions (especially those involved in policy-making processes) of participating countries, as well as other GMS countries; ii) country offices of regional institutions like the LMC, MRC and Asian Development Bank (ADB); iii) national project teams; and iv) national research institutions such as CERN. The exchange visits will encourage regional cooperation and coordination related to climate change adaptation policy-making and implementation processes. These visits will also highlight the importance of transboundary resources and shared climate impacts in the GMS. In doing so, the exchange visits will encourage relationship-building between high-level stakeholders from different countries in the GMS and, therefore, contribute to regional cooperation on climate change adaptation at the policy level.

Media products will be developed to capture and share the knowledge gained. These media products could include short documentaries, social media pieces and popular science articles. These media products will then be disseminated via online platforms to share the results and lessons learned through the proposed project with a wider audience.

Activities to be implemented under Output 3.2. will include the following:

- 3.2.1 Organise and conduct five exchange visits, interaction program, regional workshop etc. to facilitate regional cooperation. Exchange visits should involve *inter alia*: i) site visits; ii) formal and informal community consultations; iii) knowledge-sharing events; iv) presentations by local project teams; and v) policy discussions between high-level participants from the participating GMS countries.
- 3.2.2 Generate reports which will include information and feedback on each of the exchange visits.
- 3.2.3 Produce media products, such as short documentaries, social media products and articles, that capture knowledge and information generated by this project.
- 3.2.4 Disseminate media products at national, regional and international level detailing climate change adaptation interventions implemented and lessons learned.

B. Innovativeness

Describe how the project /programme would promote new and innovative solutions to climate

change adaptation, such as new approaches, technologies and mechanisms.

The design of the proposed project incorporates innovative solutions which are centred around the concrete implementation of climate change adaptation interventions in the GMS. These interventions focus on drought and flood management, and the regional dissemination of the resulting knowledge and lessons learned for transboundary river basin and water management. Implementation of adaptation interventions, most notably EbA, is currently limited within the sub-region. Under the proposed project, adaptation interventions will be implemented in vulnerable communities located in and around several different ecosystems (including rivers, forests and wetlands) in the Mekong River Basin (MRB). Intervention sites will be situated in: i) the upper (Sai Na Wang sub-district, Kalasin province) and lower (Sriwilai sub-district, Roi-Et province) Young River Basin in Thailand; and ii) community land surrounding Tram Chim National Park (Tam Nong district, Đồng Tháp province) in Vietnam. Coordinating the regional activities of the proposed project through UNEP-IEMP – based in Beijing – will promote the exchange of innovative adaptation interventions (including EbA) from the CAS to other GMS countries and enable mainstreaming of project results into the LMC, a newly established political cooperation process led by China. Knowledge exchange, intercountry dialogue and political cooperation will increase the possibility of coordinated responses to climate change between upper, middle and lower (MRB) countries. For decades, the effective cooperation related to the management of transboundary resources – such as water – in the region has been limited to middle and lower Mekong countries (Cambodia, Lao PDR, Thailand and Vietnam) through institutions such as the Mekong River Commission (MRC). Cooperation will be strengthened between upper (China), and middle and lower GMS countries through the involvement and input of Chinese institutions (such as the Chinese Academy of Sciences; CAS) in the proposed project. As a result, engagement between all MRB countries will be facilitated, strengthening regional cooperation on climate change adaptation and promoting knowledge exchange. The project will be among the first collaborative initiatives that connect Chinese institutions with regional and international partners in the GMS through the parallel implementation of adaptation interventions (including EbA), the exchange of knowledge and policy development. Consequently, South-South cooperation, a relatively new concept involving EbA, will be promoted in the sub-region.

Under Outcome 1 of the proposed project, the implementation of the climate change adaptation interventions (with a focus on EbA) will be carried out in the middle – Young River Basin, Thailand; Output 1.1 – and lower – communities surrounding Tram Chim National Park, Vietnam; Output 1.2 – MRB. Although situated in different parts of the MRB, adaptation interventions will be aligned through the purpose of enhancing management to climate change-related threats common to the region, droughts and floods. The project's interventions will be designed according to the specific socio-ecological contexts of the demonstration sites. Furthermore, adaptation interventions will be based on local knowledge and technologies available at each of the demonstration sites. The lessons learned and knowledge gained from these adaptation measures (including EbA) can then be used to advise drought and flood management in communities from similar socio-ecological contexts throughout the GMS.

During the proposed project's implementation period, an innovative monitoring programme (including an M&E plan) will be established under Output 1.3 – in collaboration with local research institutions and informed by CERN. This monitoring programme will be used to collect information on the cost-effectiveness and monitor the results of the project's adaptation interventions across various socio-economic contexts in the GMS. The resulting information will be used to conduct a cost-effectiveness analysis of climate change adaptation interventions – especially EbA – that reduce the impacts of droughts and floods (Output 2.1). The relative impact of different climate change adaptation interventions on women – and other marginalised

and vulnerable groups – will be assessed as part of the socio-economic element of the cost-effectiveness analysis. Results of the cost-effectiveness analysis will inform the development of a policy brief for reducing vulnerability to climate change in the GMS (Output 2.2). This policy brief will be used to strengthen regional coordination during the development and revision of climate change adaptation plans and transboundary water management strategies in the GMS.

The information collected through the project's monitoring programme (Output 1.3) will also be used to develop guidelines which can advise the design and implementation of M&E systems for EbA (Output 2.4). These M&E systems will be designed to simplify the collection of comparable information under different socio-ecological contexts during future adaptation projects in the sub-region. The collection of such information will allow for the generation of best practice adaptation interventions to shared climate change impacts in different ecosystems, which will promote regional cooperation, planning and implementation of adaptation in the GMS.

Under Output 1.4 of the proposed project, novel national-level knowledge-sharing strategies will be developed and implemented in Thailand and Vietnam. These strategies (including inter alia exchange visits and awareness raising via media) will ensure the transfer of best practices and lessons learned from project adaptation measures between beneficiary and neighbouring communities. Consequently, the autonomous upscaling and replication of measures beyond demonstration sites will be promoted, which will strengthen the climate-resilience and adaptive capacity of non-target communities.

Output 2.3 includes the sharing of EbA knowledge – a relatively new concept in the region – and lessons learned generated during the project on pre-existing regional knowledge platforms¹⁶² and presented at regional adaptation forums¹⁶³. By sharing EbA knowledge on regional platforms and forums, the proposed project would benefit not only the selected GMS countries but also those that were not directly involved with the project. This would, in turn, promote coordination and cooperation on climate change adaptation and transboundary water and river basin management across the GMS.

Under Output 2.5, regional training events focusing on EbA will be organised for technical government staff of GMS countries. Training events will equip attendees with the knowledge and skills necessary to transition regional adaptation plans and strategies into concrete, on-the-ground interventions. By strategically hosting these training events in Beijing, the sharing of EbA knowledge¹⁶⁴ between Chinese institutions (such as CAS) and other GMS countries will be facilitated.

Approaches to strengthening transboundary cooperation on climate change adaptation are outlined by Outputs 3.1 and 3.2. Under Output 3.1, recommendations for the regional implementation of adaptation measures – particularly EbA – focusing on transboundary water and river basin management will be developed. Recommendations will then be shared with stakeholders from across the GMS at national and regional adaptation dialogues and forums – such as the Thailand NAP stakeholder forum and Lancang-Mekong policy dialogues. Utilising emerging national and regional climate change adaptation planning mechanisms to mainstream EbA represents an innovative aspect of the proposed project.

¹⁶² Including the ADB GMS CEP data portal, MRC data portal and EbA South portal.

¹⁶³ Such as the CGIAR-WLE Greater Mekong Forum and Asia Pacific Adaptation Network.

¹⁶⁴ Most notably lessons learned from CERN.

The regional exchange of knowledge generated by the proposed project will also be carried out under Output 3.2. This Output includes intra- and inter-country exchange visits by stakeholders from the GMS countries to project demonstration sites in Thailand and Vietnam. The exchange visits will promote the exchange of innovative ideas, knowledge and skills between participants from different socio-ecological contexts. Furthermore, the visits will emphasise the importance of collaborative transboundary resource management and adaptation to shared climate impacts in the GMS. In doing so, these visits will encourage relationship-building between high-level stakeholders from different countries in the GMS and, therefore, contribute to regional cooperation on climate change adaptation. Media products will be developed to capture and share the knowledge gained during the exchange visits. Additionally, they will advocate South-South cooperation, fostering further relationships within the GMS.

C. Economic, social and environmental benefits

Describe how the project / programme would provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme would avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

Through on-the-ground climate change adaptation (including EbA) interventions in Thailand and Vietnam, the proposed project will directly benefit ~60,000 people from vulnerable communities in the GMS. This figure includes ~10,000 beneficiaries from the Young River Basin¹⁶⁵ in Thailand and ~50,000 beneficiaries from the communities surrounding Tram Chim National Park¹⁶⁶ in Vietnam. Indirect beneficiaries of the project include communities: i) surrounding the demonstration sites that will benefit from awareness-raising and knowledge-sharing; and ii) upstream and downstream of demonstration sites in the MRB that will benefit from an improved supply of ecosystem goods and services generated through adaptation interventions (specifically EbA) and enhanced transboundary resource management. The specific economic, social and environmental benefits expected from the project are presented below.

Economic Benefits:

The natural resource-based livelihoods of ~75 million people in the GMS are vulnerable to the impacts of climate change. As a result, economic stability in the region is threatened. Increasing temperatures, erratic rainfall and increasing frequency of extreme weather events (such as droughts and floods) will negatively impact agricultural yields, reduce the availability of fresh water, and threaten biodiversity as well as the provision of ecosystem goods and services. Rural communities – making up nearly 67% of the GMS population – are particularly vulnerable to climate change because of their dependence on rain-fed agriculture and other climate-sensitive natural resource-based livelihoods such as fishing and harvesting of non-timber forest products (NTFPs). By implementing climate change adaptation (including EbA) interventions within communities and ecosystems at demonstration sites in the middle and lower reaches of the MRB (Thailand and Vietnam), the climate-resilience of some of the region's most vulnerable groups will be enhanced. This will be realised through the climate-proofing of rural natural resource- and agriculture-based livelihoods and strengthening of the functioning of, as well as conserving the

¹⁶⁵ Sai Na Wang sub-district, Kalasin province in the upper and Sriwilai sub-district, Roi-Et province in the lower Young River Basin.

¹⁶⁶ Phu Thanh B, Phu Tho, Phu Hiep, Phu Duc and Tan Cong Sing communes and Tram Chim town, Tam Nong district, Đồng Tháp province.

ecosystems they depend upon.

Healthy ecosystems generate economic benefits by providing ecosystem goods and services to communities. For example, functioning ecosystems provide pollinators for food crops in agroforestry in Xishuangbanna and flood mitigation for communities around the wetlands in the Mekong Delta. Furthermore, the restoration of ecosystem functioning through EbA has previously built the climate-resilience of communities in northeast Thailand by improving the health of agro-ecosystems, thereby improving food security in the region. This is especially important for the proposed project's targeted communities in the demonstration sites in the Young River Basin and surrounding Tram Chim National Park, whose livelihoods are highly dependent on agriculture and natural resources.

EbA interventions have been shown to deliver favourable cost-benefit ratios compared with other adaptation approaches. A recent study by UN Environment¹⁶⁷ found that EbA interventions are not only less costly than other adaptation options, but also provide additional ecosystem-related benefits. The economic benefits of EbA are particularly important given the extreme poverty rates in the target communities. For example, the average poverty rate of the villagers at the Vietnam demonstration site (communities surrounding Tram Chim National Park) is 17.2%. In addition, 39 to 47% of the income of landless households in these communities is derived from fishing, aquaculture and the harvesting of other natural resources from in and around Tram Chim National Park.

Apart from improving the provision of ecosystem goods and services, the project will build the technical capacity of local communities to plan and implement climate change adaptation interventions – with a focus on EbA (Outputs 1.1 and 1.2). In addition, the exchange of knowledge at a national and regional scale will be enhanced, promoting the adoption of climate-resilient livelihoods and practices across vulnerable communities threatened by droughts and floods across similar socio-economic contexts in the GMS (Outcome 2). Improved climate change planning using EbA approaches ensures that investments in climate change adaptation that are urgently needed to safeguard the livelihoods of rural communities and the economic development of the GMS are economically and environmentally appropriate.

Further economic benefits in the short-term will be achieved through disaster risk reduction, by reducing flood damage to agricultural land and infrastructure through the implementation of adaptation interventions (including EbA). Furthermore, project activities will allow the various economic sectors to undertake medium- and long-term planning to reduce the negative impacts of climate change on resources (both national and transboundary) in the GMS.

Social benefits

Outcome 1 of the proposed project will build the climate resilience of vulnerable communities in different socio-ecological contexts in the GMS to the effects of droughts and floods. Activities under Outcome 1 will build the capacity of communities to plan and implement climate change adaptation interventions (most notably EbA). The participatory approach to technical assessments – involving local stakeholder consultations and capacity building activities especially targeted at local administrative officials – will increase the technical capacity of local stakeholders, providing valuable human resources for future climate change adaptation activities in the GMS beyond the

¹⁶⁷ UNEP/SPREP 2012. A comparative analysis of ecosystem-based adaptation and engineering options for Lami Town, Fiji: Synthesis Report.

lifespan of the project. Such activities will include a focus on gender sensitivity and social inclusiveness in EbA. The project will develop gender action plan at the initial stage of project implementation to ensure that gender is integrated in all aspects of the project. Adaptation interventions and planning will incorporate gender-specific traditional knowledge on local ecosystem services such as the use of NTFPs at the demonstration sites. Furthermore, women and vulnerable groups will be prioritised as main beneficiaries in demonstration activities to ensure that benefits accruing from on-the-ground activities are directly accessible. Specific training activities provided to local communities will target both women and vulnerable groups to improve living conditions, promote skills development and diversify livelihood opportunities. The incorporation of traditional knowledge shared by women, elderly and indigenous groups will directly benefit the project by identifying and prioritising EbA measures while increasing the value of those groups in society and contributing to social unity. Local accomplishments in terms of social inclusivity at the demonstration sites will be used as a model for further regional and national strategies.

An increase in the climate-resilience of target communities in Thailand (Young River Basin) and Vietnam (Tram Chim National Park) will strengthen the generation of both food and income the climate-proofing of agriculture-based livelihoods, as well as the introduction of additional livelihood options. The resulting increase in food security and reduction in debt associated with the impacts of droughts and floods will mitigate the need for community members (usually male) to migrate to other cities for work. This, in turn, will alleviate the workload of family members (usually) who are left at home to run the households themselves, allowing them to allocate more time to adaptation activities.

Activities under Outcome 2 of the proposed project will provide opportunities for regional and national stakeholders to exchange knowledge on adaptation interventions based on successful practices and evidence generated from interventions at the demonstration sites, facilitating the expansion of projects and generating benefits at a larger scale. Additionally, a regional approach to transboundary water management will improve relationships between neighbouring countries as well as communities and promote the sharing of adaptation resources and knowledge across the GMS.

Environmental benefits

In addition to building the climate-resilience of vulnerable communities and ecosystems, EbA interventions implemented under Outcome 1 will provide multiple environmental benefits, including *inter alia*: i) strengthened ecosystem functioning, including the provision of goods and services; ii) carbon sequestration; iii) biodiversity conservation; iv) flood and drought mitigation; v) improved agricultural production; vi) increased water availability and quality; vii) increase soil nutrient contents; and viii) reduced environmental degradation. Furthermore, adaptation activities at the demonstration sites in Thailand and Vietnam will provide opportunities to test and evaluate adaptation approaches across several ecological contexts to demonstrate knowledge of best practices. This will facilitate the upscaling of project interventions and increase the environmental benefits on a broader scale across the GMS.

By providing recommendations on climate change adaptation to regional and institutions under Outcome 3, the proposed project will help guide policy dialogues and improve the regional planning and management of transboundary water catchments. This will result in regional environmental benefits including *inter alia* increased water quality and availability throughout the GMS.

D. Cost-effectiveness

Describe or provide an analysis of the cost-effectiveness of the proposed project / programme and explain how the regional approach would support cost-effectiveness.

There has been a limited focus on determining the cost-effectiveness of climate change adaptation interventions, including EbA, across the GMS as a whole. As a result, there is limited baseline information that can be used for comparative analyses of adaptation approaches to common climate change threats (such as droughts and floods) which are sustainable and replicable across different socio-economic contexts in the GMS. Consequently, the main outputs of the proposed AF project (1.3 and 2.1) will focus on the establishment of a monitoring programme¹⁶⁸ to collect information on the cost-effectiveness of adaptation (most notably EbA) interventions in different socio-economic contexts in the GMS, and the subsequent conduction of a cost-effectiveness analysis. The expertise of CERN will be used in developing monitoring framework and undertaking cost-effective analysis.

The cost-effectiveness analysis will take into account: i) data and information collected via the monitoring programmes at adaptation demonstration sites; ii) the results of a comprehensive literature review of concrete adaptation interventions implemented under other adaptation initiatives in the GMS; and iii) information on the cost-effectiveness of various adaptation measures implemented during past and ongoing adaptation initiatives in the GMS collected through consultations with relevant stakeholders. The results of the cost-effectiveness analysis will be shared among all countries in the GMS (Output 2.3) to ensure that future adaptation initiatives are designed based on the most economically beneficial approaches towards addressing the shared climate change impacts of floods and droughts.

The proposed project's activities under Component 1 will promote the concrete implementation of climate change adaptation interventions, with a particular focus on drought and flood management, which are common throughout the GMS. Such interventions, including EbA, will be based on traditional knowledge and can be implemented by communities using locally available materials. Furthermore, the interventions can be upscaled and replicated by communities facing common climate change threats (including floods and droughts) throughout the GMS. This will be facilitated through knowledge sharing activities under Outputs 1.4, 2.2, 2.3, 2.5 and 3.2.

Benefits from ecosystem restoration outweigh the costs. United Nations Environment estimates in the 2010 report *Dead Planet:Alive Planet* show that investment on ecosystems restoration may provide benefit cost ratio of between 3 and 75% and an IRR of 7– 79% even without considering the benefits they bring to mitigating climate change impacts. Ecological restoration can further act as an engine of economy and a source of green employment.

A growing body of scientific literature suggests that EbA measures are cost-effective compared to those based on the implementation of hard infrastructure. For example, an economic analysis on the use of EbA interventions and hard infrastructure in the Tha Di basin in Thailand found that the cost of living check dams (one of the possible EbA interventions recommended under Outputs 1.1 and 1.2) was ~2.5% of the total cost of constructing a concrete weir (THB50,000 and 2,000,000 respectively). Although the lifespan of a living check dam is ~10 years – compared to several decades for a concrete weir – the EbA intervention is the most cost-

¹⁶⁸ This monitoring programme will be designed under the guidance of CERN, with a focus on the provision of ecosystem impact monitoring methods and experience.

effective option in the long-term. Additionally, living check dams are accepted socially and can be built in less than two weeks by community members using locally available materials, while concrete weirs have a relatively low social acceptance and require the expertise of engineers for construction. A further example of the cost-effectiveness of the EbA approach also emerged from an economic analysis undertaken in Lami, Fiji. This analysis included assessments of the costs and benefits of three approaches to watershed management, namely: i) EbA measures only; ii) hard infrastructure interventions only; and iii) a hybrid approach applying both EbA measures and hard infrastructure interventions. The analysis demonstrated that EbA watershed management options are at least twice as cost-effective as hard infrastructure engineering options, i.e. a benefit:cost ratio of US\$19.50:1 for EbA compared to US\$9:1 for hard infrastructure.

E. Consistency with regional/national strategies

Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist. If applicable, please refer to relevant regional plans and strategies where they exist.

Regional level

Relevant policy and strategic documents of the three main regional bodies related to Mekong transboundary management have been reviewed. These three bodies are: i) Lancang-Mekong Cooperation Mechanism¹⁶⁹; ii) Mekong River Commission¹⁷⁰; and iii) Greater Mekong Sub-region Economic Cooperation Program¹⁷¹. The relevance and consistency of the proposed project with these regional strategies is presented below:

Table 7: Consistency with regional policies, plans and strategies on climate change

REGIONAL
Sanya Declaration of the 1st Lancang-Mekong Cooperation Leaders' Meeting (2016)¹⁷²
The First Lancang-Mekong Cooperation (LMC) leaders' meeting was held in March 2016 in Sanya City, Hainan Province of China, to discuss future cooperation under the theme "shared river, shared future" and to exchange views on promoting the LMC mechanism, strengthening all-round cooperation at the sub-regional level and advancing regional integration.

¹⁶⁹ The Lancang-Mekong Cooperation (LMC) mechanism, initiated by China and officially launched in March 2016, is an emerging sub-regional cooperation that spans the entire Mekong and Lancang basin. The LMC mechanism has three pillars -- political and security issues; economic affairs and sustainable development; and social affairs and people-to-people exchanges. The Lancang-Mekong Environmental Cooperation under the LMC will promote cooperation of the Lancang-Mekong member countries' environmental protection, provide the platform on environmental laws and policy dialogues, and enhance the environmental management capacity, among others. Taking advantage of the cooperation, China is to further explore and practice South-South Environmental Cooperation with other countries to promote sustainable development of the Lancang-Mekong region.

¹⁷⁰ The MRC is an intergovernmental organisation for regional dialogue and cooperation in the Lower Mekong River Basin, established in 1995 based on the Mekong Agreement among Cambodia, Lao PDR, Thailand and Vietnam. The organisation serves as a regional platform for water diplomacy as well as a knowledge hub of water resources management for the sustainable development of the region. China and Myanmar are Dialogue Partners to the MRC.

¹⁷¹ The Greater Mekong Subregion (GMS) is a program of sub regional economic cooperation under the assistance from the Asian Development Bank (ADB) to enhance the six countries' economic relations, covering nine priority sectors: agriculture, energy, environment, human resource development, investment, telecommunications, tourism, transport infrastructure, and transport and trade facilitation. The GMS Core Environment Program is established in response to growing concern about the environmental impacts of rapid economic development with an aim to achieve an environmentally friendly and climate resilient GMS Program.

¹⁷² Ref: http://www.fmprc.gov.cn/mfa_eng/zxxx_662805/t1350039.shtml

The proposed project components are aligned with the following measures agreed at the meeting:

1. Promote high-level exchanges, dialogue and cooperation to enhance trust and understanding in the sub-region with a view to strengthening sustainable security.
4. Enhance cooperation against uncommon security threats, including terrorism, transnational crimes, and natural disasters; promote cooperation in addressing climate change impacts, humanitarian assistance, ensuring food, water and energy security.
10. Enhance cooperation among LMC countries in sustainable water resources management and utilization through activities such as the establishment of a center in China for Lancang-Mekong water resources cooperation to serve as a platform for LMC countries to strengthen comprehensive cooperation in technical exchanges, capacity building, drought and flood management, data and information sharing, conducting joint research and analysis related to Lancang-Mekong river resources.
26. Encourage closer exchanges among government agencies, local provinces and districts, business associations and non-governmental organisations of our six countries to discuss and carry out relevant cooperation.

The Lancang-Mekong Environmental Cooperation Strategic Framework (2019-2023) (draft)

The framework is currently under preparation. Its main objectives are to define priority areas of Lancang-Mekong Environmental Cooperation (LEMC), ensure necessary financial support and clarify key node and timeline arrangement. Under the support and joint efforts of related agencies, the framework will guide and serve the Lancang-Mekong Environmental Cooperation through an Action Plan which includes concrete projects. Aiming to be finalised by the end of 2017, the latest draft framework (June 2017) has been reviewed to define the relevance to this proposed project.

The proposed project components are aligned with the following (tentative) priority areas:

1. Mainstreaming Environmental Policies.
2. Environmental Capacity Building.
3. Ecosystem Management and Biodiversity Conservation.
4. Climate Change Adaptation and Mitigation.
8. Management of Environmental Data and Information.

Mekong River Commission Basin Development Strategy 2016-2020

The Strategy reflects the dynamic challenges encountered in the Lower Mekong Basin and takes a long-term view to deal with water security challenges, including flood, drought, climate change, hydropower, irrigation, fisheries, and industrial development. Specifically, it will address a number of basin-wide priorities, including amongst others: i) increasing cooperation with partners and stakeholders; ii) reducing remaining knowledge gaps to minimise risks; iii) optimising basin-wide sustainable development and cost and benefit sharing; iv) strengthening the protection of mutually agreed environmental assets; v) strengthening basin-wide procedures; and vi) national implementation capacity.¹⁷³

The proposed project components are aligned with:

- Priority 1: reduce remaining knowledge gaps to minimise risks.
- Priority 2: optimise basin-wide sustainable development and cost and benefit sharing.
- Priority 4: strengthen basin-wide procedures and national implementation capacity.
- Priority 6: enhance information management, communication and tools.
- Priority 7: increase cooperation with partners and stakeholders.

Mekong River Commission Strategic Plan 2016-2020

The Strategic Plan sets out how for the period 2016-2020 the MRC will deliver the role established by the 1995 Mekong Agreement, i.e. to promote and coordinate sustainable development and management of the Mekong's water and related natural resources.¹⁷⁴

¹⁷³ Source: <http://www.mrcmekong.org/assets/Publications/strategies-workprog/MRC-BDP-strategy-complete-final-02.16.pdf>

¹⁷⁴ Source: <http://www.mrcmekong.org/highlights/strategic-plan-2016-2020/>

The proposed project components are aligned with:

- Outcome 1: increased common understanding and application of evidence-based knowledge by policymakers and project planners.
- Outcome 5: effective dialogue and cooperation between member countries and strategic engagement of regional partners and stakeholders on transboundary water management.
- Outcome 6: basin-wide monitoring, forecasting, impact assessment and dissemination of results strengthened for better decision-making by member countries.

Mekong Adaptation Strategy and Action Plan (draft)

Mekong Adaptation Strategy and Action Plan (MASAP) has been formulated as a regional adaptation strategy. It is setting a vision for the Lower Mekong Basin, aiming at strengthening the basin-wide resilience and ensuring sustainable development of the basin in line with the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin. The MASAP sets out the strategic priorities and actions at the basin level to address climate change risks on the basin and strengthen basin-wide resilience. Aiming to be finalised by the end of 2017, the latest draft (June 2017) has been reviewed to define the relevance to this proposed project.

The proposed project components are aligned with all the seven strategic priorities for basin-wide adaptation to climate change:

1. Mainstream climate change into regional and national policies, programmes and plans;
2. Enhance regional and international cooperation and partnership on adaptation;
3. Enable implementation of transboundary and gender-sensitive adaptation options;
4. Support access to adaptation finance;
5. Enhance monitoring, data collection and sharing;
6. Strengthen capacity on development of climate change adaptation strategies and plans; and
7. Improve outreach of MRC products on climate change and adaptation.

The Greater Mekong Subregion Economic Cooperation Program Strategic Framework 2012–2022¹⁷⁵

The 10-year strategic framework builds on the substantial progress the program has made, the likely future global and regional trends, the commitment that member countries have made in their national development plans to the promotion of regional integration, and the greater GMS integration within ASEAN and the Asia region. The vision and goals to guide the program include: (1) GMS countries envision a Mekong subregion that is more integrated, prosperous, and equitable. (2) The GMS Program will contribute to realising the potential of the subregion through (i) an enabling policy environment and effective infrastructure linkages that will facilitate cross-border trade, investment, tourism, and other forms of economic cooperation; and (ii) the development of human resources and skills competencies. (3) To ensure that this development process is equitable and sustainable, environmental and social interests will be fully respected in the formulation and implementation of the GMS Program.

The proposed project components are aligned with the sector/multi-sector priorities:

- Agriculture – Pillar 2: Promoting climate-friendly agriculture and natural resource management.
- Climate change adaptation and mitigation: GMS countries are also concerned about the potential negative impacts of climate change on food and energy security. Increasing weather variability is also likely to increase the vulnerability of ecosystem services and amplify impacts on dependent poor communities.

The Greater Mekong Sub-region Economic Cooperation Program Joint Ministerial Statement, 4th Environment Ministers' Meeting (2015)¹⁷⁶

¹⁷⁵ Source: <https://www.greatermekong.org/sites/default/files/gms-ec-framework-2012-2022.pdf>

¹⁷⁶ Source: <http://www.gms-eoc.org/uploads/resources/559/attachment/7.Joint%20Ministerial%20Statement%20FINAL.pdf>

This formal gathering of ministers, organised in Nay Pyi Taw, Myanmar, in January 2015, aimed to build a shared understanding among government and non-government environment leaders on critical natural capital issues and solutions. It provided a platform for Ministers to give directions and discuss approaches for addressing environmental challenges faced by the GMS. The Joint Ministerial Statement provides political support and direction for increasing investments in natural capital.

The proposed project components are aligned with the following paragraphs from the joint ministerial statement:

- Stating that the region and its people are highly vulnerable to climate change and increased risk of natural disasters. Concerted efforts are needed, including through regional cooperation, to mitigate these impacts and to promote sustainable development.
- Encouraging to effectively implement the Core Environment Program Phase II with a focus on the following two priorities:
 - safeguarding the sub-region’s natural capital/resources and associated ecosystem services; and
 - working more efficiently and effectively with other GMS working groups, development partners and stakeholders to operationalise the Regional Investment Framework Implementation Plan.

Country level

The proposed project is well-aligned with national strategies. The relevance and consistency of the proposed project with national strategies is presented below:

Table 8: Consistency with national policies, plans and strategies for climate change.

NATIONAL	
Cambodia	
Component 1 of the project is aligned with:	<p>Cambodia Climate Change Strategic Plan 2014-2023</p> <ul style="list-style-type: none"> • Strategic objective 5. Improve capacities, knowledge and awareness of climate change responses. <p>Climate Change Action Plan 2016-2018</p> <ul style="list-style-type: none"> • Action 12: Launch and roll out of the national and sectoral M&E system. <p>National Strategic Development Plan 2014-2018</p> <p>The following are identified as needed:</p> <ul style="list-style-type: none"> • data and data management mechanisms for analysing and supporting responses to climate change; and • a knowledge management system for collection, analysis, and dissemination of data/knowledge, including knowledge of local communities on climate change.
Component 2 of the project is aligned with:	<p>Cambodia Climate Change Strategic Plan 2014-2023</p> <ul style="list-style-type: none"> • Strategic objective 1. Promote climate resilience by improving food, water and energy security. • Strategic objective 2. Reduce sectoral, regional, gender vulnerability and health risks to climate change impacts. • Strategic objective 3. Ensure climate resilience of critical ecosystems (for example, Tonle Sap Lake, Mekong River, coastal ecosystems, and highlands), biodiversity, protected areas and cultural heritage sites. • Strategic objective 5. Improve capacities, knowledge and awareness of climate change responses. • Strategic objective 7. Strengthen institutions and coordination frameworks for national climate change responses. <p>Climate Change Action Plan 2016-2018</p> <ul style="list-style-type: none"> • Action 8: Establishment of a knowledge management system on climate change and green growth. • Action 9: Integrate climate change and environmental issues into the curriculum at all levels. • Action 10: Engage and raise awareness on climate change and green

	<p>growth/sustainable consumption and production.</p> <ul style="list-style-type: none"> • Action 11: Promote and improve the adaptive capacity of communities to respond to climate change. • Action 12: Launch and roll out of the national and sectoral M&E system. • Action 13: Capacity building of national institutions coordinating climate change response. • Action 14: Support to line ministries to climate mainstreaming into development planning and budgeting. <p>Cambodia’s First Nationally Determined Contribution (NDC; 2015) Cambodia’s priority adaptation actions include:</p> <ul style="list-style-type: none"> • Promoting and improving the adaptive capacity of communities, especially through community-based adaptation actions, and restoring the natural ecology system to respond to climate change. • Implementing management measures for protected areas to adapt to climate change. • Developing and rehabilitating the flood protection dykes for agricultural and urban development. • Increasing the use of mobile pumping stations and permanent stations in responding to mini-droughts and promoting groundwater research in response to drought and climate risk. • Developing climate-proof agriculture systems for adapting to changes in water variability to enhance crop yields. • Developing crop varieties suitable to Agro-Ecological Zones (AEZ) and resilient to climate change. • Strengthening technical and institutional capacity to conduct climate change impact assessments, climate change projections, and mainstreaming of climate change into sector and sub-sector development plans. <p>Second National Communication (SNC, 2015)</p> <ul style="list-style-type: none"> • South-South cooperation, in addition to North-South cooperation, should be given due attention to ensure transfer of appropriate and least-cost technologies. The transfer of adaptation technologies to Cambodia is even more important than the transfer of mitigation technologies, given Cambodia’s high vulnerability to the impacts of climate change. <p>National Adaptation Programme of Action to Climate Change (NAPA, 2006)</p> <ul style="list-style-type: none"> • 17 (out of totally 24) provinces surveyed on climatic hazards have suffered from both floods and droughts. Villagers have identified floods and droughts as the most severe climate hazards in all the 17 provinces surveyed. Water shortages are a common occurrence all year-round. • Current national policies and programmes do not integrate global policies on climate change, focusing mainly on post-disaster emergency relief. • Programmes for improving community capacity and enhancing community-based initiatives to cope with climate hazards and adapt to climate variability receives little attention. Furthermore, these programmes have limited geographical coverage of areas identified as vulnerable to climate hazards. <p>National Strategic Development Plan 2014-2018 The following are identified as needed:</p> <ul style="list-style-type: none"> • data and data management mechanisms for analysing and supporting responses to climate change; • a knowledge management system for collection, analysis, and dissemination of data/knowledge, including knowledge of local communities on climate change; • measures to control environment and ecosystems; • farmers’ capacities in adapting to climate change in agriculture; • mitigation of impacts of climate change through the development of agro-industries; • technological and scientific capacity strengthening to assess vulnerabilities and
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	<p>hazard-prone areas in relation to climate change;</p> <ul style="list-style-type: none"> • technical and institutional capacity strengthening to promote the mainstreaming of climate change responses into the policies, laws and plans at national and sub-national level; • capacity strengthening of national and sub-national officials, particularly at the community levels, on disaster risk reduction, climate change adaptation, and hazard resilience; • coordination and enhancement of capacity and public awareness on climate change at national and local levels; and • intensifying efforts to reduce the impact of climate change by strengthening the adaptation capacity and resiliency to climate change.
<p>Component 3 of the project is aligned with:</p>	<p>Cambodia Climate Change Strategic Plan 2014-2023</p> <ul style="list-style-type: none"> • Strategic objective 1. Promote climate resilience through improving food, water and energy security. • Strategic objective 2. Reduce sectoral, regional, gender vulnerability and health risks to climate change impacts. • Strategic objective 3. Ensure climate resilience of critical ecosystems (for example, Tonle Sap Lake, Mekong River, coastal ecosystems and highlands), biodiversity, protected areas and cultural heritage sites. • Strategic objective 5. Improve capacities, knowledge and awareness of climate change responses. • Strategic objective 7. Strengthen institutions and coordination frameworks for national climate change responses. • Strategic objective 8. Strengthen collaboration and active participation in regional and global climate change processes. <p>Climate Change Action Plan 2016-2018</p> <ul style="list-style-type: none"> • Action 8: Establishment of a knowledge management system on climate change and green growth. • Action 9: Integrate climate change and environmental issues into the curriculum at all levels. • Action 10: Engage and raise awareness on climate change and green growth/sustainable consumption and production. • Action 11: Promote and improve the adaptive capacity of communities to respond to climate change. • Action 12: Launch and roll out of the national and sectoral M&E system. • Action 13: Capacity building of national institutions coordinating climate change response. • Action 14: Support to line ministries to climate mainstreaming into development planning and budgeting. <p>Cambodia's First Nationally Determined Contribution (NDC; 2015) Cambodia's priority adaptation actions include:</p> <ul style="list-style-type: none"> • strengthening technical and institutional capacity to conduct climate change impact assessments, climate change projections, and mainstreaming of climate change into sector and sub-sector development plans. <p>Second National Communication (SNC, 2015)</p> <ul style="list-style-type: none"> • South-South cooperation, in addition to North-South cooperation, should be given due attention to ensure transfer of appropriate and least-cost technologies. The transfer of adaptation technologies to Cambodia is even more important than the transfer of mitigation technologies, given Cambodia's high vulnerability to the impacts of climate change. • The general integration of climate change risks into policy, plans and strategies at the national and sub-national levels needs strengthening. <p>National Adaptation Programme of Action to Climate Change (NAPA, 2006)</p> <ul style="list-style-type: none"> • 17 (out of totally 24) provinces surveyed on climatic hazards have suffered from

	<p>both floods and droughts. Villagers have identified floods and droughts as the most severe climate hazards in all the 17 provinces surveyed. Water shortages are a common occurrence all year-round.</p> <ul style="list-style-type: none"> • Current national policies and programmes do not integrate global policies on climate change, focusing mainly on post-disaster emergency relief. Programmes for improving community capacity and enhancing community-based initiatives to cope with climate hazards and adapt to climate variability receives little attention. Furthermore, these programmes have limited geographical coverage of areas identified as vulnerable to climate hazards. <p>National Strategic Development Plan 2014-2018 The following are identified as needed:</p> <ul style="list-style-type: none"> • data and data management mechanisms for analysing and supporting responses to climate change; • a knowledge management system for collection, analysis, and dissemination of data/knowledge, including knowledge of local communities on climate change. • measures to control environment and ecosystems; • farmers' capacities in adapting to climate change in agriculture; • mitigation of impacts of climate change through the development of agro-industries; • technological and scientific capacity strengthening to assess vulnerabilities and hazard-prone areas in relation to climate change; • technical and institutional capacity strengthening to promote the mainstreaming of climate change responses into the policies, laws and plans at national and sub-national level; • capacity strengthening of national and sub-national officials, particularly at the community levels, on disaster risk reduction, climate change adaptation, and hazard resilience; • coordination and enhancement of capacity and public awareness on climate change at national and local levels; • intensifying efforts to reduce the impact of climate change by strengthening the adaptation capacity and resiliency to climate change; • increasing the involvement in international cooperation in the water sector to ensure the sustainability and effectiveness of water resources use as well as to address negative impacts arising from floods, droughts and climate change; and • increasing the awareness and encouraging the implementation of river basin development and management plan with the cooperation of concerned ministries, stakeholders and beneficiaries, especially women.
China	
Component 1 of the project is aligned with:	<p>National Strategy for Climate Change Adaptation (2013-2020)</p> <ul style="list-style-type: none"> • To strengthen the effective protection of existing forest resources and other natural ecosystems. • To enhance water resource management. <p>Second National Communication (SNC, 2012)</p> <ul style="list-style-type: none"> • China will take effective policies and measures to enhance climate change adaptation capability by enhancing scientific research on climate change, observations and impact assessments. <p>China's 13th Socio-Economic Development Plan (2016-2020)</p> <ul style="list-style-type: none"> • To strengthen the systematic monitoring of climate change and the related scientific research.
Component 2 and 3 of the project is aligned with:	<p>National Strategy for Climate Change Adaptation (2013-2020)</p> <ul style="list-style-type: none"> • To share climate change adaptation experience with other developing countries by capacity building and joint-research. • To conduct South-South Cooperation in terms of water resource management. <p>Enhanced Actions on Climate Change: China's First Nationally Determined</p>

	<p>Contributions (NDC; 2015)</p> <ul style="list-style-type: none"> • To share good experience and best practices on climate change. • To conduct climate change international dialogue and communication. • To strengthen relevant policy coordination, and to conduct concrete cooperation. <p>China's 13th Socio-Economic Development Plan (2016-2020)</p> <ul style="list-style-type: none"> • To enhance transboundary river governance and to promote cooperation with the involved neighbouring countries. • To strengthen bilateral or multilateral dialogue and concrete cooperation on climate change.
Lao PDR	
<p>Component 2 and 3 of the project is aligned with:</p>	<p>Lao PDR's First Nationally Determined Contribution (2015)</p> <ul style="list-style-type: none"> • Enhance cooperation, strong alliances and partnerships with national stakeholders and international partners to achieve national development goals. • Improve public awareness and understanding of various stakeholders about climate change, vulnerabilities and impacts to increase stakeholder willingness to take actions. • Promotion of climate change capacity in the water resource sector. • Manage watersheds and wetlands for climate change resilience. <p>Second National Communication (SNC, 2013)</p> <ul style="list-style-type: none"> • The need of strengthening regional cooperation (such as Mekong sub-region) to enhance more practical, applicable and cost-effective technological transfers and knowledge exchange. • The need for more effective mainstreaming of the strategy with the sustainable social and economic development process of the country. • The need for developing technical capacities of relevant national personnel with regard to vulnerability and adaptation. <p>National Adaptation Programme of Action (NAPA, 2009)</p> <ul style="list-style-type: none"> • Priority 1: Strengthen the capacity of the national disaster management committees. • Priority 5: Awareness raising on water and water resource management. • Priority 8: Strengthen institutional and human resource capacities related to water and water resource management. <p>National Socio-Economic Development Plan (NSED, 2016-2020)</p> <ul style="list-style-type: none"> • Create coordination mechanism between the government, private sector, international organisations and development partners to jointly contribute to meeting all the NSED's targets. • Outcome 3, Output 1: environmental protection and sustainable natural resources management. • Outcome 3, Output 2: prepare to cope with the disaster risks and impacts of climate change. • Outcome 3, Output 3: Reducing the instability of agricultural production caused by disaster impact.
Myanmar	
<p>Component 1 of the project is aligned with:</p>	<p>National Adaptation Programme of Action (NAPA, 2012)</p> <ul style="list-style-type: none"> • The first priority in agriculture sector: reduced climate change vulnerability of rural and subsistence farmers through locally relevant technologies, climate-resilient rice varieties, and ex/in-situ conservation of plant genetic resources. <p>Initial National Communication (INC, 2012)</p> <ul style="list-style-type: none"> • A need of identifying cost-effective technological and policy adaptation measures.

<p>Component 2 and 3 of the project is aligned with:</p>	<p>National Adaptation Programme of Action (NAPA, 2012)</p> <ul style="list-style-type: none"> The second priority of biodiversity sector: mainstreaming ecosystem-based climate change adaptation for buffering rural communities against climate change impacts into policy, planning and relevant projects. <p>Initial National Communication (INC, 2012)</p> <ul style="list-style-type: none"> Lack of training, information and experience on environmentally sound technologies information systems. A need of integrating climate change concerns into national long-term socio-economic and environmental planning.
<p>Thailand</p>	
<p>Component 1 of the project is aligned with:</p>	<p>Thailand UN United Nations Partnership Framework 2017-2021</p> <ul style="list-style-type: none"> Outcome: By 2021, inclusive systems and processes advance sustainable people-centred, equitable development for all people in Thailand Outcome Strategy 1: Strengthen systems, structures and processes for effective, inclusive and sustainable policy-making and implementation <ul style="list-style-type: none"> Indicator 4: Number of hectares of land and forest that are managed sustainably under an in-situ conservation regime, sustainable use regime, with effective management. Indicator 6: Extent to which implementation of comprehensive measures - plans, strategies, policies, programmes to achieve low-emission and climate-resilient development objectives has improved. <p>Climate Change Master Plan 2015-2050</p> <ul style="list-style-type: none"> Measure 1.1 (1) Water, flood and drought management: Integrated water management. Measure 1.1 (2) Water, flood and drought management: Preparedness to deal with and to reduce damages from flood and drought. Measure 1.1 (3) Water, flood and drought management: Flood and drought risk management Measure 1.2 (1) Agriculture and food security: Natural disaster risk management. Measure 1.2 (2) Agriculture and food security: Preparedness to deal with and to adapt to climate change. Measure 1.2 (3) Agriculture and food security: Food security and maintenance. Measure 1.5 (1) Natural resources management: Conservation and restoration of healthy natural resources and ecosystems. Measure 1.5 (2) Natural resources management: Regulation and control on sustainable use of natural resources. Measure 1.6 (1) Human settlement and security: Reduction of risk and damages from natural disasters. Measure 1.6 (2) Human settlement and security: Preparedness and capacity of communities to adapt. Measure 3.1 (1) Information, research and technology development: Development of information and research. Measure 3.1 (2) Information, research and technology development: Development of technology. Measure 3.3 (1) Awareness raising and capacity building on climate change: Academic and research groups. Measure 3.3 (3) Awareness raising and capacity building on climate change: Governmental officials and agencies. <p>Thailand's National Adaptation Plan (NAP; 2018)</p> <p>The final draft of Thailand's NAP is expected to be finalised and published in 2018 once the public consultation process has been completed. Alignment with Component 1 includes:</p> <ul style="list-style-type: none"> the promotion of on-the-ground adaptation interventions, including EbA; and the expansion of adaptation planning and implementation across priority sectors at

	<p>the local and national level, such as water resources and agriculture.</p> <p>Thailand's First Nationally Determined Contribution (2015) Thailand's prioritised adaptation efforts are detailed below.</p> <ul style="list-style-type: none"> • Promote and strengthen Integrated Water Resources Management (IWRM) practices to achieve water security, effective water resource management to mitigate flood and drought. • Safeguard food security through the guidance of Sufficiency Economy Philosophy, e.g. an application of the New Theory in agriculture and land management to promote appropriate resource allocation and economic diversification at the household level and sustainable management of community forests to promote food security at the community level, for instance. • Promote sustainable agriculture and Good Agricultural Practice. • Increase national forest cover to 40% through local community participation, including in particular headwater and mangrove forests to enhance adaptive capacities of the related ecosystem. • Safeguard biodiversity and restore ecological integrity in protected areas and important landscapes from the adverse impacts of climate change, with the emphasis on vulnerable ecosystems and red list species. • Strengthen disaster risk reduction and reduce population's vulnerability to climate risk and extreme weather events through enhanced awareness, coordination and adaptive capacity of local communities, especially in the disaster risk-prone areas. <p>12th National Economic and Social Development Plan 2017-2021</p> <ul style="list-style-type: none"> • Strategy 4, guideline 3.1.1 Conserve and restore forest resources for ecological balance. • Strategy 4, guideline 3.1.2 Conserve and sustainably utilise biodiversity. • Strategy 4, guideline 3.2.4 Improve efficiency of water storage and water distribution systems. • Strategy 4, guideline 3.4.2 Support agricultural production sector to become sustainable agriculture. • Strategy 4, guideline 3.4.5 Build knowledge, understanding, awareness, and participation of the public and different sectors to deal with climate change • Strategy 4, guideline 3.6.2 Build capacity in disaster preparedness.
Component 2 of the project is aligned with:	<p>Thailand UN United Nations Partnership Framework 2017-2021</p> <ul style="list-style-type: none"> • Outcome: By 2021, inclusive systems and processes advance sustainable people-centred, equitable development for all people in Thailand • Outcome Strategy 1: Strengthen systems, structures and processes for effective, inclusive and sustainable policy-making and implementation <ul style="list-style-type: none"> ○ Indicator 4: Number of hectares of land and forest that are managed sustainably under an in-situ conservation regime, sustainable use regime, with effective management. ○ Indicator 6: Extent to which implementation of comprehensive measures - plans, strategies, policies, programmes to achieve low-emission and climate-resilient development objectives has improved. <p>Climate Change Master Plan 2015-2050</p> <ul style="list-style-type: none"> • Measure 3.1 (1) Information, research and technology development: Development of information and research. • Measure 3.1 (2) Information, research and technology development: Development of technology. • Measure 3.2 (1) Development of mechanisms to support climate change management: Mechanisms to support climate change adaptation. • Measure 3.2 (3) Development of mechanisms to support climate change management: Mechanisms to support related development sectors. • Measure 3.3 (1) Awareness raising and capacity building on climate change: Academic and research groups. • Measure 3.3 (3) Awareness raising and capacity building on climate change:

	<p>Governmental officials and agencies.</p> <p>Thailand's National Adaptation Plan (NAP; 2018) The final draft of Thailand's NAP is expected to be finalised and published in 2018 once the public consultation process has been completed. Alignment with Component 2 includes:</p> <ul style="list-style-type: none"> • The promotion of on-the-ground adaptation interventions, including EbA. • The expansion of adaptation planning and implementation across priority sectors at the local and national level, such as water resources and agriculture. <p>Thailand's First Nationally Determined Contribution (2015)</p> <ul style="list-style-type: none"> • Thailand's prioritised adaptation efforts include: Build regional climate resilience by serving as a knowledge hub to foster regional cooperation and exchange experiences on adaptation. <p>Second National Communication (SNC, 2011)</p> <ul style="list-style-type: none"> • Needs identified include: developing climate change scenarios at the sub-regional level; developing socio-economic scenarios for use in vulnerability analyses; analysing climate change effects on major sectors such as agriculture and water; prioritising adaptation options within and across various sectors; developing regional information exchanges and communication. <p>12th National Economic and Social Development Plan 2017-2021</p> <ul style="list-style-type: none"> • Strategy 4, guideline 3.5.1 Enact and improve the laws related to climate change to support international agreements on climate change. • Strategy 4, guideline 3.5.4 Increase capacity on research and development related to science, technology and innovation to support climate change adaptation. • Strategy 4, guideline 3.4.5 Build knowledge, understanding, awareness, and participation of the public and different sectors to deal with climate change • Strategy 4, guideline 3.6.2 Build capacity in disaster preparedness.
<p>Component 3 of the project is aligned with:</p>	<p>Thailand UN United Nations Partnership Framework 2017-2021</p> <ul style="list-style-type: none"> • Outcome: By 2021, inclusive systems and processes advance sustainable people-centred, equitable development for all people in Thailand • Outcome Strategy 1: Strengthen systems, structures and processes for effective, inclusive and sustainable policy-making and implementation <ul style="list-style-type: none"> ○ Indicator 4: Number of hectares of land and forest that are managed sustainably under an in-situ conservation regime, sustainable use regime, with effective management. ○ Indicator 6: Extent to which implementation of comprehensive measures - plans, strategies, policies, programmes to achieve low-emission and climate-resilient development objectives has improved. <p>Climate Change Master Plan 2015-2050</p> <ul style="list-style-type: none"> • Measure 3.2 (1) Development of mechanisms to support climate change management: Mechanisms to support climate change adaptation. • Measure 3.2 (3) Development of mechanisms to support climate change management: Mechanisms to support related development sectors. • Measure 3.3 (1) Awareness raising and capacity building on climate change: Academic and research groups. • Measure 3.3 (3) Awareness raising and capacity building on climate change: Governmental officials and agencies. <p>Thailand's National Adaptation Plan (NAP; 2018) The final draft of Thailand's NAP is expected to be finalised and published in 2018 once the public consultation process has been completed. Alignment with Component 3 includes:</p> <ul style="list-style-type: none"> • The promotion of on-the-ground adaptation interventions, including EbA. • The expansion of adaptation planning and implementation across priority sectors at the local and national level, such as water resources and agriculture. <p>Thailand's First Nationally Determined Contribution (2015)</p> <ul style="list-style-type: none"> • Thailand's prioritised adaptation efforts include: Build regional climate resilience by

	<p>serving as a knowledge hub to foster regional cooperation and exchange experiences on adaptation.</p> <p>Second National Communication (SNC, 2011)</p> <ul style="list-style-type: none"> Needs identified include: Develop regional information exchanges and communication. <p>12th National Economic and Social Development Plan 2017-2021</p> <ul style="list-style-type: none"> Strategy 4, guideline 3.5.1 Enact and improve the laws related to climate change to support international agreements on climate change. Strategy 4, guideline 3.5.4 Increase capacity on research and development related to science, technology and innovation to support climate change adaptation. Strategy 4, guideline 3.4.5 Build knowledge, understanding, awareness, and participation of the public and different sectors to deal with climate change. Strategy 4, guideline 3.6.2 Build capacity in disaster preparedness. Strategy 4, guideline 3.8 Develop international cooperation on environment. Strategy 10, guideline 3.6.1 Increase the roles and participation of Thailand in international organisations.
Vietnam	
<p>Component 1 of the project is aligned with:</p>	<p>Vietnam UN One Strategic Plan 2017-2021</p> <ul style="list-style-type: none"> Focus Area 2: Ensuring climate resilience and environmental sustainability <ul style="list-style-type: none"> Outcome 2.1: Low-carbon, climate and disaster resilient development Outcome 2.2: Sustainable management of natural resources and the environment <p>National Climate Change Strategy 2011-2020</p> <ul style="list-style-type: none"> Task 1.b/ Proactive disaster response and climate monitoring: Reduction of damage due to disaster risks. Task 2.a/ Food and water resource security assurance: Food security. Task 2.b/ Food and water resource security assurance: Water resource security. Task 3. Suitable proactive response to sea level rise in vulnerable areas Task 4. Protection and sustainable development of forests, increase of GHG absorption and biodiversity conservation. Task 7.a/ Building of communities to effectively respond to climate change: Communities responding to climate change. Task 7.c/ Building of communities to effectively respond to climate change: Raising awareness, intensifying education and training. <p>Vietnam's First Nationally Determined Contribution (2015)</p> <ul style="list-style-type: none"> There is a need for international assistance as well as cooperation with other developing countries on: tools to assess climate change impacts, vulnerability, exposure and climate change adaptation measures; as well as to strengthen the capacity to adapt to climate change at national and local level. Adaptation priority actions for the period 2021-2030 include: Implement ecosystem-based adaptation through the development of ecosystem services and biodiversity conservation, with a focus on the preservation of genetic resources, species at risk of extinction, and important ecosystems. <p>Plan for Implementation of the Paris Agreement (2016)</p> <p>Implementation of climate change adaptation activities 2016-2020 include:</p> <ul style="list-style-type: none"> Assessing the level of risk and vulnerability to climate change, identify the needs for climate change adaptation, loss and damage caused by climate change. Developing and implementing effective projects to prevent and control natural disasters, respond to climate change in each sector. Implementation of other activities to adapt to climate change to increase resilience, protect people's livelihoods and create the conditions for greater contributions in GHG emissions, including programs and projects underway or have been approved or are being developed in accordance with the priorities of the Government, Ministries, sectors and localities which have secured resources or can mobilize resources to implement.

	<p>The Initial Biennial Updated Report (BUR, 2014)</p> <ul style="list-style-type: none"> • The four criteria to evaluate and select priority adaptation technologies: (i) economic benefits; (ii) social benefits; (iii) environmental benefits and (iv) reduction of vulnerability to climate change. <p>National Target Program to Respond to Climate Change (NTP-RCC, 2008)</p> <ul style="list-style-type: none"> • Activity 2: identify measures to respond to climate change based on results of climate change results and vulnerability assessment for sector/areas and localities. <p>Socio-Economic Development Plan 2016-2020</p> <ul style="list-style-type: none"> • Strengthen management of natural resources, minerals and environmental protection. • Protect water sources, build an infrastructure system to encourage the effective and thrifty use of water resources, ensure sufficient supply of water for production and consumption by businesses and citizens.
<p>Component 2 of the project is aligned with:</p>	<p>Vietnam UN One Strategic Plan 2017-2021</p> <ul style="list-style-type: none"> • Focus Area 1: Investing in people <ul style="list-style-type: none"> ○ Outcome 1.1: Poverty and vulnerability reduction • Focus Area 2: Ensuring climate resilience and environmental sustainability <ul style="list-style-type: none"> ○ Outcome 2.1: Low-carbon, climate and disaster resilient development ○ Outcome 2.2: Sustainable management of natural resources and the environment <p>National Climate Change Strategy 2011-2020</p> <ul style="list-style-type: none"> • Task 6.a/ Increasing the decisive role of the State in climate change response: Adjusting, and integrating climate change issues into, strategies, master plans and plans. • Task 6.b/ Increasing the decisive role of the State in climate change response: Improving and strengthening institutions. • Task 7.c/ Building of communities to effectively respond to climate change: Raising awareness, intensifying education and training. • Task 8. Development of advanced sciences and technologies for climate change response. • Task 9. Promotion of international cooperation and integration to enhance the country's status in climate change issues. <p>Vietnam's First Nationally Determined Contribution (2015)</p> <ul style="list-style-type: none"> • There is a need for international assistance as well as cooperation with other developing countries on: tools to assess climate change impacts, vulnerability, exposure and climate change adaptation measures; as well as to strengthen the capacity to adapt to climate change at national and local level. <p>Plan for Implementation of the Paris Agreement (2016)</p> <p>Implementation of climate change adaptation activities 2016-2020 include:</p> <ul style="list-style-type: none"> • Reviewing the existing database on adaptation to climate change, propose additional research and management, data sharing practices to update reports of national contribution to climate change adaptation. <p>The Initial Biennial Updated Report (BUR, 2014)</p> <ul style="list-style-type: none"> • Capacity needs in the areas of: i) improving capacity and effectiveness of early warning and disaster prevention; and ii) assessment of water resources, climate resource, climate change and climate change impacts. <p>Second National Communication (SNC, 2010)</p> <ul style="list-style-type: none"> • Capacity building needs in the areas of: i) assessment of vulnerability for ecosystems, economic and social impacts of climate change, and development of appropriate adaptation measure; and ii) application of cost-benefit analysis to assess climate change response measures and solutions. <p>Socio-Economic Development Plan 2016-2020</p> <ul style="list-style-type: none"> • Strengthen organisational structure, forces, operating mechanisms associated with the synchronous deployment of measures to protect and develop forests, especially coastal protection forests, watershed forests, and special-use forests.

<p>Component 3 of the project is aligned with:</p>	<p>Vietnam UN One Strategic Plan 2017-2021</p> <ul style="list-style-type: none"> • Focus Area 1: Investing in people <ul style="list-style-type: none"> ○ Outcome 1.1: Poverty and vulnerability reduction • Focus Area 2: Ensuring climate resilience and environmental sustainability <ul style="list-style-type: none"> ○ Outcome 2.1: Low-carbon, climate and disaster resilient development ○ Outcome 2.2: Sustainable management of natural resources and the environment <p>National Climate Change Strategy 2011-2020</p> <ul style="list-style-type: none"> • Task 6.a/ Increasing the decisive role of the State in climate change response: Adjusting, and integrating climate change issues into, strategies, master plans and plans. • Task 6.b/ Increasing the decisive role of the State in climate change response: Improving and strengthening institutions. • Task 7.c/ Building of communities to effectively respond to climate change: Raising awareness, intensifying education and training. • Task 9. Promotion of international cooperation and integration to enhance the country's status in climate change issues. • Task 10. Diversification of financial resources and effective concentrated investment. <p>Vietnam's First Nationally Determined Contribution (2015)</p> <ul style="list-style-type: none"> • There is a need for international assistance as well as cooperation with other developing countries on: tools to assess climate change impacts, vulnerability, exposure and climate change adaptation measures; as well as to strengthen the capacity to adapt to climate change at national and local level. • Adaptation priority actions for the period 2021-2030 include: implement integrated water resources management in river basin systems; strengthen international cooperation in addressing transboundary water issues; and ensure water security. <p>Plan for Implementation of the Paris Agreement (2016)</p> <p>Implementation of climate change adaptation activities 2016-2020 include:</p> <ul style="list-style-type: none"> • Strengthening international cooperation and mobilize investment resources to effectively prevent and control natural disasters, respond to climate change, prevent flood in urban area, search and rescue; with special focus on completing projects to overcome drought, salinization, sea level rise in Central Region, Central Highlands and Mekong Delta, urgent projects against salinization, preserve fresh water for production and daily life of the people living in the Mekong Delta area. <p>National Target Program to Respond to Climate Change (NTP-RCC, 2008)</p> <ul style="list-style-type: none"> • Activity 4: strengthen the capacity of the organisation, institution and policy on climate change. • Activity 7: mainstreaming the NTP in strategies, plans, socio-economic development planning and other sectoral/local development plans. <p>Second National Communication (SNC, 2010)</p> <ul style="list-style-type: none"> • Capacity building needs in the area of technology development and transfer where technical experts and professional need to be trained to facilitate the prompt and successful adoption of new technologies. <p>Socio-Economic Development Plan 2016-2020</p> <ul style="list-style-type: none"> • Strengthen organisational structure, forces, operating mechanisms associated with the synchronous deployment of measures to protect and develop forests, especially coastal protection forests, watershed forests, and special-use forests.
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F. Technical standards

Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The proposed project is aligned with the requirements of the Environmental and Social Policy (ESP) of the Adaptation Fund (see Part II: L). The Adaptation Fund-accredited Implementing Agency, UN Environment, together with the UNEP-IEMP and relevant national partners, will ensure that the project follows procedures outlined in the ESP. This includes the requirement that project activities funded by the Adaptation Fund reflect local circumstances and needs and draw upon national actors and capabilities.

The proposed project’s activities have been validated by national project partners to ensure that they are in line with the relevant technical standards within each country. These project partners include *inter alia*:

- Ministry of Natural Resources and Environment (MoNRE; Thailand); and
- Ministry of Natural Resources and Environment (MoNRE; Vietnam).

National technical standards or guidelines applicable to relevant activities of the proposed project are outlined below in Table 10.

Table 9: National technical standards or guidelines applicable to the proposed project.

Technical standards: Thailand	
Activity	Technical standard or guideline
Construction of small-scale living check dams (Activity 1.1.5)	<ul style="list-style-type: none"> • Royal Irrigation Department. 2016. Handbook on the construction, repair and maintenance of check dams. • Department of National Parks and Wildlife. 2007. Check dam construction handbook.
Technical standards: Vietnam	
Ecological restoration interventions in Tram Chim National Park (Activity 1.2.4)	<ul style="list-style-type: none"> • Projects using national park land may need to conduct an EIA prior to implementation. • Decree 18/2015/ND-CP, Appendix 2 of Circular 27/2015/TT-BTBMT.
Improving the connectivity of canals surrounding Tram Chim National Park (Activity 1.2.5)	<ul style="list-style-type: none"> • National canal design standards – TCVN 4118:2012. • Technical requirements for canal systems – TCVN 9164:2012.

In Thailand, according to national regulations, neither the proposed project nor its activities (for example, small-scale weir and check dam construction) require EIAs or Environmental and Health Impact Assessments (EHIAs)^{177,178} to be conducted. In Vietnam, however, ecological restoration interventions planned for Tram Chim National Park (Activity 1.2.4) may require an EIA, in accordance with Decree 18/2015/ND-CP, Appendix 2 of Circular 27/2015/TT-BTBMT. The necessity of an EIA will be discussed during consultations with relevant stakeholders during the project’s inception phase. If necessary, plans for an EIA will be incorporated into adaptation intervention protocols that will be designed under Activity 1.2.1. All other adaptation interventions to be implemented at demonstration sites in Vietnam will not be at the scale which requires an EIA. In addition, the proposed project’s activities are in line with national social norms, including gender equality and equal access.

G. Project duplication

¹⁷⁷ According to Article 67 of the Constitution of Thailand (2007), activities expected to result in severe adverse impacts to communities with respect to environmental quality, natural resources and health, require the conduction of and EHIA.

¹⁷⁸ Asian Environmental Compliance and Enforcement Network (AECEN). 2015. Assessing Environmental Impact Assessment (EIA) in Thailand: Implementation Challenges and Opportunities for Sustainable Development Planning (Working Paper).

Describe if there is duplication of project / programme with other funding sources, if any.

With the GMS recognised as being highly vulnerable to the effects of climate change, particularly droughts and floods, the livelihoods of the ~75 million people reliant on the Mekong River and its associated ecosystems are at risk. Consequently, there are many past and ongoing climate change adaptation initiatives in the sub-region. Because of the large area covered by the GMS and its high number of vulnerable inhabitants, the reach and impact of past and previous initiatives have been limited. Most past and ongoing initiatives have focused on individual countries, particularly Least Developed Countries (including Cambodia, Myanmar and Lao PDR), while few have been implemented at a regional level. Furthermore, adaptation initiatives with a regional scope, have been primarily implemented across the Lower Mekong – Cambodia, Lao PDR, Thailand and Vietnam. Such regional climate change adaptation initiatives, especially those implementing concrete EbA interventions are uncommon throughout the GMS. Those that have been implemented in the past have mainly involved in research and policy-related dialogues, with limited emphasis on regional cooperation and knowledge sharing, particularly between China and other GMS countries.

The proposed project will focus on the concrete implementation of on-the-ground climate change adaptation interventions, with an emphasis on flood and drought management, in Thailand and Vietnam. Through these interventions, the knowledge generated from them, and regional cooperation executed through Chinese institutions, transboundary water management will be enhanced. Additionally, this project will complement other national and regional initiatives within the GMS, incorporating input from and collaborating with a broad range of stakeholders. Brief outlines of the most relevant of these initiatives are provided below.

The **Mekong River Commission (MRC)** has generated a large variety of information on lower Mekong countries (Cambodia, Lao PDR, Thailand and Vietnam), which are signatories of the commission. The proposed project will build on the activities of the MRC, particularly those related to climate change adaptation, including the: i) ongoing assessment of climate change impacts on ecosystems; ii) design of the Mekong Adaptation Strategy and Action Plan; and iii) formulation of the Basin Development Strategy.

The Earth Net Foundation is currently implementing ongoing climate change adaptation pilot projects (funded by the Thai Health Promotion Foundation) in the Patthalung, Trung, Chiang Mai, Chachoengsao, Chiang Rai and Nakhon Ratchasima provinces of Thailand. Pilot projects include *inter alia*: i) rice cultivation in the flooded areas of the Tha Chang community; ii) climate surveillance and a marine warning system in Ban-Mod-Ta-Noi; iii) experimental rice farming for climate change adaptation; and iv) food storage to strengthen food security under climate change conditions. The proposed project will draw from the knowledge obtained from these ongoing pilot projects, such as the results of experimental rice farming, to inform the implementation of relevant adaptation interventions. Furthermore, the proposed project will add to the knowledge generated and lessons learned from these pilot projects in Thailand.

The **South-South Capacity Building for Ecosystem Management in the Greater Mekong Sub-region** project funded by the Chinese Ministry of Environmental Protection (MEP) focuses on capacity building for ecosystem management across the GMS. Knowledge and lessons learned (for example, gaps and opportunities in transboundary ecosystem management), as well as problems encountered regarding ecosystem services areas in the GMS will be used to advise the planning and implementation of the proposed project, particularly at the demonstration site in Vietnam. Similarly, the USAID's **Mekong Adaptation and Resilience to Climate Change (Mekong ARCC) Project** has identified various environmental, economic and

social effects of climate change in the Lower Mekong Basin (LMB) that will be incorporated into planning and implementation of the proposed project.

The World Bank's **Mekong Delta Integrated Climate Resilience and Sustainable Livelihoods Project**¹⁷⁹ in Vietnam (US\$ 387 million, 2016–2022) aims to enhance tools for climate-smart planning and improve the climate resilience of land and water management practices. The proposed project plans to complement the work being done by the World Bank project both in Vietnam and across the GMS, and use the information generated by the project to advise its implementation.

The ADB's GMS Environment Operations Centre's Core Environment Programme is working to integrate climate change considerations in development planning and biodiversity conservation. This Core Environment Programme is focussed on: i) building capacity to plan for climate change by helping practitioners to assess risks and plan for climate change adaptation; ii) strengthening national monitoring systems by building the capacity of local stakeholders to monitor forest resources and greenhouse gas reductions; and iii) developing and testing adaptation and mitigation options by assessing the feasibility of options, including new technology, ecosystem-based approaches and financing modalities, to promote climate-resilient and low carbon development. The proposed project will build on the knowledge generated under this initiative, especially with regards to climate change adaptation.

Within the National Natural Science Foundation of China (NSFC) – UN Environment cooperation framework, a research project titled: **Water resources change and adaptive management in the Greater Mekong River drainage basin** (2016–2020, US\$ 600,000), has been launched. Under this project, a detailed assessment of the potential impacts of future climate change and socio-economic development on regional water resources is being conducted. The findings of this project will be used to determine how best to allocate water resources to maintain the health of various ecosystems in the GMS. This information will be used to advise the implementation of EbA interventions at the proposed project's demonstration sites.

The **Asia-Pacific Adaptation Network (APAN)**, which is part of UN Environment's Global Adaptation Network (GAN), is a regional programme for managing and applying knowledge regarding adaptation. APAN supports adaptation initiatives of governments and other organisations, with an emphasis on the management of knowledge and capacity building. Its mission is to assist in the building of resilient and sustainable social systems, ecosystems and economies in countries across the Asia-Pacific region under the conditions of climate change. The proposed project will support APAN by strengthening the knowledge base and institutional capacity for climate change adaptation in the GMS.

H. Learning and knowledge management

If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The proposed project's substantial learning and knowledge management dimensions are integrated into several outputs of Components 1: Demonstration of climate change adaptation interventions, with a focus on drought and flood management, in vulnerable communities and different ecosystems, 2: Regional knowledge base on climate change adaptation expanded in

¹⁷⁹ Available at: <http://projects.worldbank.org/P153544/?lang=en&tab=overview>

the GMS and 3: Strengthened regional cooperation on climate change adaptation, particularly in response to floods and droughts, in the GMS.

Under Output 1.4, national level knowledge-sharing strategies will be designed for and implemented in Thailand and Vietnam. Such strategies may include: i) exchange visits; ii) awareness raising at pagodas and schools; iii) the establishment of climate change adaptation learning centres; and iv) awareness raising using media such as posters, radio and television. Under these strategies, best practices and lessons learnt from project adaptation interventions will be shared between beneficiaries and surrounding communities. This knowledge sharing will contribute to the autonomous upscaling and replication of project interventions beyond demonstration sites, thereby also enhancing the climate resilience of non-beneficiary communities.

Output 1.3 includes the collection of information on the cost-effectiveness of adaptation interventions (including EbA) through monitoring programmes designed for and implemented at each of the project's demonstration sites. Information will be collected on: i) socio-economic impacts of the adaptation interventions; ii) ecological impacts of the adaptation interventions, including impacts on ecosystem goods and services; and iii) benefits of the adaptation interventions to women and other vulnerable groups. This information will be used to enhance the regional climate change adaptation knowledge base and shared with other GMS countries (Component 2). Specifically, the information collected under Output 1.3 will inform the conduction of cost-effectiveness analyses of climate change adaptation interventions (particularly EbA) that reduce the impacts of droughts and floods (Output 2.1). Cost-effectiveness analyses will be further enhanced by the information resulting from a comprehensive literature review of adaptation interventions implemented through other projects in the GMS, as well as consultations conducted with stakeholders involved in past and ongoing adaptation projects in the sub-region (Output 2.1).

Output 2.2 covers the development of three policy briefs¹⁸⁰, as well as an EbA-focused paper for the Lancang-Mekong Environmental Cooperation Centre Environmental Outlook Report series. This output will be accomplished using information generated by the project including: i) knowledge and lessons learned from the demonstration sites of the proposed project; ii) collated information from other projects, programmes and strategies in the GMS; and iii) the results of the cost-effectiveness analyses (Output 2.1.). These policy briefs and paper will be shared with relevant stakeholders across the GMS (Output 2.3.).

Under Output 2.3, knowledge on EbA that has been generated and collated through the project (Outputs 2.1, 2.2, 2.4 and 3.1) will be shared on the main regional knowledge platforms, including the inter alia: i) ADB GMS CEP data portal; ii) MRC data portal; iii) EbA South portal; and iv) Lancang-Mekong information sharing platforms (currently being developed). Furthermore, project knowledge will be presented at three regional adaptation forums, such as the CGIAR-WLE Greater Mekong Forum and the Asian Pacific Adaptation Network. Through the use of the pre-existing regional platforms and forums mentioned above, the best practices of and lessons learned generated by the proposed project will not only strengthen national adaptation efforts in beneficiary countries but also foster coordinated regional responses to the impacts of climate change.

¹⁸⁰ Policy briefs will be developed on: developed on: i) good practice in managing shared climate change impacts in the GMS; ii) integrating climate change adaptation into transboundary water management; and iii) cost-effectiveness of EbA for reducing vulnerability to climate change.

Output 2.4 includes the development of guidelines for the design and implementation of cost-effective, comparable and simplified M&E systems for climate change adaptation (including EbA) projects in the GMS. These guidelines will be informed by the lessons learned and knowledge generated through M&E plans developed for an implemented at demonstration sites (Output 1.3). Additionally, M&E plans of other adaptation projects will be reviewed to identify design features that encourage the generation of knowledge applicable to different socio-ecological contexts across a transboundary and shared natural resource like the Mekong River. The M&E guidelines produced will allow for the generation of best practice adaptation interventions to shared climate change impacts in different ecosystems, which will promote regional cooperation, planning and implementation of adaptation in the GMS.

Through Output 2.5 of the proposed project, regional EbA training events will be conducted to strengthen the technical capacity of government staff from all GMS countries to implement concrete, on-the-ground interventions. The training (including training material) will be developed taking into account lessons learned through and best practices arising from the implementation of climate change interventions in Thailand (Output 1.1) and Vietnam (Output 1.2). It will also incorporate the findings of the cost-effectiveness analysis (Output 2.1) and M&E guidelines (Output 2.4).

Under Output 3.2, participants from GMS countries will be sent on exchange visits of the project demonstration sites. Participants may include representatives of: i) national government institutions; ii) country offices of regional institutions like the MRC and ADB; iii) national project teams; and iv) national research institutions. These visits will enhance knowledge sharing, encourage relationship building, will promote regional (South-South) cooperation on climate change adaptation, as well as highlight the importance of transboundary river basin management and shared climate impacts in the GMS. In addition, media products will be developed to capture and share the knowledge gained during the exchange visits. These media products could include short documentaries, social media pieces and popular science articles. These media products will then be disseminated via online platforms to share the results and lessons learned through the proposed project with a broader audience.

I. Consultative process

Describe the consultative process, including the list of stakeholders consulted, undertaken during project / programme preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

The first round of preliminary consultations with participating countries took place between March and July 2016. The purposes of the consultations were to: i) introduce the project overview; ii) receive preliminary comments and advice; iii) consult on the site selection for demonstration of adaptation interventions; and iv) consult on the engagement of potential national, sub-national and local partners. The consultations consisted of: i) three formal meetings in Bangkok and Hanoi with representatives from focal agencies of the AF and potential national partners; ii) bilateral discussions with governmental agencies responsible for ecosystem management and climate change adaptation on the ground in China and Vietnam; and iii) field visits to the proposed demonstration sites in Vietnam. The agencies that took part in the consultation process included: i) the National Development and Reform Commission of China; ii) the Chinese Academy of Sciences and its institutes; iii) the Naban River Watershed Nature Reserve management unit in China; iv) the Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment of Thailand;

v) the Department of Water Resources, Ministry of Natural Resources and Environment of Thailand; vi) the Department of Legal Affairs, Ministry of Natural Resources and Environment of Vietnam; vii) the Biodiversity Conservation Agency, Ministry of Natural Resources and Environment of Vietnam; and viii) GIZ teams involved in 'Strategic Mainstreaming of Ecosystem-based Adaptation Project' and 'Integrated Coastal Management Programme' in Vietnam.

During the consultations, the participating countries expressed strong interest and support for the proposed project. Valuable comments were received and have been incorporated into this proposal. These comments related to: i) project design; ii) the selection of demonstration sites; iii) ownership, benefits and capacity building opportunities for national partners; iv) relevant national policies; v) climate change adaptation and EbA activities within the country and the region; and vi) transboundary/upstream-downstream cooperation. Preliminary consultations and internal discussions with stakeholders from Vietnam were sufficient to select a demonstration site. However, further consultations were required to select a demonstration site in Thailand.

From September to October 2016, the second round of preliminary consultations was conducted with participating countries. The primary objective of the consultations was to collect information regarding climate change impacts observed by the local stakeholders. Additionally, initial discussions on concrete adaptation interventions to be implemented at the demonstration sites were conducted.

The focal point for the implementation of the proposed project in Thailand, the Department of Water Resources (DWR), led an in-country consultation process on site selection. Through this process, the Young River Basin in the Roi-et and Kalasin provinces was selected as an appropriate demonstration site. The sub-national agency under the DWR, the Water Resources Regional Office 4, has consulted with local stakeholders and collected information about the Young River Basin, including: i) general information; ii) climate change impacts in the area; iii) potential local project implementing partners; iv) beneficiaries; and v) potential on-the-ground climate change adaptation interventions to be implemented at the site. In October 2016, a formal meeting was subsequently conducted in Bangkok among the Office of Natural Resources and Environmental Policy and Planning, DWR, UN Environment and UNEP-IEMP to discuss next steps.

Moreover, in Vietnam, information about the selected demonstration sites was collected through informal consultations with local stakeholders conducted by local partners, including: i) staff of Tram Chim National Park in Vietnam; and ii) the Institute of Ecological Geography and Environment in Vietnam. The collected information included: i) climate change impacts on the local communities; and ii) proposed adaptation interventions. Additionally, general and specific information about the sites on ecosystems, livelihoods, ecosystem services and management in Vietnam was extracted from the reports of the previous UNEP-IEMP's meetings at the sites¹⁸¹.

In December 2016, several consultations with the Chinese counterparts took place to discuss their engagement with the proposed project. It was found that China is in a good position to support the project. Those organisations consulted with include: i) the Kunming Institute of

¹⁸¹ These two meetings were 'Capacity Building and Consultative Meeting with Stakeholders on Tram Chim National Park' (18 March 2016 in Dong Thap province of Vietnam) and 'Ecosystem Management Capacity Building and Consultation Workshop on Protected Areas in Xishuangbanna Prefecture' (12 May 2016 in Yunnan province of China) under the project 'South-South Capacity Building for Ecosystem Management in the Greater Mekong Sub-region' implemented by UNEP-IEMP.

Botany; ii) the Chinese Ecosystem Research Network; iii) various institutes under the Chinese Academy of Sciences; and iv) the China-ASEAN Environmental Cooperation Center. It was confirmed that Chinese participation would be in the form of the provision of data and information available from the upper reach of the GMS.

A summary of the formal meetings in Thailand and Vietnam (in June and October 2016) is enclosed as Annex II.



Figure 8: Site visit to the Tram Chim National Park (March 2016).

In May 2017, a consultative mission was undertaken by representatives from UN Environment and UNEP–IEMP. The objective of the mission was to gather the information required to address the comments received from the AF on a previously submitted version of the concept note. Various meetings and consultations were conducted with community, national and regional stakeholders in Vietnam, Lao PDR and Thailand to gather the information required to revise the concept note. Additionally, field visits were undertaken to selected implementation sites in Vietnam and Thailand to identify potential on-the-ground implementation technologies for the project. In Vietnam, consultations were held with: i) various high-level government agencies; ii) managers of Tram Chim National Park; and iii) community members living around Tram Chim National Park. After consultations in Vietnam, a meeting was held with the Mekong River Commission (MRC) Secretariat in Lao PDR. In Thailand, meetings involved representatives from: i) the UN Environment Asia Pacific Regional Office; ii) the Climate Change Management and Coordination Division of the Office of Natural Resources and Environmental Policy and Planning; iii) the Department of Water Resources and the Water Resources Regional Office; iv) communities in the Young River Basin; v) the Core Environment Program (CEP) of the Asian Development Bank’s Greater Mekong Sub-region (ADB GMS); vi) GIZ; vii) the European Union (EU); and viii) Sida. A mission report for the consultations in Lao PDR, Thailand and Vietnam in May 2017 is enclosed as Annex II.

During the preparation of the proposal for the proposed project, inception workshops were held in Thailand and Vietnam in March 2018. The purpose of the Thai inception workshop was to share adaptation knowledge and ideas, and to propose possible EbA approaches to reducing the adverse effects of climate change (focusing on droughts and floods) at the community level across the Young River Basin. This information was also used to inform the conduction of a vulnerability analysis of the Young River Basin (the vulnerability analysis report is presented in Annex I). The resulting information was used to further refine the design of the proposed project, particularly the implementation of concrete, on-the-ground adaptation interventions at demonstration sites within the Young River Basin. Participants of the Thai workshop included: i) two representatives from UN Environment; ii) representatives from the Government of Thailand’s Department of Water Resources, and Policy and Planning Bureau Natural Resources and Environment; iii) local government representatives from the Kalasin, Khon Kaen and Roi-Et provinces; iv) community representatives from the upper, middle and lower Young River Basin; v) representatives from relevant local bodies and educational institutions; and vi) private sector representatives. A report for the Thai inception workshop is presented in Annex II.

The objectives of the Vietnamese inception workshop (April 2018) were to: i) introduce the proposed project to stakeholders; ii) identify the main climate change threats for the project implementation area (communities surrounding Tram Chim National Park); iii) identify locally appropriate adaptation measures (with an emphasis on EbA) to reduce the adverse effects of climate change (particularly floods and droughts); and iv) identify additional stakeholders and project beneficiaries. This information was also used to inform the conduction of a vulnerability analysis of the communities surrounding Tram Chim National Park (the vulnerability analysis report is presented in Annex I). The resulting information was used to further refine the design of the proposed project, particularly the implementation of concrete, on-the-ground adaptation interventions at demonstration sites within and surrounding Tram Chim National Park. In Vietnam, the inception workshop involved representatives from: i) C4 EcoSolutions (international consultancy contracted by UN Environment); ii) Government of Vietnam departments including DLA-MoNRE, IMHEN-MoNRE, ISPONRE-MoNRE and the Department of Natural Resources and Environment; iii) Tram Chim National Park; iv) local communes and towns; and v) local bodies (including the Forest Rangers Agency, People's Committee of Phu Thanh B Commune and Farmer's Union of Phu Hiep commune). A report for the Vietnamese inception workshop is presented in Annex II.

Apart from the consultations in the beneficiary countries (Thailand and Vietnam), additional consultations on regional components were held in April 2018. These included meetings with senior scientists from the Chinese Academy of Sciences (CAS)¹⁸² mainly on potential collaboration in the project activities involving regional knowledge enhancement and sharing. Discussions mainly focused on the contributions that the CAS's technical knowledge and experience of the upper reaches of the Mekong River that could make to the regional outputs. Moreover, a meeting with the Deputy Director of the Lancang-Mekong Environmental Cooperation Center (LMEC) was convened to confirm their interest in participating in the proposed project, particularly in the regional component on strengthening regional collaboration¹⁸³. Furthermore, a regional consultation was held in Beijing, China, to bring together representatives from the GMS countries, as well as the key strategic regional partner, the LMEC. During this consultation, discussions centred on the design of the regional components (focusing on regional knowledge enhancement and cooperation) and what the benefits would be for individual countries, as well as the GMS as a whole. A summary of the regional consultations is provided in Annex II.

Validation workshops to endorse the project document were held in July 2018. These workshops served to confirm the project design and implementation arrangements for each country. Summaries of these workshops are provided in Annex II.

All the information from consultations with local, national and regional stakeholders has been integrated into this project proposal to ensure that the proposed project is a nationally- and regionally-driven effort.

J. Justification for funding request

Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

¹⁸² Including representatives from the: i) Chinese Ecosystem Research Network (CERN); ii) Kunming Institute of Botany; and iii) Institute of Geographic Sciences and Natural Resources Research (IGSNRR).

¹⁸³ A mandate of the LMEC, as well as the Lancang-Mekong Cooperation Mechanism (LMC).

Component 1: Demonstration of climate change adaptation interventions, with a focus on drought and flood management, in vulnerable communities and different ecosystems.

Baseline scenario (without AF resources)

National governments and regional bodies in the GMS are aware of the threats that climate change poses to the people of the region. Accordingly, governments of countries like Thailand and Vietnam have developed or are developing comprehensive adaptation strategies¹⁸⁴ to guide efforts to enhance the climate resilience of their citizens. Likewise, regional cooperation mechanisms like the LMC and MRC are in the process of developing regional strategies for adaptation¹⁸⁵. Although governments and regional bodies in the GMS have experience in developing these high-level, conceptual adaptation plans, they have less expertise in implementing concrete adaptation solutions (most notably, EbA) across diverse socioecological contexts. Indeed, projects financed by the Adaptation Fund are yet to be implemented in Thailand and Vietnam, further highlighting the lack of adaptation implementation experience in these countries (and the region). With limited knowledge on implementing concrete interventions (especially EbA) that address national and regional climate impacts, it is unlikely that governments will be able to transform national and regional strategies into effective on-the-ground adaptation actions. Therefore, people in the GMS who are vulnerable to the impacts of climate change are likely to remain vulnerable in the future.

Additionality (with AF resources)

Under the proposed project, AF resources will be used to implement concrete climate change adaptation interventions in the GMS. A suite of interventions – including EbA – will be demonstrated in communities to reduce their vulnerability to the impacts of floods and droughts. Through a comprehensive M&E system, the project will generate knowledge on the cost-effectiveness of different concrete interventions in diverse socioecological contexts. This knowledge will be shared within and among GMS countries, enabling national governments and regional bodies to integrate concrete adaptation knowledge that is nationally and regionally appropriate into their climate change strategies. This will facilitate the effective conversion of conceptual adaptation strategies into on-the-ground actions, increasing the resilience of vulnerable people across the GMS to shared climate change threats.

Component 2: Regional knowledge base on climate change adaptation expanded in the GMS and

Component 3: Political cooperation on climate change adaptation.

Baseline scenario (without AF resources)

Millions of people in GMS countries are threatened by a shared suite of climate impacts. As rainfall becomes more variable, temperatures rise and the flow dynamics of the Mekong River are altered, droughts and floods will continue to increase in frequency and intensity across the region. These climate impacts threaten the natural resource-based livelihoods of people from diverse socioecological contexts in the GMS. With people from six unique countries unified in their exposure to climate impacts and shared reliance on a transboundary resource (i.e. the

¹⁸⁴ A National Adaptation Plan (NAP) in Thailand and National Climate Change Strategy in Vietnam.

¹⁸⁵ The LMCM is developing the Lancang-Mekong Environmental Cooperation Strategic Framework, and the MRC is developing the Mekong Adaptation Strategy and Action Plan (MASAP).

Mekong River), there is an opportunity for South-South cooperation on adaptation among the countries of the GMS. However, previous and ongoing projects, plans and strategies to adapt to climate change have been mostly unsuccessful in capitalising on this opportunity. Most adaptation initiatives in the GMS have been national efforts with limited regional buy-in, coordination or knowledge transfer. This limits the effectiveness of such initiatives as climate threats impacting important transboundary water resources are, fundamentally, regional problems which require regional adaptation solutions. Additionally, national governments in the GMS have limited experience in integrating regional climate and transboundary resource concerns into national adaptation strategies. Consequently, the alignment of relevant policies, plans and strategies at the regional level remains weak, inhibiting a cooperative and coordinated approach to climate change adaptation, as well as transboundary resource management across the GMS. If climate change adaptation approaches continue to be isolated to individual countries in the GMS, it is likely that people will remain vulnerable to climate change in the future.

Additionality (with AF resources)

Through the proposed project, AF resources will be used to expand the regional knowledge base on climate change adaptation. Knowledge and lessons-learned relevant to GMS countries will be generated by implementing and monitoring concrete adaptation interventions in different socio-ecological contexts across the region. Additionally, thorough reviews and assessments of past and ongoing adaptation initiatives will be undertaken to complement the on-the-ground generation of knowledge. To ensure that knowledge on concrete adaptation solutions and transboundary water management is shared effectively among GMS countries, the proposed project will integrate generated information into appropriate national and regional institutions, cooperation mechanisms, forums and knowledge platforms. Through these knowledge-sharing events, the proposed project will also encourage relationship-building between GMS countries and institutions. In doing so, the proposed project will encourage a cooperative approach to adaptation and transboundary water management in the region, which will enhance the effectiveness of future climate change adaptation initiatives across the GMS, including China.

Activities under the proposed project will also result in policy recommendations and promote policy-dialogue related to climate change adaptation and transboundary resource management between high-level government stakeholders from GMS countries. This will foster cooperation between GMS countries in their approaches to climate change adaptation and transboundary resource management, ensuring policy alignment as well as the implementation of complementary on-the-ground interventions.

K. Sustainability

Describe how the sustainability of the project / programme outcomes has been taken into account when designing the project / programme.

Project sustainability will be achieved by: i) implementing concrete on-the-ground adaptation interventions (with a focus on EbA) at demonstration sites in Thailand and Vietnam, which can be replicated in vulnerable communities across the MRB; ii) building the capacity of institutions and communities at the regional, national and local scales to integrate climate-resilient practices into policies and strategies; iii) engaging vulnerable communities to ensure buy-in and the implementation of project interventions; iv) using a participatory approach to build capacity and strengthen the regional knowledge base of technical governmental staff from GMS countries based on the implementation of concrete EbA interventions; v) encouraging the exchange of climate change adaptation knowledge at a local, national and regional level; vi) institutionalising

climate change adaptation – particularly EbA – into government and community structures; and vii) promoting cooperation and alignment with regards to the design and implementation of national, as well as regional policies related to climate change adaptation.

Under **Outcome 1**, long-term sustainability will be achieved by: i) building the technical capacity of vulnerable communities and local government agencies to plan for and implement adaptation interventions; ii) raising awareness and knowledge of EbA interventions; and iii) facilitating participatory stakeholder engagement and knowledge exchange between local communities and government agencies. These points are discussed further below.

The EbA interventions that are implemented by beneficiary communities are expected to ameliorate the impacts of climate change upon livelihoods, ecosystems and biodiversity. Local communities will, therefore, be incentivised to continue implementing and maintaining the various EbA interventions upon which their livelihoods depend. The incentives for implementing EbA both during and after the proposed project include: i) increasing the climate resilience of ongoing agricultural activities, securing food and income generation for farmers; ii) enhancing the supply of ecosystem goods and services, strengthening the provision of water and food, as well as additional/alternative sources of income; iii) improving water infrastructure and management, reducing the adverse impacts of floods and droughts; and iv) providing additional, climate-resilient livelihood options to communities (women in particular). These will encourage project sustainability at both the community and government levels.

Interventions implemented to improve water infrastructure and management will continue to perform their function long after the project has been completed. This will assist in ensuring the sustainable supply and management of water to target communities in the long-term. Furthermore, soft infrastructure (EbA), including living check dams, which have a lifespan of ~10 years can be constructed from local materials by communities. The cheap cost of construction and benefits accrued during the lifespan of living check dams¹⁸⁶ will encourage the construction of new and additional dams in the future.

Best practices and lessons learned from the implementation of adaptation interventions, such as living check dams, at demonstration sites will be shared with surrounding communities in Thailand and Vietnam through national knowledge-sharing strategies. The strategies and knowledge products will be in local language for wider reach. This will contribute to the autonomous upscaling and replication of interventions beyond demonstration sites, strengthening the climate-resilience of non-beneficiary communities in the long-term.

Under **Outcome 2**, knowledge adaptation measures (including EbA) will be generated, collated and shared using existing forums, workshops and networks in the GMS. This will include information generated through cost-effectiveness analyses of adaptation interventions (that reduce the impacts of droughts and floods) implemented through Outcome 1. The results of these analyses will be used to expand the local, national and regional knowledge base on climate change adaptation in all six countries of the GMS, thereby informing best practice adaptation interventions to the shared climate change impacts of droughts and floods. A thorough understanding of the cost-effectiveness of climate change adaptation (especially EbA) will further justify and sustain its implementation across the region in vulnerable communities and threatened ecosystems.

¹⁸⁶ Including water storage for drought periods, increased ground water recharge and the attenuation of flooding.

Information on the cost-effectiveness of EbA will be used in the development of one of three policy briefs related to climate change adaptation in the GMS¹⁸⁷. The policy briefs will facilitate the institutionalisation of climate change adaptation, as well as lessons learned and information generated from project interventions. This will enhance the sustainability of the proposed project at both a national and regional level. In addition to policy briefs, the development of a paper on climate changes strategies for the GMS – with a focus on EbA – Lancang-Mekong Environmental Cooperation Centre Environmental Outlook Report series will ensure the regional dissemination of information generated through project demonstration sites.

The proposed project will also build upon existing climate change adaptation knowledge exchange platforms and databases that are both functional and have relevant stakeholder support across the sub-region¹⁸⁸. Knowledge products generated through the proposed project – as well as other relevant information collected during the generation of these knowledge products¹⁸⁹ – will be shared on these existing platforms. Sharing knowledge using existing mechanisms that are independently organised and funded will ensure that the knowledge products generated by the proposed project remain available after the project's funding period has finished.

Ensuring that all of the EbA knowledge and information generated through the proposed project result in the implementation of concrete, on-the-ground interventions across all GMS countries will be catalysed through regional training events for technical government staff. The capacitation of these staff to transition regions adaptation plans into on-the-ground actions will promote both the continued and future implementation of EbA in all six sub-region countries¹⁹⁰.

Guidelines for the design and implementation of climate change adaptation-specific M&E frameworks developed through the proposed project will further enhance long-term sustainability. The collection of comparable data from a range of projects using the methods stipulated in the guidelines will allow for the generation of best practice adaptation interventions to shared climate change impacts in different ecosystems, which will promote regional cooperation, planning and implementation of adaptation in the GMS. As a result, the effectiveness of climate change adaptation initiatives across the sub-region will continually be improved, building on the foundation prepared by other initiatives such as the proposed project.

Under **Outcome 3**, the regional approach to addressing climate change impacts in the GMS – particularly floods and droughts – will be strengthened through the linking of the adaptation science of, and knowledge¹⁹¹ generated through the project with the political processes for transboundary water and river basin management in the region. Scaling up the drought and flood risk measures at a basin-scale could reduce the impacts of climate change in the given country and downstream in the Mekong River basin. A strengthened regional approach to climate change adaptation in the GMS will encourage a coordinated response in the member countries. This is essential for effective and sustainable adaptation and transboundary water management.

¹⁸⁷ Other policy briefs will be developed on good practice in managing shared climate change impacts in the GMS and integrating climate adaptation into transboundary water management.

¹⁸⁸ These include the ADB GMS CEP data portal, MRC data portal and EbA South portal, as well as other Lancang-Mekong information sharing platforms that are currently under development.

¹⁸⁹ For instance, knowledge products such as the Adaptation, Livelihoods and Ecosystems planning tool (ALivE) generated through the EbA South project will also be shared by the proposed project.

¹⁹⁰ Cambodia, China, Laos PDR, Myanmar, Thailand and Vietnam.

¹⁹¹ Such as best practices and lessons learned.

The development of recommendations for strengthening regional cooperation and the scaling up of adaptation interventions into regional and national planning processes of the GMS will foster a long-term response to climate change adaptation. Existing regional forums and policy dialogues¹⁹² will be used as platforms to disseminate the resulting recommendations. This will be supplemented by exchange visits to project demonstration sites (in Thailand and Vietnam) by representatives of GMS countries allowing for the further exchange of adaptation knowledge, building relationships and encouraging regional cooperation. This collaboration will ensure that the sustainability of the project is secured at the regional level, whereby all countries in the GMS can share in the knowledge generated through the proposed project, as well as plan for and implement complementary adaptation interventions.

L. Environmental and social impact risks

Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

The proposed project's activities were evaluated against AF environmental and social principles to identify potential adverse impacts. Despite the positive impacts that can enhance the project results, some environmental and social principles of the AF could be triggered by the project in terms of environmental and social impact and risks. An evaluation of the project against each of the AF environmental and social principles is described below and summarised in Tables 11 and 12.

Principle 1: Compliance with the Law

During the development of the full project proposal, both regional and national stakeholders were consulted to ensure that all relevant and legal requirements were met. The proposed project is, therefore, well aligned and complies with regional, national and sub-national policies, laws, plans and priorities for sustainable development and climate change adaptation. A full description of this alignment and compliance is presented in Parts II E and F.

The proposed project will be implemented in a protected area in Vietnam, namely Tram Chim National Park, that is also a Ramsar site¹⁹³ and will comply with national protected area management laws. Once implemented, the monitoring of adaptation interventions (including EbA) at demonstration sites in and around the national park will provide a means of tracking their alignment with national protected area management laws during project implementation.

Principle 2: Access and Equity

The beneficiaries of the proposed project are poor people in vulnerable communities (in Thailand and Vietnam) and are not in decision-making processes. Therefore, certain community members may benefit more than others. Subsequently, this may result in both intra- and inter-community conflicts over benefits (such as additional or alternative livelihood options) accrued both during and after project implementation. This risk will be mitigated through the implementation of local knowledge-sharing strategies (Output 1.4) in communities surrounding the demonstration sites. The gender action plan will address the gender issues and ensure that vulnerable women benefit from the project interventions. As a result, the autonomous upscaling

¹⁹² Including: i) Lancang-Mekong policy dialogues; ii) MRC regional stakeholder forums; iii) Thailand NAP stakeholder forum; and iv) Vietnam National Climate Change Strategy stakeholder forum.

¹⁹³ A Ramsar Site is a wetland site designated of international importance under the Ramsar Convention. The Convention on Wetlands, known as the Ramsar Convention, is an intergovernmental environmental treaty established in 1971 by UNESCO, and coming into force in 1975.

and replication of project interventions beyond these sites will be facilitated, enhancing the climate-resilience of non-beneficiary communities. Furthermore, both beneficiary and non-beneficiary communities¹⁹⁴ will be sensitised towards the approach of prioritising the support from the proposed project to most vulnerable communities while ensuring benefits reach further communities through one or more of the proposed project activities.

Implementation of the proposed project will take place under a rapidly changing context as hydropower and water extraction initiatives continue to be developed within the Mekong River Basin. There is a risk that these developments negatively affect the access of target communities to essential services, such as clean water, and negatively impact the productivity of livelihoods including fishing.

The involvement of local authorities¹⁹⁵ in the project design and implementation of adaptation interventions at demonstration sites (as well as other aspects of project design) mitigates the reduction or prevention of community access to: i) basic health services; ii) clean water and sanitation; iii) energy; iv) education; v) housing; vi) safe and decent working conditions; and vii) land rights. Adherence to these principles will be promoted further through additional engagements with beneficiary during the finalisation of adaptation interventions and consequent development of protocols during project inception.

Principle 3: Marginalised and vulnerable groups

There is a risk that vulnerable and marginalised groups will be excluded during the implementation project activities (particularly adaptation interventions – Component 1) and have insufficient access to the associated benefits. Consequently, the proposed project has been designed to ensure that marginalised and vulnerable groups – especially women, indigenous people, youth, and people living with disabilities – will not be adversely affected by, but instead benefit from, relevant climate change adaptation activities. In addition, to avoid the exclusion of these communities and groups, they were involved in extensive consultations carried out during the preparation of the full project proposal. The project will prepare implementation protocol as well as gender action plan to ensure equal participation and that social impacts do not unjustly impact on marginalised and vulnerable groups.

Principle 4: Human Rights

The design of the proposed project (including implementation arrangements) a human rights-based approach. No activities are included in the design of the project that violate established international human rights. Moreover, the proposed project will promote the basic human rights of access to food, water and information. There is a Human Rights Commission in each partner country with representatives up to district level that will ensure that human rights at the grassroots level is adhered to and promoted.

The project seeks to ensure that benefits of the project are shared broadly in a nondiscriminatory, equitable manner through participatory processes and transparent selection criteria. Extensive stakeholder consultations were held during project preparation (see Annex II) and will be continued throughout project implementation. Potential project-related concerns and/or grievances of local communities will be addressed through a Grievance Mechanism consistent with the UN Environment's Stakeholder Response Mechanism (see Annex V).

¹⁹⁴ Including inter-community institutions such as the Young River Basin Committee.

¹⁹⁵ For example, Young River Basin Committee in Thailand and commune authorities in communities surrounding Tram Chim National Park.

Principle 5: Gender Equity and Women's Empowerment

The proposed project is targeting communities where men occupy the majority of the leadership positions. There is, therefore, a risk that women will not benefit equitably from the proposed project's climate change adaptation (including EbA) and capacity-building interventions.

Gender Action Plan, proposed to be prepared prior to implementation, will ensure that gender equity and women's empowerment are considered across all relevant design aspects of the proposed project and will be adhered to throughout the implementation period. To this end, a gender analysis was conducted during the development of the proposal, under the guidance of gender experts and non-governmental organisations (NGOs), to ensure that gender considerations were fully considered during project design (see Annex VII). In particular, equal rights, responsibilities, opportunities and access of women to the benefits of climate change adaptation have been considered. For example, where applicable, project activities have been designed to include gender disaggregation (at least 50%), especially on-the-ground activities, such as those of Outputs 1.1 and 1.2. For technical assessments as well as capacity building activities, women will be strongly encouraged to participate.

The National Project Management Units (Thailand and Vietnam), local government authorities and bodies at the proposed project intervention sites will ensure gender issues are considered and addressed during project implementation. Gender-focused activities will also include raising awareness in the region to *inter alia*: i) acknowledge women for their contribution as an income generating individual in the household; and ii) highlight their role in climate change adaptation. This will enhance the value of women within their communities, as well as promote their equitable participation of women in the planning, implementation, monitoring and evaluation of the project. Furthermore, the fair and equitable selection (with a least 50% female representation) of beneficiaries will be conducted for capacity building and training sessions. A list of all the participants will be maintained, and gender ratio will be monitored by the National Project Management Units on a quarterly basis, ensuring that the progress of all gender-related targets in the project results framework are tracked and met.

Principle 6: Core Labour Rights

Local communities will be involved in the implementation and maintenance of climate change adaptation (including EbA) interventions. Though the project does not involve hard infrastructure construction, there may be possibilities of accidents while implementing the proposed project's interventions.

Thailand and Vietnam have ratified six and five out of the eight fundamental International Labour Organisation (ILO) Conventions, respectively^{196,197}. Core labour rights, including the right to safe working conditions, were considered during the design of the proposed project and will be enforced where necessary during implementation. In addition, both national and regional stakeholders were involved in the design of project activities, ensuring that labour legislation in the beneficiary countries (Thailand and Vietnam) is adhered to. Compliance with labour rights will be ensured in all the proposed project activities through oversight by the National Project Management Units.

¹⁹⁶ Source: https://www.ilo.org/gateway/faces/home/ctryHome?locale=EN&countryCode=THA&_adf.ctrl-state=58pa0fr9y_19.

¹⁹⁷ Source: https://www.ilo.org/gateway/faces/home/ctryHome?locale=EN&countryCode=VNM&_adf.ctrl-state=58pa0fr9y_56.

Component 1 of the proposed project will involve labour for the implementation of climate change adaptation interventions (including EbA) in Thailand and Vietnam. Labour (implementation and maintenance) will be carried out by consultants and firms hired through the project, as well as members of beneficiary communities. In cases where wages are to be paid for work completed, wages will be determined according to tasks. The wage rate will be calculated on the basis of prevailing minimum wage rate for the assigned task. A record of work done for labour engaged will have to be maintained and the wages paid accordingly. The hours of work and the timing of the hours will be determined in consultation with the labour and the prevailing practices in the area. Positive discrimination in favour of women may be used to provide fair and equal opportunity to women to seek employment as labourers. All forms of negative discrimination in respect of employment and occupation will be eliminated. The proposed project will not engage in child labour in any of its activities. All forms of forced or compulsory labour will be eliminated.

Principle 7: Indigenous Peoples

The project site in Vietnam does not have indigenous people while in Thailand, Upper Young River Basin has significant population of indigenous people.

During the design phase of the proposed project, the inclusion and consideration of indigenous peoples were emphasised. When climate change adaptation demonstration sites are confirmed during the project's inception phase, local indigenous people will be identified and included in the implementation of interventions. The inclusion of indigenous people is seen as essential and beneficial since they possess traditional knowledge related to EbA that will contribute to the inclusive selection and implementation of EbA interventions. Therefore, they will be included in the local-level assessments, demonstration of EbA interventions, capacity-building, knowledge-management and training activities implemented under the proposed project.

Principle 8: Involuntary Resettlement

No activities are or will be included in the project design that will result in involuntary resettlement.

Principle 9: Protection of Natural Habitats

On-the-ground adaptation interventions (specifically EbA) will include the planting of species for enrichment and/or restoration of ecosystems. The project interventions will not have any negative impact on the natural habitat. However, the promotion of EbA interventions through the proposed project (including those based on traditional knowledge) is more likely to result in the restoration, improved management and protection of natural habitats, as well as the strengthened supply of ecosystem goods and services. To ensure that this principle is adhered to, the consultation with and inclusion of relevant stakeholders (community and authority level) during project design and implementation is prioritised.

Apart from EbA implemented under the proposed project, adaptation interventions involving hard infrastructure (for example, the lengthening of canals and construction of water reservoirs) are in very small scale to impact and disrupt natural habitat.

Adaptation interventions will be implemented in and around Tram Chim National Park. All necessary impact assessments will be conducted before the implementation of interventions around Tram Chim National Park, and park management will be consulted to ensure that the protection of natural habitats is enforced. Furthermore, all national protected area laws will be respected during the selection and implementation of adaptation interventions for Tram Chim

National Park and its surrounding communities. Ecological restoration interventions planned for Tram Chim National Park (Activity 1.2.4) may require the conduction of an EIA, in accordance with Decree 18/2015/ND-CP, Appendix 2 of Circular 27/2015/TT-BTBMT, as they will be implemented on national park land. The necessity of an EIA will be discussed during consultations with relevant stakeholders during the project's inception phase. If necessary, plans for an EIA will be incorporated into adaptation intervention protocols that will be designed under Activity 1.2.1.

Principle 10: Conservation of Biological Diversity

There is a low risk that adaptation interventions involving the construction of hard infrastructure (such as the extending of canals; Component 1) could negatively impact biological diversity.

The project will ensure that the conservation and sustainable use of biological diversity factors into the process of finalising adaptation interventions and demonstration site selection. Adaptation demonstration sites will be selected using a participatory approach to ensure that activities do not cause significant loss of biological diversity or the introduction of known invasive species. Furthermore, the focus on EbA under the proposed project will result in the restoration of ecosystems, which will ultimately enhance the biological diversity of the areas surrounding the demonstration sites.

Principle 11: Climate Change

No climate change impacts are anticipated to be caused by the proposed project's activities. Indeed, project activities will contribute to climate change adaptation efforts in the GMS. The EbA-focused approach adopted for the project is unlikely to result in maladaptation, exacerbate the impacts of climate change threats (droughts and floods) or increase greenhouse gas emissions.

The project will contribute to climate change adaptation efforts in the GMS. Under Component 1, climate change adaptation interventions (including EbA) will be implemented by vulnerable communities in the sub-region – Thailand and Vietnam – to manage the climate change impacts, particularly droughts and floods. These interventions will contribute to the enhancement of the adaptation knowledge base in the GMS, which will promote regional cooperation, planning and implementation of adaptation (Component 2). Building on Component 2, through Component 3, regional cooperation on climate change adaptation in the sub-region, particularly in response to droughts and floods, will be strengthened.

Principle 12: Pollution Prevention and Resource Efficiency

Project activities are not expected to result in the generation of any considerable amounts of pollution, particularly hazardous or toxic waste. Project design will ensure that all applicable international standards are met for maximising resource efficiency and minimising waste production and the release of pollutants, including carbon emissions. In terms of resource efficiency, implementation of the proposed project will not require (during or after implementation) exorbitant amounts of water, energy, materials or other natural resources. All applicable international standards will be met for maximising efficient resource use and minimising the production of waste and the release of pollutants.

Principle 13: Public Health

Project activities will have no foreseeable adverse effects on public health. EbA interventions under Component 1 will likely improve public health through the strengthened provision of ecosystem goods and services, such as food, clean water and medicinal plants.

Principle 14: Physical and Cultural Heritage

There is a low risk that the adaptation interventions involving the construction of hard infrastructure (such as canals and water storage reservoirs) could result in negative impacts on physical and cultural heritage.

The participatory approach to project design included the use of local knowledge to ensure that physical and cultural heritage is not negatively affected by on-the-ground adaptation activities. In addition, the location of physical and cultural heritage sites will be considered during the finalisation of demonstration sites during inception to reduce the likelihood of negative impacts related to project interventions.

Principle 15: Lands and Soil Conservation

Project activities will promote land and soil conservation across the demonstration sites through EbA interventions such as agroforestry and riverbank restoration. Agroforestry, for example, will reduce erosion, limiting the loss of nutrients from topsoil and enhance soil fertility. In addition to the benefits of EbA interventions under Outcome 1, activities under Outcomes 2 and 3 will promote land and soil conservation on a regional scale through: i) knowledge sharing; and ii) recommendations for national and regional strategies and policy frameworks.

Table 10: Checklist for social and environmental principles.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>	X	
<i>Access and Equity</i>		X
<i>Marginalized and Vulnerable Groups</i>		X
<i>Human Rights</i>	X	
<i>Gender Equity and Women's Empowerment</i>		X
<i>Core Labour Rights</i>	X	
<i>Indigenous Peoples</i>		X
<i>Involuntary Resettlement</i>	X	
<i>Protection of Natural Habitats</i>	X	
<i>Conservation of Biological Diversity</i>		X
<i>Climate Change</i>	X	
<i>Pollution Prevention and Resource Efficiency</i>	X	
<i>Public Health</i>	X	
<i>Physical and Cultural Heritage</i>		X
<i>Lands and Soil Conservation</i>	X	

Table 11: Checklist for environmental and social impacts and risks of the project.

Checklist of environmental and social principles	Potential impacts and risks
<i>Compliance with the Law</i>	Project interventions will comply with the law.
<i>Access and Equity</i>	The beneficiaries of the proposed project are poor people in

	vulnerable communities who may not be into decision-making processes. There is, therefore, a risk that certain community members may benefit more than others.
<i>Marginalized and Vulnerable Groups</i>	There is a risk that vulnerable and marginalised groups will be excluded during the implementation project activities (particularly adaptation interventions – Component 1) and have insufficient access to the associated benefits. Thus, the Gender Action plan and implementation protocol will ensure that women, marginalized and vulnerable communities are well represented and benefit from the project interventions.
<i>Human Rights</i>	No activities are or will be included in the design of the proposed project that are not in line with established international human rights. Moreover, the proposed project will promote the fundamental human rights of access to food, water and information.
<i>Gender Equity and Women’s Empowerment</i>	The proposed project is targeting communities where men occupy the majority of the leadership positions. There is, therefore, a risk that women will not benefit equitably from the proposed project’s climate change adaptation (including EbA) and capacity-building interventions. Thus, the project has proposed to develop Gender Action Plan for the implementation of project interventions.
<i>Core Labour Rights</i>	Local communities will be involved in the implementation and maintenance of climate change adaptation (including EbA) interventions via local contractors and consultants. The local contractors and consultations will comply with the national labour right.
<i>Indigenous Peoples</i>	The project site in Thailand has indigenous people and the project will ensure that they are consulted to ensure equitable access of indigenous peoples to the project's resources and benefits.
<i>Involuntary Resettlement</i>	No activities are or will be included in the project design that will result in involuntary resettlement.
<i>Protection of Natural Habitats</i>	On-the-ground adaptation interventions (specifically EbA) will include the planting of species for enrichment and/or restoration of ecosystems. Adaptation interventions will be implemented around Tram Chim National Park. All necessary impact assessments will be conducted before the implementation of interventions.
<i>Conservation of Biological Diversity</i>	There is a low risk that adaptation interventions involving the construction of hard infrastructure (such as the extending of canals; Component 1) could negatively impact biodiversity.
<i>Climate Change</i>	No climate change impacts are anticipated to be caused by the proposed project’s activities. Indeed, project activities will contribute to climate change adaptation efforts in the GMS. The EbA-focused approach adopted for the project is unlikely to result in maladaptation or exacerbate the impacts of climate change threats (droughts and floods).
<i>Pollution Prevention and Resource Efficiency</i>	Project activities are not expected to result in the generation of any considerable amounts of pollution (particularly hazardous or toxic waste). In terms of resource efficiency, implementation of the proposed project will not require (during or after implementation) exorbitant

	amounts of water, energy, materials or other natural resources.
<i>Public Health</i>	Project activities will have no foreseeable negative effects on public health.
<i>Physical and Cultural Heritage</i>	There is a low risk that the adaptation interventions involving the construction of hard infrastructure (such as canals and water storage reservoirs) could result in negative impacts on physical and cultural heritage.
<i>Lands and Soil Conservation</i>	Project activities will promote land and soil conservation across the demonstration sites through EbA interventions such as agroforestry and riverbank restoration (Outcome 1). In addition, activities under Outcomes 2 and 3 will promote land and soil conservation on a regional scale.

According to the AF’s Environmental and Social Policy, a project can be categorised as either A, B or C. Category A refers to projects that are “likely to have significant adverse environmental or social impacts that are for example diverse, widespread, and irreversible”. Because any adverse social and environmental impacts of the project are expected to be localised and minimal – on-the-ground interventions will largely be “green” and contain minimal construction of hard infrastructure – the Category A classification does not apply. Category B project is categorized as “less adverse than Category A projects. The proposed project is in Category C as the interventions are “with no adverse environmental or social impacts”. In fact, the project interventions will improve the environment and social condition of the proposed project site.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Management arrangements

Describe the arrangements for project / programme management at the regional and national level, including coordination arrangements within countries and among them. Describe how the potential to partner with national institutions, and when possible, national implementing entities (NIEs), has been considered, and included in the management arrangements.

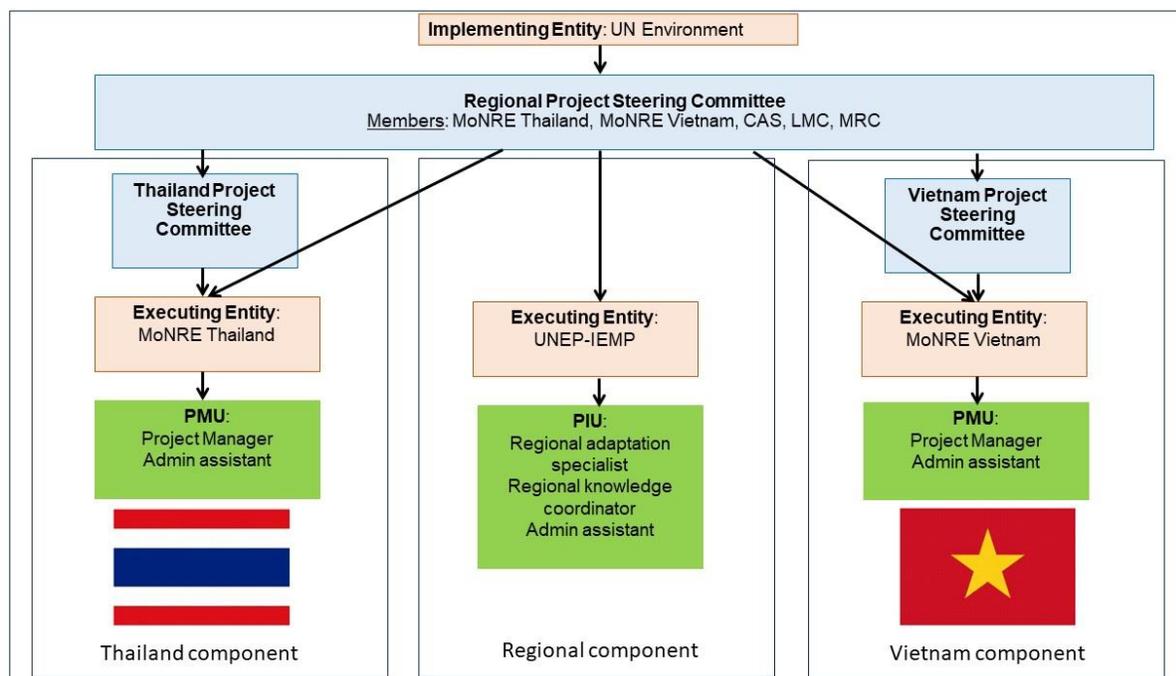


Figure 9: Project management arrangements.

Multilateral Implementing Entity

As requested by the participating countries, UN Environment will be the Multilateral Implementing Entity (MIE) for the proposed project. UN Environment has significant experience in implementing projects of this nature, with dedicated groups in Climate Change Adaptation and Terrestrial Ecosystems. UN Environment has implemented over 50 projects on climate change adaptation at global, regional and national levels. These projects develop innovative solutions for national governments and local communities to adapt to the predicted effects of climate change in an environmentally sound manner including enhancing climate resilience by restoring valuable ecosystems that are vulnerable to climate change. Investments into ecosystems, flood and coastal protection, water catchment and storage, and alternative livelihoods are aimed at helping people buffer extremes of droughts and floods, sea level rise and to adapt to projected climate change. The following implementation services under the MIE modality will be provided by UN Environment for the proposed project:

- overall coordination and management of UN Environment's MIE functions and responsibilities, and the facilitation of interactions with the AF Board and related stakeholders;
- oversight of portfolio implementation and reporting on budget performance;

- quality assurance and accountability for outputs and deliverables at the project development phase, during implementation and on completion;
- receipt, management and disbursement of AF funds in accordance with the financial standards of the AF;
- information and communication management, including maintaining specific project databases to track and monitor progress – financial and substantive – of project implementation;
- oversight and quality assurance of evaluation processes for project performance and ensuring that lessons learned/best practice are incorporated to improve future projects; and

The proposed project will be executed by three separate entities, one to execute regional activities, one within Thailand and one within Vietnam.

Executing Entity – Regional activities

The UN Environment-International Ecosystem Management Partnership (UNEP-IEMP) will be the executing entity for all regional components of the proposed project. UNEP-IEMP hosted by Chinese Academy of Science (CAS) is an appropriate institution to execute the regional component as well as strengthen the collaborative role of institutions based in China such as LMEC, CERN in the region. The UNEP-IEMP will oversee the execution of all outputs and activities under Component 2 and Component 3 of the proposed project. For these regional Components, UNEP-IEMP will be responsible for:

- coordinating and managing the overall implementation of project outcomes and activities;
- monitoring and evaluating regional project outcomes and activities;
- regional knowledge management, communications and awareness raising;
- implementing the regional components of the project;
- providing technical advice on project activities carried out within Thailand and Vietnam (if and when necessary, in support of CTA work);
- managing procurement of goods and services for the regional activities of the project; and
- ensuring the overall quality and timeous delivery of regional project outputs.

Regional project steering committee

A regional project steering committee (RPSC) will be established to provide strategic guidance for the implementation of the entire proposed project. In addition, the RPSC will: i) undertake project assurance – monitoring and evaluation; ii) ensure performance improvement; and iii) ensure accountability and learning. The RPSC will approve annual work plans and review project progress reports, as well as any deviations from the approved plans. The RPSC will meet annually.

Members of the RPSC will comprise:

MoNRE Thailand, MoNRE Vietnam, Chinese Academy of Sciences, Lancang-Mekong Environmental Cooperation Centre and Mekong River Commission and Chief Technical Advisor.

Regional project implementation unit

A regional project implementation unit will be established in UNEP-IEMP. The regional project implementation unit will be responsible for both the coordination and delivery of regional outputs and activities.

The regional project implementation unit will comprise of a regional adaptation specialist (see

Budget notes 2.1a, 2.2a, 2.4a and 3.1a), a regional knowledge coordinator (see Budget Notes 2.2c, 2.3a, 2.5c, and 3.1g) and a regional finance and procurement assistant. The finance and procurement assistant will be responsible for ensuring that the regional components of the project's financial and administrative procedures comply with AF and UN Environment guidelines.

Table 12: Estimated project management costs for regional components.

Execution activity Role	US\$
Regional adaptation specialist	Technical budget
Regional knowledge coordinator	Technical budget
Finance and procurement assistant (@\$1,800 per month)	86,400
Regional PSC meetings (@\$5,000 per meeting)	20,000
Communication costs	4,503
TOTAL	110,903

Executing entity - Thailand

The Department of Water Resources (DWR), Ministry of Natural Resources and Environment (MoNRE) will be the executing entity for project activities within Thailand. The DWR will oversee the execution of Output 1.1, and the activities within Output 1.3 and Output 1.4 that will take place within Thailand. For these Outputs within Thailand, the DWR will be responsible for:

- coordinating and managing the implementation of national project outputs and activities;
- monitoring and evaluating national project outputs and activities;
- ensuring the overall quality and timeous delivery of national project outputs and activities; and
- coordinating with executing entities in Vietnam and UNEP-IEMP to implement regional project outputs and activities.

National project steering committee

A Working Group on climate change adaptation for Young River Basin, under the Climate Change Adaptation Committee within DWR, will be established to form the national project steering committee (PSC). The national PSC will be responsible for providing strategic oversight of project implementation in Thailand.

Members:

- Chair – MoNRE Thailand
- Representative of Climate Change Adaptation Committee of Thailand
- Office of Natural Resources and Environmental Policy and Planning (National focal point of UNFCCC)
- Department of Water Resources, Thai National Mekong Committee Secretariat
- Regional Office of Water Resources No. 4, Khonkaen province (local line agency in proximity of demonstration EbA project)
- Community/village leaders of Young river basin (of upper, mid and lower river basin)
- District administrative governor offices (from EbA demonstration projects)

National designated execution entity

The DWR will designate an institution (local government or external) to be responsible for the

on-the-ground execution of the proposed project. The designated execution entity will be responsible for daily operation and management of the project with oversight and monitoring provided by the DWR. The designated execution entity will be located nearby the demonstration site so that it can easily coordinate with local partners and communities. DWR will ensure that the designated execution entity complies with all AF rules and procedures.

Within the designated execution entity, a project management unit (PMU) will be established that will be responsible for day-to-day management and implementation of the national activities.

Thailand Project Management Unit (PMU)

The PMU will be overseen by a National Project Director (NPD). The NPD will be a designated existing staff member of the DWR. The NPD will be responsible for coordinating all project activities in Thailand and will be the focal point for all communication between Thailand, Vietnam, UNEP-IEMP and UN Environment AF Coordination Unit. Costs related to the National Project Director will be covered in-kind by the DWR.

A Project Manager (PM) will be hired to lead the PMU. The PM will be responsible for the overall management of the proposed project within Thailand. The PM will ensure that the project is run transparently and effectively in accordance with AF and UN Environment guidelines and approved work plans and budgets. The PM will receive project support from a national finance and procurement assistant. The key functions of the PM will be:

- facilitating the day-to-day functioning of the project staff;
- managing human and financial resources in consultation with the National Project Director to achieve results in line with the outputs and activities outlined in the full proposal;
- leading the preparation and implementation of annual results-based work plans and logical frameworks as endorsed by the management;
- coordinating project activities with related and parallel activities;
- monitoring project activities, including financial matters, and preparing quarterly progress reports, and organising quarterly progress reviews;
- reporting and providing feedback on project strategies, activities, progress and barriers to the national PSC, UN Environment and UNEP-IEMP; and
- managing relationships with project stakeholders including communities, NGOs, government agencies and others as required.

Because many of the activities of the proposed project involve procurement and sub-contracting, the recruitment of a dedicated finance and procurement assistant will be necessary in order to ensure that the PMU has the required capacity to manage finances as per UN Environment and AF requirements. The finance and procurement assistant will be responsible for ensuring that the projects financial and administrative procedures comply with AF and UN Environment guidelines.

Three local community coordinators (one each from the upper, middle and lower Young River Basin) will be hired to assist the PM. These local community coordinators will be responsible for managing the on-the-ground implementation of adaptation interventions within their respective demonstration sites.

Table 13: Estimated project management costs for Thailand.

Execution activity Role	US\$
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Execution activity Role	US\$
Project director	In-kind
Project manager (@\$1,700 per month)	81,600
Finance and procurement assistant (@\$850 per month)	40,800
Three local community coordinators (@\$450 per person per month)	64,800
National PSC meetings (@\$2,000 per meeting)	8,000
Communication costs (@\$1,000 per year)	4,000
Office space	In-kind
Office equipment	4,800
Audit (@\$1,500 per year)	6,000
TOTAL	210,000

Executing entity - Vietnam

The Department of Legal Affairs (DLA), Ministry of Natural Resources and Environment (MoNRE) will be the executing entity for project activities within Vietnam. The DLA will oversee the execution of Output 1.2, and the activities within Output 1.3 and Output 1.4 that will take place in Vietnam. For these Outputs within Vietnam, the DLA will be responsible for:

- coordinating and managing the implementation of national project outputs and activities;
- monitoring and evaluating national project outputs and activities;
- ensuring the overall quality and timeous delivery of national project outputs and activities; and
- coordinating with executing entities in Thailand and UNEP-IEMP to implement regional project outputs and activities.

National project steering committee

A national project steering committee will be established. The national PSC will be responsible for providing strategic oversight of project implementation in Vietnam.

Members:

- Chair – MoNRE, Vietnam
- Department of Climate Change
- Institute of Meteorology Hydrology and Climate change
- Institute of Strategy and Policy on Natural Resources and Environment
- Vietnam Environment Administration
- Dong Thap Province's People Committee
- Tram Chin National Park management
- Community/village leaders of communes around Tram Chim National Park
- Academia and NGO/CSO¹⁹⁸

Vietnam Project Management Unit (PMU)

Within DLA, MoNRE a national project management unit will be established. The PMU will be overseen by a National Project Director (NPD). The NPD will be a designated existing staff

¹⁹⁸ Civil society organisation.

member of the DLA. The NPD will be responsible for coordinating all project activities in Vietnam and will be the focal point for all communication between Thailand, Vietnam, UNEP-IEMP and UN Environment AF Coordination Unit. Costs related to the National Project Director will be covered in-kind by the DLA.

A Project Manager (PM) will be hired to lead the PMU. The PM will be responsible for the overall management of the proposed project in Vietnam. The PM will ensure that the project is run transparently and effectively in accordance with AF and UN Environment guidelines and approved work plans and budgets. The PM will receive project support from a national finance and procurement assistant. The key functions of the PM will be:

- facilitating the day-to-day functioning of the project staff;
- managing human and financial resources in consultation with the National Project Director to achieve results in line with the outputs and activities outlined in the full proposal;
- leading the preparation and implementation of annual results-based work plans and logical frameworks as endorsed by the management;
- coordinating project activities with related and parallel activities;
- monitoring project activities, including financial matters, and preparing quarterly progress reports, and organising quarterly progress reviews;
- reporting and providing feedback on project strategies, activities, progress and barriers to the national PSC, UN Environment and UNEP-IEMP; and
- managing relationships with project stakeholders including communities, NGOs, government agencies and others as required.

Because many of the activities of the proposed project involve procurement and sub-contracting, the recruitment of a dedicated finance and procurement assistant will be necessary in order to ensure that the PMU has the required capacity to manage finances as per UN Environment and AF requirements. The finance and procurement assistant will be responsible for ensuring that the projects financial and administrative procedures comply with AF and UN Environment guidelines.

A local community coordinator (to be based at the project intervention site) will be hired to assist the PM. The local community coordinator will be responsible for coordinating and managing the on-the-ground implementation of adaptation interventions in communities surrounding Tram Chim National Park.

Sub-contracting of on-the-ground implementation:

PMU will sub-contract firms or consultants to implement activities at Tram Chim National Park. These will be local organisations (Tram Chim National Park Management Board, or associations from communes).

Table 14: Estimated project management costs for Vietnam.

Execution activity Role	US\$
Project director	In-kind
Project manager (@\$1,700 per month)	81,600
Finance and procurement assistant (@\$900 per month)	43,200
Local community coordinator (@\$1,300 per month)	62,400
National PSC meetings (@\$2,000 per meeting)	8,000
Communication costs (@\$1,000 per year)	4,000

Execution activity Role	US\$
Office space	In-kind
Office equipment	4,800
Audit (@\$1,500 per year)	6,000
TOTAL	210,000

B. Financial and project risk management

Describe the measures for financial and project/programme risk management.

Table 15: Financial and project risk management measures for the proposed project, including risk ratings.

Identified risks	Risk rating	Mitigation measures
High turnover of staff members in implementing agencies and within different countries may negatively impact project deliverables.	Low–medium	<ul style="list-style-type: none"> Proposed project will build partnerships between government and non-government agencies at the national and local levels to ensure continuity.
Disagreement amongst stakeholders with regards to demonstration site selection.	Low	<ul style="list-style-type: none"> Intervention sites will be selected using an agreed upon list of criteria to ensure the selection is transparent and equitable. There will be a participatory approach to the proposed project, particularly with regard to demonstration site selection.
Loss of government support may result in lack of prioritisation of proposed project activities.	Low	<ul style="list-style-type: none"> Regular stakeholder consultation and involvement will be undertaken to ensure that both beneficiary governments (GoT and GoV) maintain their commitment and consider the proposed project as a support to their natural resource management, agriculture and rural development programmes. The roles of DWR-MoNRE (Thailand) and DLA-MoNRE (Vietnam) as national executing entities under the proposed project ensures responsibility for and support of activities.
Institutional capacities and relationships are not sufficient to provide practical solutions to climate problems that are complex and multi-sectoral.	Medium	<ul style="list-style-type: none"> Proposed project design includes the development of institutional capacity. This will ultimately lead to the development of an appropriate institutional framework for climate change adaptation planning (including EbA), altering policy and implementing interventions.
Capacity constraints of local institutions may limit the ability to undertake the research and interventions.	Medium	<ul style="list-style-type: none"> Human resource capacity will be developed as required. Collaboration and exchange between local institutions and international research institutes will be initiated. A chief technical advisor (CTA) will work closely with the AF PM to ensure timely delivery of project outputs.
Priority interventions implemented are not found to be cost-effective.	Low	<ul style="list-style-type: none"> Cost-effectiveness is a core principle in the implementation of adaptation measures. Detailed information will be recorded regarding the cost-effectiveness of interventions at all of the demonstration sites (Output 1.3). A cost-effectiveness

Identified risks	Risk rating	Mitigation measures
		<p>analysis will then be conducted based on this information. Results from the analysis will be used to inform the adaptative management of interventions and will be disseminated across the GMS for use in the design of future adaptation initiatives.</p> <ul style="list-style-type: none"> Adaptation interventions (particularly EbA) will be designed to ensure that they are no-regret and low cost, using locally available materials and knowledge.
Lack of commitment/buy-in from local communities may result in failure of intervention sites.	Medium	<ul style="list-style-type: none"> A stakeholder engagement plan will be developed during the inception phase. Community stakeholders were consulted through a bottom-up approach integrating the community into the proposed project's implementation phases will be followed. Awareness-raising in and training of beneficiary communities are included in the project's design to promote buy-in and ensure awareness and understanding of activities.
Disagreement among stakeholders with regard to roles in the proposed project.	Low	<ul style="list-style-type: none"> Stakeholder roles are detailed clearly in the stakeholder involvement plan. This plan will be presented and confirmed during the Inception Workshop. The stakeholder involvement plan has been designed to be representative of gender, vulnerable groups and local communities.
Current climate and seasonal variability and/or hazard events result in poor results for the adaptation (including EbA) and restoration activities.	Medium	<ul style="list-style-type: none"> Current climatic variability will be taken into account in the planning of the adaptation (including EbA) and conservation agriculture activities. Drought- and flood-resilient plants (including crops) species will be selected for relevant interventions. Techniques to assist plant growth particularly in the seedling/sapling phases and to reduce the risk of damage from climate change hazard impacts will be used. Species will be planted in appropriate seasons to reduce the risk of hazard impact. Diversity in planted crops will reduce this risk. M&E at demonstration sites will allow for adaptive management, allowing for appropriate decisions to be made in the event of climate-related hazards and seasonal variability. The design of adaptation (including EbA) intervention protocols will include considerations for the effects of climate-related hazards and seasonal variability. The involvement of local communities in the design, implementation and management of adaptation interventions at demonstration sites promotes the use of local knowledge. This includes extensive knowledge of current climate-related hazards and seasonal variability.
Trees planted by the project are cut down by the communities.	Medium	<ul style="list-style-type: none"> Community involvement – i.e. 'bottom-up' approach – and awareness-raising will be undertaken to avoid this risk.
Some infrastructure put in place by the project could	Medium	<ul style="list-style-type: none"> Community management structures such as village water committees established and trained in integrated

Identified risks	Risk rating	Mitigation measures
lead to conflicts associated with different user access.		water resources management and conflict resolutions.
Community access to goods and services supplied by the EbA interventions in Tram Chim National Park is restricted or prevented.	Low	<ul style="list-style-type: none"> • Consultations between project management, community representatives and management of Tram Chim National Park during the project's inception phase will ensure that agreements are made regarding the access of communities to ecosystem goods and services.
Ecosystem goods and services supplied by EbA interventions in Tram Chim National Park are overexploited by local communities, resulting in environmental degradation.	Medium	<ul style="list-style-type: none"> • Agreements on the extraction and use of ecosystem goods and services by local communities will be made during the inception phase. Resource user groups and park management will work together to ensure that overexploitation is mitigated. • The extraction of ecosystem goods and services from Tram Chim National Park by local communities will be tracked through the project's M&E framework. • Interventions within the national park will be designed and managed to ensure that they are compliant with Vietnam's protected area management laws. This will also cover the extraction of ecosystem goods and services and will be enforced throughout the project's implementation period.
Conflicts/disagreements between GMS countries on the management of transboundary resources (such as water) prevents cooperation on regional activities.	Medium	<ul style="list-style-type: none"> • During the design phase, buy-in and support of all beneficiary countries were prioritised. As a result, the project and its design have been endorsed and validated, respectively, by all beneficiary countries. • The involvement of UN Environment as the implementing entity and UNEP-IEMP as the executing entity for regional components will ensure that regional dialogue over and participation in relevant activities is promoted as well as maintained. • Consultations with, as well as input and endorsement from regional bodies (such as the LMC and MRC) regarding the implementation of the proposed project will mitigate the impacts of regional disputes on regional project activities.

C. Environmental and social risk management measures

Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

Environmental and social impacts and risks have been identified for the proposed project (see Part II:L). The table below describes risks and impacts management in the proposed project in accordance with the Environmental and Social Principles of the AF.

Table 16: Environmental and social risk management.

Checklist of environmental and social principles	Potential impacts and risks	Mitigation measures
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<i>Compliance with the Law</i>	The project will comply with the law.	The involvement of stakeholders in the selection of adaptation interventions and design of their protocols during the project's inception phase (Output 1.2), will ensure that all relevant laws are considered during this process. Once implemented, the monitoring of adaptation interventions (including EbA) at demonstration sites in and around the national park will provide a means of tracking their alignment with law.
<i>Access and Equity</i>	The beneficiaries of the proposed project are poor people in vulnerable communities who may not be into decision-making processes. There is, therefore, a risk that certain community members may benefit more than others.	<p>This risk will be mitigated through the implementation of local knowledge-sharing strategies (Output 1.4) in communities surrounding the demonstration sites. As a result, the autonomous upscaling and replication of project interventions beyond these sites will be facilitated, enhancing the climate-resilience of non-beneficiary communities. Furthermore, both beneficiary and non-beneficiary communities¹⁹⁹ will be sensitised towards the approach of prioritising the support from the proposed project to most vulnerable communities while ensuring benefits reach further communities through one or more of the proposed project activities.</p> <p>The involvement of local authorities²⁰⁰ in the project design and implementation of adaptation interventions at demonstration sites (as well as other aspects of project design) mitigates the reduction or prevention of community access to essential services. In addition, the introduction of climate-resilient livelihood options (Outputs 1.1 and 1.2) under the proposed project will provide local communities with alternative sources of food and income.</p>
<i>Marginalized and Vulnerable Groups</i>	There is a risk that vulnerable and marginalised groups will be excluded during the implementation project activities (particularly adaptation interventions – Component 1) and have insufficient access to the associated benefits.	<p>The proposed project has been designed to ensure that marginalised and vulnerable groups – especially women, indigenous people, youth, and people living with disabilities – will not be adversely affected by, but instead benefit from, relevant climate change adaptation activities.</p> <p>Comprehensive stakeholder mapping will take place through Outputs 1.1 and 1.2 as adaptation demonstration sites are identified. This will allow for the identification of marginalised and vulnerable groups. In addition, to avoid the exclusion of these communities and groups, they were involved in extensive consultations carried out during the preparation of the full project proposal. This ensures equal</p>

¹⁹⁹ Including inter-community institutions such as the Young River Basin Committee.

²⁰⁰ For example, Young River Basin Committee in Thailand and commune authorities in communities surrounding Tram Chim National Park.

		<p>participation and that social impacts do not unjustly impact on marginalised and vulnerable groups.</p>
<i>Human Rights</i>	<p>No activities are or will be included in the design of the proposed project that are not in line with established international human rights. Moreover, the proposed project will promote the fundamental human rights of access to food, water and information.</p>	<p>There is a Human Rights Commission in each partner country with representatives up to district level that will ensure that human rights at the grassroots level is adhered to and promoted.</p> <p>The project seeks to ensure that benefits of the project are shared broadly in a nondiscriminatory, equitable manner through participatory processes and transparent selection criteria. Extensive stakeholder consultations were held during project preparation (see Annex II) and will be continued throughout project implementation. Potential project-related concerns and/or grievances of local communities will be addressed through a Grievance Mechanism consistent with the UN Environment's Stakeholder Response Mechanism (see Annex V).</p>
<i>Gender Equity and Women's Empowerment</i>	<p>The proposed project is targeting communities where men occupy the majority of the leadership positions. There is, therefore, a risk that women will not benefit equitably from the proposed project's climate change adaptation (including EbA) and capacity-building interventions.</p>	<p>Gender equity and women's empowerment were considered across all relevant design aspects of the proposed project and will be adhered to throughout the implementation period. To this end, a gender analysis was conducted during the development of the proposal, under the guidance of gender experts and NGOs, to ensure that gender considerations were fully considered during project design (see Annex VII). In particular, equal rights, responsibilities, opportunities and access of women to the benefits of climate change adaptation have been considered. For example, where applicable, project activities have been designed to include gender disaggregation (at least 50%), especially on-the-ground activities, such as those of Outputs 1.1 and 1.2. For technical assessments as well as capacity building activities, women will be strongly encouraged to participate.</p> <p>The National Project Management Units (Thailand and Vietnam), local government authorities and bodies at the proposed project intervention sites will ensure gender issues are considered and addressed during project implementation. Gender Action Plan will ensure that gender-focused activities will include raising awareness in the region to <i>inter alia</i>: i) acknowledge women for their contribution as an income generating individual in the household; and ii) highlight their role in climate change adaptation. This will enhance the value of women within their communities, as well as promote their equitable participation of women</p>

		<p>in the planning, implementation, monitoring and evaluation of the project. Furthermore, the fair and equitable selection (with a least 50% female representation) of beneficiaries will be conducted for capacity building and training sessions. A list of all the participants will be maintained, and gender ratio will be monitored by the National Project Management Units on a quarterly basis, ensuring that the progress of all gender-related targets in the project results framework are tracked and met.</p> <p>Gender discrimination will be commensurate with the identified gaps in gender equality and will not go beyond providing equal opportunities for women.</p>
<i>Core Rights</i>	<i>Labour</i>	<p>Local communities will be involved in the implementation and maintenance of climate change adaptation (including EbA) interventions. There may be exposed to the risk of accidents while implementing the proposed project's interventions.</p> <p>During implementation, the National Project Steering Committees and Management Units will ensure respect for international and national labour laws and codes, for any work that may be carried out in relation to the project. This includes the eight International Labour Organization Convention (ILO) core labour standards related to fundamental principles and rights of workers, as well as ILO Convention No. 169 which concerns rights of indigenous and tribal peoples.</p> <p>Positive discrimination in favour of women may be used to provide fair and equal opportunity to women to seek employment as labourers. All forms of negative discrimination in respect of employment and occupation will be eliminated. The proposed project will not engage in child labour in any of its activities. All forms of forced or compulsory labour will be eliminated.</p>
<i>Indigenous Peoples</i>		<p>There is the risk for inequitable access of indigenous peoples to the project's resources and benefits.</p> <p>During the design phase of the proposed project, the inclusion and consideration of indigenous peoples were emphasised. When climate change adaptation demonstration sites are confirmed during the project's inception phase (Outputs 1.1 and 1.2), comprehensive stakeholder mapping will be conducted.</p> <p>The inclusion of indigenous people is seen as essential and beneficial since they possess traditional knowledge related to EbA that will contribute to the inclusive selection and implementation of EbA interventions. Therefore, they will be included in the local-level assessments, demonstration of EbA interventions, capacity-building, knowledge management and training activities implemented under the proposed project. This will ensure that the UN Declaration on the Rights of Indigenous</p>

		Peoples, including matters of free, prior and informed consent, will be upheld.
<i>Involuntary Resettlement</i>	No appreciable risk	The programme will work with communities in their locations, and will not in any way promote resettlement of communities to new locations.
<i>Protection of Natural Habitats</i>	<p>On-the-ground adaptation interventions (specifically EbA) will include the planting of species for enrichment and/or restoration of ecosystems.</p> <p>Adaptation interventions involving hard infrastructure will also be constructed (for example, the lengthening of canals and construction of water reservoirs). Such interventions may result in the disturbance of small areas of natural habitat.</p> <p>Adaptation interventions implemented around Tram Chim National Park may disturb the natural habitats of the park.</p>	<p>The promotion of EbA interventions through the proposed project (including those based on traditional knowledge) is more likely to result in the restoration, improved management and protection of natural habitats, as well as the strengthened supply of ecosystem goods and services. To ensure that this principle is adhered to, the consultation with and inclusion of relevant stakeholders (community and authority level) during project design and implementation is prioritised.</p> <p>All necessary impact assessments will be conducted before the implementation of interventions around Tram Chim National Park, and park management will be consulted to ensure that the protection of natural habitats is enforced. Furthermore, all national protected area laws will be respected during the selection and implementation of adaptation interventions for Tram Chim National Park and its surrounding communities.</p> <p>The project partners, through broad stakeholder consultation and engagement, will ensure that adaptation interventions not planned for implementation within Tram Chim National Part do not encroach onto protected areas, buffer zones and natural habitats.</p>
<i>Conservation of Biological Diversity</i>	There is a low risk that adaptation interventions involving the construction of hard infrastructure (such as the extending of canals; Component 1) could negatively impact biodiversity.	The project will ensure that the conservation and sustainable use of biological diversity factors into the process of finalising adaptation interventions and demonstration site selection. Adaptation demonstration sites will be selected using a participatory approach to ensure that activities do not cause significant loss of biological diversity or the introduction of known invasive species. Furthermore, the focus on EbA under the proposed project will result in the restoration of ecosystems, which will ultimately enhance the biological diversity of the areas surrounding the demonstration sites.
<i>Climate Change</i>	No appreciable risk	No mitigation measures necessary.
<i>Pollution Prevention and Resource</i>	No appreciable risk	No mitigation measures necessary.

<i>Efficiency</i>		
<i>Public Health</i>	No appreciable risk	No mitigation measures necessary.
<i>Physical and Cultural Heritage</i>	There is a low risk that the adaptation interventions involving the construction of hard infrastructure (such as canals and water storage reservoirs) could result in negative impacts on physical and cultural heritage.	The participatory approach to project design included the use of local knowledge to ensure that physical and cultural heritage is not negatively affected by on-the-ground adaptation activities. In addition, the location of physical and cultural heritage sites will be considered during the finalisation of demonstration sites during inception to reduce the likelihood of negative impacts related to project interventions.
<i>Lands and Soil Conservation</i>	No appreciable risk	No mitigation measures necessary.

D. Monitoring and evaluation

Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

The proposed project will comply with formal guidelines, protocols and toolkits issued by the AF and UN Environment. UN Environment will develop a **Supervision Plan** during the project's inception phase which will be distributed and presented to all stakeholders during the Inception Workshop. The emphasis of the Supervision Plan will be on outcome monitoring, learning and sustainability and financial management. Proposed project risks and assumptions will be regularly monitored by UN Environment. Risk assessment and rating is an integral part of the Project Progress Review (PPR). The quality of the project's M&E will also be reviewed and rated as part of the PPR. Appropriate financial parameters will be monitored annually to ensure the cost-effective use of financial resources.

The proposed project will undergo an independent **Mid-Term Review** at the mid-point of project implementation. The Mid-Term Review will determine progress being made toward the achievement of outcomes and will identify corrective actions if needed. It will: i) focus on the effectiveness, efficiency and timeliness of project implementation; ii) highlight issues requiring decisions and actions; and iii) document initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for improved implementation during the final half of the project's term.

An independent **Terminal Evaluation** will take place three months prior to the proposed project's end date in accordance with UN Environment guidance. The Final Evaluation will focus on the delivery of the project's results as initially planned – and as corrected after the Mid-Term Evaluation, if any such correction took place. The Final Evaluation will assess the impact and sustainability of results, including their contribution to capacity development and the achievement of adaptation benefits.

An **Annual Project Progress Review** (PPR) will be prepared to monitor progress made since the project's start and in particular for the previous reporting period. The PPR includes, but is not limited to, reporting on the following:

- progress on the project's objective and outcomes – each with indicators, baseline data and end-of-project targets (cumulative);
- project outputs delivered per project outcome (annual);
- lessons learned/good practice;
- annual Work Plan and expenditure reports; and

- project risk and adaptive management.

Periodic monitoring will be conducted through visits to the intervention sites undertaken by relevant staff from UN Environment. Visits will be jointly conducted based on the agreed schedule to assess project progress first hand. A summary of the M&E costs is provided in Table 18.

Table 17: Monitoring and evaluation costs of the proposed project. *Note: The costs indicated here do not include the costs associated with UN Environment staff. Such costs will be covered by the MIE fee.*

Type of M&E activity	Responsible parties	Budget US\$ (excluding project team time)	Timeframe
Direct Project Monitoring and Quality Assurance including progress and financial reporting, project revisions, technical assistance and risk management	<ul style="list-style-type: none"> • Project Managers • Finance and procurement assistants • UNEP-IEMP • External consultants – CTA 	(supported from staff costs included in Project execution, and from MIE fee)	Quarterly, half-yearly and annually and as needed
Evaluations (Mid-term review and Independent terminal evaluations)	<ul style="list-style-type: none"> • Project Managers • UNEP-IEMP • UN Environment • External consultants 	Mid-term: 35,000 Terminal: 35,000	At midpoint and end of project implementation
Audit	<ul style="list-style-type: none"> • Project Managers • UNEP-IEMP 	Regional: 12,000 (3,000 annually) Thailand: 8,000 (2,000 annually) Vietnam: 8,000 (2,000 annually)	Annually at year end
Inception meeting, field visits and steering committee meetings	<ul style="list-style-type: none"> • Project Managers • UNEP-IEMP 	Regional: 20,000 (5,000 annually) Thailand: 8,000 (2,000 annually) Vietnam: 8,000 (2,000 annually)	Inception meeting within the first two months and annual PSC meetings
TOTAL indicative cost			US\$ 134,000

E. Results framework

Include a results framework for the project/programme proposal, including milestones, targets and indicators.

Table 18: Results framework with indicators to output level, including baseline, project targets, sources of verification and assumptions.

Expected outcome/outputs	Outcome indicator	Baseline	Target	Sources of verification	Assumptions
<p>Objective: Strengthened awareness and action of governments and communities in the GMS to adapt to climate change using EbA.</p>	Change in the awareness score assessment framework for each targeted institution.	Baseline values to be at the beginning of project implementation.	Each targeted institution (MoNRE Thailand, MoNRE Vietnam, LMEC) has progressed by a minimum of 1 step in their capacity score assessment framework.	<p>A capacity score will be generated for each targeted institution. The scoring will be based on four criteria expressed as questions (these criteria will be further validated at inception phase):</p> <ol style="list-style-type: none"> 1. Degree to which there is greater awareness of how investments in natural and physical assets can deliver adaptation benefits and positive net returns. 2. Degree to which there is awareness of how to measure adaptation benefits and how this relates to national planning and budgetary processes. 3. Degree to which strengthened awareness has translated into adaptation investment planning. 	The demonstration of EbA interventions, knowledge-sharing and training provided by the project increases the awareness of targeted institutions about EbA possibilities and implications for flood and drought management and transboundary climate change effects.

Expected outcome/outputs	Outcome indicator	Baseline	Target	Sources of verification	Assumptions
				<p>4. Degree to which better adaptation information has translated into more informed regional dialogues on transboundary river management and adaptation needs.</p> <p>Each question is answered with an assessment and score for the extent to which the associated criterion has been met: not at all (= 0), partially (= 1) or to a large extent/ completely (= 2). An overall score is calculated, with a maximum score of 10 given five criteria.</p>	
<p>Outcome 1. Climate change adaptation interventions implemented by vulnerable communities in Thailand and Vietnam to manage climate change impacts, particularly droughts and floods.</p>	<p>Natural and physical assets necessary for adaptation to climate change (droughts and floods) in Thailand and Vietnam protected or rehabilitated.</p>	<p>Areas of forest, wetland, riparian habitat, grassland and agricultural land are degraded through overexploitation of natural resources. Water infrastructure needed to attenuate flooding, as well as store and redistribute water during droughts is absent or insufficient.</p>	<p>930 ha of natural habitats restored at demonstration sites in Thailand and Vietnam.</p>	<p>Monitoring and evaluation reports per intervention site; reports on community consultations/trainings and field visits, GIS.</p>	<p>All communities surrounding project intervention sites are committed to participating in project activities and taking up/adopting climate change adaptation activities (including EbA).</p>

Expected outcome/outputs	Outcome indicator	Baseline	Target	Sources of verification	Assumptions
	<p>Number of people participating in concrete on-the-ground climate change adaptation interventions (including EbA) to build resilience from drought and flood.</p> <p>Percentage of change in average annual household crop production loss because of drought and flood.</p>	<p>0</p> <p>Baseline values will be determined at the beginning of the project implementation</p>	<p>At least 1,000 people (500 in the Young River Basin and 500 in the communities surrounding Tram Chim National Park, of which at least 50% should be women) are participating in concrete on-the-ground climate change adaptation (including EbA) interventions.</p> <p>40% reduction in the average annual household crop production loss attributed to drought and flood.</p>	<p>Registers of project beneficiaries at each site, site visits and community surveys.</p> <p>Household survey, interview with local agricultural extension officers.</p>	<p>Community members continue to participate in adaptation interventions once they have been trained and provided with the necessary equipment.</p> <p>Community members will be able to separate out crop production losses attributable to drought and flood.</p>
<p>Outcome 2. Enhanced knowledge and awareness of adaptation measures, including EbA, to shared climate change impacts in different ecosystems to promote regional cooperation, planning and implementation of adaptation in the GMS.</p>	<p>Number of projects utilising the guidelines for the design and implementation of EbA monitoring and evaluation systems generated.</p>	<p>0</p>	<p>3 projects are utilising the guidelines for the design and implementation of EbA monitoring and evaluation systems.</p>	<p>Review of project documents. Interviews with project managers.</p>	

Expected outcome/outputs	Outcome indicator	Baseline	Target	Sources of verification	Assumptions
<p>Outcome 3. Strengthened regional cooperation on climate change adaptation, particularly in response to floods and droughts, in the GMS.</p>	<p>Number of national adaptation strategies/plans that incorporate the climate change interventions demonstrated through the project (EbA, climate-resilient agriculture and additional climate-resilient livelihoods).</p>	<p>0</p>	<p>At least 1 national adaptation strategy/plan incorporates the climate change interventions demonstrated through the project (EbA, climate-resilient agriculture and additional climate-resilient livelihoods).</p>	<p>Project reports. Review of regional adaptation strategies/plans.</p>	<p>All GMS countries are committed to regional cooperation, planning and implementation of adaptation in the region.</p>

F. Project alignment with AF results framework

Demonstrate how the project/programme aligns with the Results Framework of the Adaptation Fund.

Table 19: Proposed project alignment with the AF Results Framework.

Project Objective(s) ²⁰¹	Project Objective Indicator	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
To strengthen the capacity of governments and communities in the GMS to adapt to climate change using EbA.	Change in the capacity score assessment framework for each targeted institution.	Outcome 5. Increased ecosystem resilience in response to climate change and variability-induced stress.	5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress.	7,000,000
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
Outcome 1. Climate change adaptation interventions implemented by vulnerable communities in Thailand and Vietnam to manage climate change impacts, particularly droughts and floods.	1.1. Natural and physical assets necessary for adaptation to climate change (droughts and floods) protected or rehabilitated.	Output 5. Vulnerable, physical, natural, and social assets strengthened in response to climate change impacts, including variability.	5.1. Number and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets).	4,600,000
	1.2. Number of people practising climate change adaptation interventions (including EbA).			
Outcome 2. Enhanced knowledge and awareness of adaptation measures, including EbA, to shared climate change impacts in different ecosystems to promote regional cooperation, planning and implementation of adaptation in the GMS.	2.1 Number of projects utilising the guidelines for the design and implementation of EbA monitoring and evaluation systems generated.	Output 3. Targeted population groups participating in adaptation and risk reduction awareness activities.	3.1.2. Number of news outlets in the local press and media that have covered the topic.	788,709
Outcome 3. Strengthened regional cooperation on climate change	3.1. Number of regional adaptation strategies/plans that incorporate the climate	Output 7. Improved integration of climate-resilience	7.1. Number, type and sector of policies introduced or	450,000

²⁰¹ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology, but the overall principle should still apply.

<p>adaptation, particularly in response to floods and droughts, in the GMS.</p>	<p>change interventions demonstrated through the project (EbA, climate-resilient agriculture and additional climate-resilient livelihoods).</p>	<p>strategies into country development plans.</p>	<p>adjusted to address climate change risks</p>	
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G. Budget

Include a detailed budget with budget notes, broken down by country as applicable, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
Component 1: Demonstration of climate change adaptation interventions, with a focus on drought and flood management, in vulnerable communities and different ecosystems.										
Outcome 1: Climate change adaptation interventions implemented by vulnerable communities in Thailand and Vietnam to manage climate change impacts, particularly droughts and floods.										4,600,000
Output 1.1: A suite of climate change adaptation interventions, including EbA, implemented at Young River Basin in Thailand.	2,000,000	1.1.1 Develop detailed implementation protocols for the climate change adaptation interventions, including EbA, to be implemented in the Young River Basin.	National consultancy - Adaptation specialists	010	1.1a	140,000				140,000
			International consultant - Chief Technical Advisor	010	1.1b 1.2b	25,000	25,000	25,000	25,000	100,000
			Workshops - Community consultations	120	1.1c	10,000				10,000
			Travel - Project management unit	125	1.1d	20,000				20,000
			National consultancy - Gender specialist	010	1.1k	10,000				10,000
		1.1.2 Train communities in the Young River Basin to implement climate change adaptation interventions according to the implementation protocols developed through Activity 1.1.1.	National consultancy - Adaptation specialists	010	1.1a	50,000				50,000
			Printing costs - Training materials	130	1.1e	20,000				20,000
			Training events - Young River Basin	130	1.1f	100,000	100,000	50,000	50,000	300,000
		1.1.3 Implement climate-resilient agriculture interventions in the	Climate change adaptation intervention inputs - climate-resilient	130	1.1g		150,000	100,000	50,000	300,000

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
		selected sites within the Young River Basin.	agriculture							
		1.1.4 Implement ecosystem-based adaptation interventions within the Young River Basin to maintain the supply of ecosystem goods and services to surrounding communities.	Climate change adaptation intervention inputs - ecosystem-based adaptation	130	1.1h		200,000	150,000	50,000	400,000
		1.1.5 Implement interventions to improve water infrastructure and water management to reduce the negative impacts of floods and droughts.	Climate change adaptation intervention inputs - water management	130	1.1i		200,000	150,000	50,000	400,000
		1.1.6 Establish additional, climate-resilient livelihood options in the communities within the targeted sub-districts in the Young River Basin.	Climate change adaptation intervention inputs - additional climate-resilient livelihoods	130	1.1j		100,000	50,000	50,000	200,000
			Travel - project management unit	125	1.1d		20,000	20,000	10,000	50,000
Output 1.2: A suite of climate change adaptation interventions, including EbA, implemented in communities living around Tram Chim National Park in Vietnam.	2,000,000	1.2.1 Develop detailed implementation protocols for the climate change adaptation interventions, including EbA, to be implemented in the communities living around Tram Chim National Park.	National consultancy - Adaptation specialists	010	1.2a	140,000				140,000
			International consultant - Chief Technical Advisor	010	1.1b 1.2b	25,000	25,000	25,000	25,000	100,000
			Workshops - Community consultations	120	1.2c	10,000				10,000
			Travel - project management unit	125	1.2d	20,000				20,000
			National consultancy -	010	1.1k	10,000				10,000

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
			Gender specialist							
		1.2.2 Train communities living around Tram Chim National Park to implement climate change adaptation interventions according to the implementation protocols developed through Activity 1.1.1.	National consultancy - Adaptation specialists	010	1.2a	50,000				50,000
			Printing costs - Training materials	130	1.2e	20,000				20,000
			Training events - Young River Basin	130	1.2f	100,000	100,000	50,000	50,000	300,000
		1.2.3 Implement climate-resilient agriculture interventions in the communities living around Tram Chim National Park.	Climate change adaptation intervention inputs - climate-resilient agriculture	130	1.2g		150,000	100,000	50,000	300,000
		1.2.4 Implement ecosystem-based adaptation interventions within Tram Chim National Park to maintain the supply of ecosystem goods and services to surrounding communities.	Climate change adaptation intervention inputs - ecosystem-based adaptation	130	1.2h		200,000	150,000	50,000	400,000
		1.2.5 Implement interventions to improve water infrastructure and water management to reduce the negative impacts of floods and droughts.	Climate change adaptation intervention inputs - water management	130	1.2i		200,000	150,000	50,000	400,000
		1.2.6 Establish additional, climate-resilient livelihood options in the communities living around Tram Chim	Climate change adaptation intervention inputs - additional climate-resilient livelihoods	130	1.2j		100,000	50,000	50,000	200,000

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
		National Park.	Travel - project management unit	125	1.2d		20,000	20,000	10,000	50,000
Output 1.3: Monitoring programme established to collect information on the cost-effectiveness of project interventions in different socio-ecological contexts in the GMS.	250,000	1.3.1: Design a monitoring and evaluation (M&E) plan for each adaptation demonstration site that is context-specific but also allows for comparison among sites.	National consultants (Thailand) - researchers	010	1.3a	5,000				5,000
			National consultants (Vietnam) - researchers	010	1.3b	5,000				5,000
		1.3.2: Implement the M&E plans in association with local research institutions to monitor the results, and collect information on the cost-effectiveness, of concrete adaptation technologies in different socio-ecological contexts. This information will be used to inform a cost-effectiveness analysis under Output 2.1.	National consultants (Thailand) - researchers	010	1.3a		20,000	20,000	20,000	60,000
			National consultants (Vietnam) - researchers	010	1.3b		20,000	20,000	20,000	60,000
			Intervention monitors (Thailand)	010	1.3c		20,000	20,000	20,000	60,000
			Intervention monitors (Vietnam)	010	1.3d		20,000	20,000	20,000	60,000
Output 1.4: National level knowledge-sharing strategy implemented in Thailand and Vietnam.	350,000	1.4.1: Design knowledge-sharing strategies in Thailand and Vietnam that are locally appropriate and enhance the local transfer of applicable adaptation knowledge.	National consultancy (Thailand) - Awareness-raising firm	120	1.4a	25,000				25,000
			National consultancy (Vietnam) - Awareness-raising firm	120	1.4b	25,000				25,000
		1.4.2: Implement the knowledge-sharing strategies in communities surrounding the project	National consultancy (Thailand) - Awareness-raising firm	120	1.4a	25,000	25,000	50,000	50,000	150,000

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
		demonstration sites in Thailand and Vietnam.	National consultancy (Vietnam) - Awareness-raising firm	120	1.4b	25,000	25,000	50,000	50,000	150,000
Component 2: Regional knowledge base on climate change adaptation expanded in the GMS.										
Outcome 2: Enhanced knowledge and awareness of adaptation measures, including EbA, to shared climate change impacts in different ecosystems to promote regional cooperation, planning and implementation of adaptation in the GMS.										788,709
Output 2.1: GMS-specific cost-effectiveness analysis undertaken on climate change adaptation interventions that reduce the impact of floods and droughts.	150,000	2.1.1: Collate information on cost-effectiveness generated through M&E plans at project demonstration sites (Output 1.3).	Regional adaptation specialist	010	2.1a	15,000	15,000	15,000	15,000	60,000
		2.1.2: Undertake a comprehensive literature review on the cost-effectiveness of different climate change adaptation interventions in the GMS.	International consultancy – Cost-effectiveness analysis	010	2.1b			10,000		10,000
		2.1.3: Conduct interviews and consultations with stakeholders involved in climate change adaptation projects in the GMS on the cost-effectiveness of different climate change adaptation interventions.	International consultancy – Cost-effectiveness analysis	010	2.1b			10,000		10,000
			Consultations - cost-effectiveness analysis	120	2.1c				20,000	
		2.1.4: Develop a cost-effectiveness analysis of climate change adaptation interventions that reduce the impacts of floods and droughts.	International consultancy – Cost-effectiveness analysis	010	2.1b				40,000	
Printing costs - Cost-effectiveness analysis	130		2.1d					10,000		10,000

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)	
Output 2.2: Policy briefs – and paper for the Lancang-Mekong Cooperation Outlook Report series – developed on: i) good practice in managing shared climate change impacts in the GMS; ii) integrating climate change adaptation into transboundary water management; and iii) cost-effectiveness of EbA for reducing vulnerability to climate change.	138,709	2.2.1: Identify policy barriers to climate change adaptation, upscaling and mainstreaming in the GMS, with a focus on policies relating to transboundary water and river basin management.	Regional adaptation specialist	010	2.2a	10,000	10,000			20,000	
		2.2.2: Develop one policy brief on good practice in managing shared climate change impacts (drought and floods) in the GMS.	International consultant - Adaptation and Policy expert	010	2.2b		20,000			20,000	
		2.2.3: Develop one policy brief on integrating climate change adaptation into transboundary water management.	International consultant - Adaptation and Policy expert	010	2.2b				20,000	20,000	
		2.2.4: Develop one policy brief on the cost-effectiveness of EbA for reducing vulnerability to climate change in the GMS.	International consultant - Adaptation and Policy expert	010	2.2b					18,709	18,709
		2.2.5: Develop an original paper for LM-ECC Environmental Outlook Report series on climate change adaptation in the GMS with special reference to: i) concrete adaptation strategies – including EbA – for shared climate impacts like droughts and floods; ii) integrating	Regional knowledge coordinator	010	2.2c			20,000	20,000	20,000	60,000

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
		climate change adaptation into transboundary water and river basin management; and iii) regional coordination on adapting to climate change.								
Output 2.3: Knowledge on EbA that has been generated and collated through the project shared on the main regional knowledge platforms, presented at regional adaptation forums and shared through different media.	150,000	2.3.1: Share M&E guidelines (Output 1.4), the cost-effectiveness analysis (Output 2.1) and policy briefs (Output 2.2) on three regional knowledge platforms.	Regional knowledge coordinator	010	2.2c 2.3a	10,000	10,000	10,000	10,000	40,000
		2.3.2: Present M&E guidelines (Output 1.4), the cost-effectiveness analysis (Output 2.1) and policy briefs (Output 2.2) at three regional forums.	Regional knowledge coordinator	010	2.2c 2.3a	10,000	10,000	10,000	10,000	40,000
			Travel - knowledge sharing	125	2.3b	10,000	20,000	20,000	20,000	70,000
Output 2.4: Guidelines for the design and implementation of EbA monitoring and evaluation systems, including simplified methods for collecting comparable information in different socio-ecological contexts.	50,000	2.4.1: Collate and evaluate lessons learned from the implementation of M&E plans at each project demonstration site.	Regional adaptation specialist	010	2.4a	5,000	5,000	5,000	5,000	20,000
		2.4.2: Review M&E plans from other adaptation projects to identify design features that encourage cost-effective, simplified and comparable M&E systems.	International consultant - M&E specialist	010	2.4b				10,000	10,000
			2.4.3: Develop guidelines for the design and	International consultant - M&E specialist	010	2.4b				20,000

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
		implementation of M&E systems for climate change adaptation (including EbA) projects in the GMS.								
Output 2.5: Regional training events on ecosystem-based adaptation conducted with technical government staff from all GMS countries.	300,000	2.5.1: Develop and/or update training material on best-practice ecosystem-based adaptation interventions in the GMS.	National consultants - trainers	010	2.5a	5,000	20,000	20,000	20,000	65,000
		2.5.2: Host three regional training events on ecosystem-based adaptation for technical government staff from all GMS countries.	Training workshops - regional EbA training	120	2.5b		60,000	60,000	60,000	180,000
			National consultants - trainers	010	2.5a	5,000	5,000	5,000	5,000	20,000
			Regional knowledge coordinator	010	2.5c	5,000	5,000	5,000	5,000	20,000
			Printing costs - EbA training material	130	2.5d		5,000	5,000	5,000	15,000
Component 3: Political cooperation on climate change adaptation.										
Outcome 3: Strengthened regional cooperation on climate change adaptation, particularly in response to floods and droughts, in the GMS.										450,000
Output 3.1: Recommendations for regional cooperation on the scaling up of climate change adaptation interventions – based on the results of the project –	150,000	3.1.1: Develop recommendations for strengthening regional cooperation on implementing climate change adaptation interventions using information generated through: i) the proposed project; and ii) a review of past and	Regional adaptation specialist	010	3.1a			10,000	10,000	20,000
			National consultants (Thailand and Vietnam) - Adaptation specialists	010	3.1b			5,000	5,000	10,000
			International consultant - Policy	010	3.1c			10,000	10,000	20,000

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)	
developed and presented at: i) Lancang-Mekong policy dialogues; ii) MRC regional stakeholder forums; iii) Thailand NAP stakeholder forum; and iv) Vietnam National Climate Change Strategy stakeholder forum.		ongoing projects on regional climate change adaptation and transboundary and river basin water management within and beyond the GMS.	expert								
			Workshops - Policy consultations	120	3.1d			10,000	10,000	20,000	
		Printing costs - Recommendations	130	3.1e				5,000	5,000	10,000	
		3.1.2: Present the set of recommendations at primary national and regional climate change adaptation dialogues and forums, including: i) Lancang-Mekong policy dialogues; ii) the MRC regional stakeholder forum on MASAP; iii) the Thailand NAP stakeholder forum; and iv) the Vietnam National Climate Change Strategy stakeholder forum.	Regional adaptation specialist	010	3.1a					20,000	20,000
			National consultants (Thailand and Vietnam) - Adaptation specialists	010	3.1b				5,000	5,000	10,000
			Travel - Recommendations	125	3.1f				10,000	10,000	20,000
Regional knowledge coordinator	010		3.1g			5,000	5,000	5,000	5,000	20,000	
Output 3.2: Exchange visits for practitioners, policy-makers and planners to project intervention sites to exchange knowledge, encourage relationship-building and promote regional cooperation on climate change adaptation.	300,000	3.2.1: Organise and conduct five exchange visits to each demonstration site of the proposed project. Exchange visits should involve inter alia: i) site visits; ii) formal and informal community consultations; iii) knowledge-sharing events; iv) presentations by local project teams; and v) policy discussions between high-level participants from the participating GMS		140	3.2a						
Exchange visits						45,000	90,000	90,000	225,000		
			Regional adaptation specialist	010	3.2b						
						5,000	5,000	5,000	5,000	20,000	

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
		countries.								
		3.2.2: Generate reports which will include information and feedback on each of the exchange visits.	Regional adaptation specialist	140	3.2c	5,000	5,000	5,000	5,000	20,000
		3.2.3: Produce media products, such as short documentaries, that capture knowledge shared during the exchange visits.	National consultancy - Awareness-raising firm	120	3.2d			15,000	15,000	30,000
		3.2.4: Disseminate media products detailing climate change adaptation interventions implemented and lessons learned.	National consultancy - Awareness-raising firm	120	3.2d			2,500	2,500	5,000
Component Cost						950,000	1,985,000	1,732,500	1,171,209	5,838,709
Project Execution costs										
Project Execution Costs Thailand	210,000		Thailand project manager	10		20,400	20,400	20,400	20,400	81,600
			Thailand finance and procurement assistant	10		10,200	10,200	10,200	10,200	40,800
			Thailand local community coordinators	10		16,200	16,200	16,200	16,200	64,800
			Thailand PSC meetings	125		2,000	2,000	2,000	2,000	8,000
			Thailand communication costs	125		1,000	1,000	1,000	1,000	4,000
			Thailand office equipment	135		4,800				4,800
			Thailand Audit	120		1,500	1,500	1,500	1,500	6,000
Project Execution Costs Vietnam	210,000		Vietnam project manager	10		20,400	20,400	20,400	20,400	81,600

Expected Outputs	Output budget (US\$)	Activities	Inputs		Budget notes	Y1 (US\$)	Y2 (US\$)	Y3 (US\$)	Y4 (US\$)	Total (US\$)
			Vietnam finance and procurement assistant	10		10,800	10,800	10,800	10,800	43,200
			Vietnam local community coordinator	10		15,600	15,600	15,600	15,600	62,400
			Vietnam PSC meetings	125		2,000	2,000	2,000	2,000	8,000
			Vietnam communication costs	125		1,000	1,000	1,000	1,000	4,000
			Vietnam office equipment	135		4,800				4,800
			Vietnam Audit	120		1,500	1,500	1,500	1,500	6,000
Project Management Costs Regional	110,903		Regional finance and procurement assistant	10		21,600	21,600	21,600	21,600	86,400
			Regional PSC meetings	125		5,000	5,000	5,000	5,000	20,000
			Regional communication costs	125		1,000	1,000	1,000	1,503	4,503
Monitoring and Evaluation	82,000		External audit	120		3,000	3,000	3,000	3,000	12,000
			Mid-term evaluation	10			35,000			35,000
			Terminal evaluation	10					35,000	35,000
Project management costs (9.5%)						142,800	168,200	133,200	168,703	612,903
Project Cycle Management Fee charged by the Implementing Entity (8.5%)										548,388
TOTAL										7,000,000

Table 20: Budget notes.

#	Description	Budget notes
1.1a	National consultancy - Adaptation specialists	1.1.1 National consultancy to undertake the necessary assessments and design detailed implementation protocols for all climate change adaptation interventions. 1.1.2 The consultancy will also develop training materials, based on the assessments and implementation protocols, for communities on climate-resilient agriculture, EbA and additional climate-resilient livelihoods.
1.1b 1.2b	International consultant - Chief Technical Advisor	Consultancy for an international consultant to perform the role of Chief Technical Advisor (CTA) for the entire implementation of the project. The CTA will oversee the development of the implementation protocols for all climate change adaptation interventions and provide quality assurance. 70 days per year at \$650 per day = \$45,500 per year. \$4,500 per year travel and DSA. Total \$50,000 per year. Cost of CTA split between Output 1.1 and Output 1.2.
1.1c	Workshops - Community consultations	Participatory planning workshops with relevant stakeholder groups (including Young River Basin Committee) to validate the climate change adaptation interventions identified in the vulnerability assessment and develop a detailed plan for the implementation of these interventions. 4 workshops (2 per sub-district) at \$2,500 per workshop
1.1d	Travel - project management unit	Travel costs for project management unit to oversee the design and implementation of climate change adaptation interventions.
1.1e	Printing costs - Training materials	Printing costs for training materials on climate change adaptation interventions for communities in the Young River Basin.
1.1f	Training events - Young River Basin	Cost of training communities in the Young River Basin on climate-resilient agriculture, EbA and additional climate-resilient livelihoods.
1.1g	Climate change adaptation intervention inputs - climate-resilient agriculture	Input costs for the implementation of climate-resilient agriculture interventions in the Young River Basin.
1.1h	Climate change adaptation intervention inputs - ecosystem-based adaptation	Input costs for the implementation of ecosystem-based adaptation interventions within the Young River Basin to maintain the supply of ecosystem goods and services to surrounding communities.
1.1i	Climate change adaptation intervention inputs - water management	Input costs for the implementation of interventions to improve water infrastructure and water management to reduce the negative impacts of floods and droughts in the Young River Basin.
1.1j	Climate change adaptation intervention inputs - additional climate-resilient livelihoods	Input costs for the establishment of additional, climate-resilient livelihood options in the communities within the targeted sub-districts in the Young River Basin.
1.1k	National consultancy - Gender specialist	National consultancy to develop a gender action plan and ensure that gender considerations are included in the climate change adaptation intervention protocols.

#	Description	Budget notes
1.2a	National consultancy - Adaptation specialists	<p>1.1.1 National consultancy to undertake the necessary assessments and design detailed implementation protocols for all climate change adaptation interventions.</p> <p>1.1.2 The consultancy will also develop training materials, based on the assessments and implementation protocols, for communities on climate-resilient agriculture, EbA and additional climate-resilient livelihoods.</p>
1.2c	Workshops - Community consultations	<p>Participatory planning workshops with relevant stakeholder groups (including Tram Chim National Park management and commune authorities) to validate the climate change adaptation interventions identified in the vulnerability assessment and develop a detailed plan for the implementation of these interventions.</p> <p>4 workshops at \$2,500 per workshop</p>
1.2d	Travel - project management unit	Travel costs for project management unit to oversee the design and implementation of climate change adaptation interventions.
1.2e	Printing costs - Training materials	Printing costs for training materials on climate change adaptation interventions for communities surrounding Tram Chim National Park.
1.2f	Training events – Tram Chim National Park	Cost of training communities living around Tram Chim National Park on climate-resilient agriculture, EbA and additional climate-resilient livelihoods.
1.2g	Climate change adaptation intervention inputs - climate-resilient agriculture	Input costs for the implementation of climate-resilient agriculture interventions in the communities living around Tram Chim National Park.
1.2h	Climate change adaptation intervention inputs - ecosystem-based adaptation	Input costs for the implementation of ecosystem-based adaptation interventions within Tram Chim National Park to maintain the supply of ecosystem goods and services to surrounding communities.
1.2i	Climate change adaptation intervention inputs - water management	Input costs for the implementation of interventions to improve water infrastructure and water management to reduce the negative impacts of floods and droughts in the communities living around Tram Chim National Park.
1.2j	Climate change adaptation intervention inputs - additional climate-resilient livelihoods	Input costs for the establishment of additional, climate-resilient livelihood options in the communities living around Tram Chim National Park.
1.2k	National consultancy - Gender specialist	National consultancy to develop a gender action plan and ensure that gender considerations are included in the climate change adaptation intervention protocols.
1.3a	National consultants (Thailand) researchers	<p>National researchers to design and oversee long-term monitoring programme in collaboration with local research institutions. The researchers will also be responsible for providing training on M&E to national project staff during the first year (\$5,000).</p> <p>National researchers will guide and assist intervention monitors to conduct monitoring within target communities. These national researchers will also be responsible for compiling annual monitoring report in association with project staff.</p> <p>Researcher's roles will also include compiling information for relevant regional outputs.</p>

#	Description	Budget notes
		\$20,000 per year (from the second year) is allocated to national researchers for monitoring and the production of annual monitoring reports.
1.3b	National consultancy (Vietnam) - researchers	National researchers to design and oversee long-term monitoring programme in collaboration with local research institutions. The researchers will also be responsible for providing training on M&E to national project staff during the first year (\$5,000). National researchers will guide and assist intervention monitors to conduct monitoring within target communities. These national researchers will also be responsible for compiling annual monitoring report in association with project staff. Researcher's roles will also include compiling information for relevant regional outputs. \$20,000 per year (from the second year) is allocated to national researchers for monitoring and the production of annual monitoring reports.
1.3c	Intervention monitors (Thailand)	Stipend for local intervention monitors to conduct monitoring and research in target communities. Monitors will also assist national researchers in the collation of cost-effectiveness information generated through M&E plans (Activity 2.1.1). Stipend will cover transport, equipment and living expenses. Stipend per intervention monitor: \$2,000 per year. 10 intervention monitors across the project intervention sites.
1.3d	Intervention monitors (Vietnam)	Stipend for local intervention monitors to conduct monitoring and research in target communities. Monitors will also assist national researchers in the collation of cost-effectiveness information generated through M&E plans (Activity 2.1.1). Stipend will cover transport, equipment and living expenses. Stipend per intervention monitor: \$2,000 per year. 10 intervention monitors across the project intervention sites.
1.4a	National consultancy (Thailand) - Awareness-raising firm	National awareness-raising firm in Thailand to design a locally appropriate national level adaptation knowledge sharing strategy. The firm will also be responsible for implementing the knowledge-sharing strategy in the communities surrounding the project demonstration sites in the Young River Basin. \$50,000 is allocated to the design and implementation of the strategy during the first year of project implementation, and \$25,000 for implementation per year thereafter. Total = \$50,000 x 1 + \$25,000 x 3 = \$125,000
1.4b	National consultancy (Vietnam) - Awareness-raising firm	National awareness-raising firm in Vietnam to design a locally appropriate national level adaptation knowledge sharing strategy. The firm will also be responsible for implementing the knowledge-sharing strategy in the communities surrounding the project demonstration sites surrounding Tram Chim National Park. \$50,000 is allocated to the design and implementation of the strategy during the first year of project implementation, and \$25,000 for implementation per year thereafter. Total = \$50,000 x 1 + \$25,000 x 3 = \$125,000
2.1a 2.2a 2.4a 3.1a 3.2b 3.2c	Regional adaptation specialist	Regional adaptation specialist will be based in Beijing and will provide technical input and advice into the knowledge and policy coordination products developed under Component 2 and 3. The regional adaptation specialist will be responsible for: <ul style="list-style-type: none"> • Collating information on cost-effectiveness generated through M&E plans at project demonstration sites. • Collating lessons learned from the implementation of M&E plans at each project demonstration site. • Identifying policy barriers to climate change adaptation, upscaling and mainstreaming in the GMS, with a focus on policies relating to transboundary water and river basin management.

#	Description	Budget notes
		<ul style="list-style-type: none"> Overseeing the development of a set of recommendations on regional cooperation on implementing climate change adaptation interventions. The consultant should be familiar with adaptation in the GMS. The specialist will work with: i) national adaptation specialists from Thailand and Vietnam to ensure that information generated through the project informs the recommendations; and ii) an international policy expert to ensure that the relevant policies of GMS countries are identified and taken into account. The regional adaptation specialist will also conduct a review of all past and ongoing projects on regional climate change adaptation. Once developed, the specialist will present the set of recommendations at regional climate change adaptation dialogues and forums (including Lancang-Mekong policy dialogues and the MRC regional stakeholder forum). Organising and conducting exchange visits to the project's adaptation demonstration sites in Thailand and Vietnam, including: i) site visits; ii) formal and informal community consultations; iii) knowledge-sharing events; iv) presentations by local project teams and v) policy discussions between high-level participants from the various GMS countries. The consultant will also be required to generate reports which will include information and feedback on each of the exchange visits.
2.1b	International consultancy – Cost-effectiveness analysis	International consultancy to develop a GMS-specific cost-effectiveness analysis of climate change adaptation interventions that reduce the impact of floods and droughts.
2.1c	Consultations - cost-effectiveness analysis	Cost of interviews and consultations with stakeholders involved in climate change adaptation projects in the GMS on the cost-effectiveness of different climate change adaptation interventions.
2.1d	Printing costs - Cost-effectiveness analysis	Cost for the design and printing of the cost-effectiveness analysis.
2.2b	International consultant - Adaptation and Policy expert	<p>International adaptation and policy expert to work with regional knowledge coordinator to develop:</p> <ul style="list-style-type: none"> one policy brief on good practice in managing shared climate change impacts (drought and floods) in the GMS. one policy brief on integrating climate change adaptation into transboundary water management. one policy brief on the cost-effectiveness of EbA for reducing vulnerability to climate change in the GMS.
2.2c 2.3a 2.5c 3.1g	Regional knowledge coordinator	<p>Regional knowledge coordinator will be based in Beijing and will oversee the knowledge generation and dissemination activities in Component 2 and 3. The regional knowledge coordinator will be responsible for:</p> <ul style="list-style-type: none"> Developing an original paper for LMEC Environmental Outlook Report series on climate change adaptation in the GMS with special reference to: i) concrete adaptation strategies – including EbA – for shared climate impacts like droughts and floods; ii) integrating climate change adaptation into transboundary water and river basin management; and iii) regional coordination on adapting to climate change. Sharing M&E guidelines (Output 1.4), the cost-effectiveness analysis (Output 2.1) and policy briefs (Output 2.2) on three regional knowledge platforms. Presenting M&E guidelines (Output 1.4), the cost-effectiveness analysis (Output 2.1) and policy briefs (Output 2.2) at three regional forums. Organising three regional training events on ecosystem-based adaptation for technical government staff from all GMS countries. The

#	Description	Budget notes
		<p>Regional knowledge coordinator will also assist national consultants (training and adaptation specialists) in the development of training material for these events under Activity 2.5.1 (budget note 2.5a).</p> <ul style="list-style-type: none"> Presenting the set of recommendations at primary national and regional climate change adaptation dialogues and forums, including: i) Lancang-Mekong policy dialogues; and ii) the MRC regional stakeholder forum on MASAP.
2.3b	Travel - knowledge sharing	Travel costs for the presentation of M&E guidelines (Output 1.4), the cost-effectiveness analysis (Output 2.1) and policy briefs (Output 2.2) at three regional forums.
2.4b	International consultant - M&E specialist	International M&E expert to: i) collate and evaluate lessons learned from the implementation of M&E plans at project demonstration sites; ii) review M&E plans from other adaptation projects to identify design features that encourage cost-effective, simplified and comparable M&E systems; and iii) develop guidelines for the design and implementation of M&E systems for climate change adaptation (including EbA) projects in the GMS.
2.5a	National consultants - trainers	National consultants (specialising in training and adaptation; from each of the GMS countries) to develop and update training material on best-practice EbA interventions in the GMS (with assistance from the Regional knowledge coordinator – Budget note 2.5c). The initial development of training material will be conducted during the first year of project implementation, followed by the updating of this information annually until project termination. Training material must be developed taking into account lessons learned through the implementation of climate change interventions in Thailand (Output 1.1) and Vietnam (Output 1.2). It must also incorporate the findings of the cost-effectiveness analysis (Output 2.1) and M&E guidelines (Output 2.5). A module on conducting gender analyses and incorporating gender considerations into the design of climate change adaptation interventions must also be presented. Trainers will also be required to conduct training at the training workshops.
2.5b	Training workshops - regional EbA training	<p>Three regional training events on EbA in Beijing during the second, third and fourth years of project implementation for technical government staff from all GMS countries (including Cambodia, China, Lao PDR, Myanmar, Thailand and Vietnam).</p> <p>Four delegates from each country will be invited to attend each training event (24 delegates in total).</p> <p>\$60,000 per workshop including venue hire, travel, accommodation and meals for delegates.</p> <p>Total cost = \$60,000 per event x 3 events = \$180,000</p>
2.5d	Printing costs - EbA training material	<p>Printing costs for training material for each training event, including translation into relevant regional languages.</p> <p>Total cost = \$5,000 x 3 events = \$15,000</p>
3.1b	National consultants (Thailand and Vietnam) Adaptation specialists and -	National adaptation specialists (one each from Thailand and Vietnam) to assist the regional adaptation specialist in the development of a set of recommendations on regional cooperation on implementing climate change adaptation interventions. The national adaptation specialists will ensure that country-specific (Thailand and Vietnam) information generated through the project informs the recommendations. Once developed, the national consultants will present the set of recommendations at respective national climate change adaptation forums and dialogues (including the Thailand NAP stakeholder forum and Vietnam National Climate Change Strategy stakeholder forum). \$10,000 is allocated to each of the national adaptation experts during the last two years of project implementation to develop and present the set of recommendations (including professional fees, travel,

#	Description	Budget notes
		accommodation and meals).
3.1c	International consultant - Policy expert	International policy expert (familiar with policy across the GMS) to assist the regional adaptation specialist in the development of a set of recommendations on regional cooperation on implementing climate change adaptation interventions. The international policy expert will ensure that the relevant policies of GMS countries are identified and taken into account. \$20,000 is allocated to the international policy expert for his/her input into the development of recommendations over the last two years of project implementation.
3.1d	Workshops - Policy consultations	Cost of workshops with relevant stakeholders across the GMS to develop and validate the set of recommendations for strengthening regional cooperation on implementing climate change adaptation interventions.
3.1e	Printing costs - Recommendations	Cost of printing and dissemination of the set of recommendations for strengthening regional cooperation on implementing climate change adaptation interventions.
3.1f	Travel - Recommendations	Travel costs for relevant experts to present the set of recommendations at primary national and regional climate change adaptation dialogues and forums.
3.2a	Exchange visits	Exchange visits to project demonstration sites (Thailand and Vietnam). These visits will occur annually for the last two years of the project's implementation period and will be organised and conducted by representatives from each project country (Thailand and Vietnam). These representatives will also be required to generate reports which will include information and feedback on each of the exchange visits. Participants may include representatives of: i) national government institutions; ii) country offices of regional institutions like the LMC, MRC and ADB; iii) national project teams; and iv) national research institutions. \$45,000 is allocated per exchange visit (including transport, accommodation and meals for participants).
3.2d	National consultancy - Awareness-raising firm	National consultancy (awareness-raising firm) to produce media products, such as short documentaries, that capture knowledge shared at exchange events (all events in both Thailand and Vietnam). The awareness-raising firm will also be responsible for the dissemination of these media products to a wider audience within the GMS via appropriate online platforms. This will include the translation of media products into all relevant GMS languages. \$25,000 per year over the last two years of the project is allocated to the generation and dissemination of media products (all inclusive).

H. Disbursement schedule

Include a disbursement schedule with time-bound milestones.

Table 21: Disbursement schedule including milestones.

	Upon Agreement signature (US\$)	After Year 1 (US\$)	After Year 2 (US\$)	After Year 3 (US\$)
Scheduled date (tentative)	March 2019	March 2020	March 2021	March 2022
Project funds	1,092,800	2,153,200	1,865,700	1,339,912
Implementing Entity fee	92,888	183,022	158,085	113,893

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

A. Record of endorsement on behalf of the government²⁰²

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 an annex to the project/programme proposal. Please attach the endorsement letters with this template; add as many participating governments if a regional project/programme:

See Annex IV for all endorsement letters.

Table 22: List of endorsements provided for the proposed project.

Thailand: Mr. Suphot Tovichakchaikul, Deputy Permanent Secretary for Permanent Secretary, Ministry of Natural Resources and Environment	Date: 25 July 2018
Vietnam: Dr. Tran Hong Ha, Minister of Natural Resources and Environment Socialist Republic of Viet Nam	Date: 26 July 2018

⁶. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

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 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.



Monika G MacDevette (PhD)
Deputy Director and
Director a.i., Ecosystems Division
UN Environment Programme
Nairobi, KENYA

Date: 6 August 2018

Office Tel.: +: 254 20 762 4595;
Office mobile: +254-719-867902
Email: monika.macdevette@un.org

Project Contact Person: Moon Shrestha

Tel.: +:254 20762 3717 Email: Moon.Shrestha@un.org

Annexes

Annex I	Vulnerability Assessments
Annex II	Stakeholder consultations
Annex III	Terms of References (ToRs) for key project members
Annex IV	List of endorsements and endorsement letters
Annex V	Grievance mechanism
Annex VI	UN Environment Environmental, Social and Economic Review Note (ESERN)
Annex VII	Gender Analysis

Annex I. Vulnerability assessments
[Please see attached]

Annex II. Stakeholder consultations
[Please see attached]

Annex III. Terms of References (ToRs) for key project members

Terms of Reference for national Project Managers (PM)

Scope of Work

The two Project Managers (PM) will lead the Thailand and Vietnam Project Management Units (PMU), respectively, and provide overall operational management for the successful execution and implementation of the project within the respective country. This position's responsibilities include the daily responsibility for management, coordination and supervision of the implementation of the project and delivery of the results in accordance with the full project proposal and work plans. In addition, the PM will be responsible for financial management and disbursements, with accountability to the government, and UN Environment. The PM will report to the Regional Policy Steering Committee (RPSC).

The responsibilities of the PMs will include the following.

- Oversee and manage project implementation, monitor work progress, and ensure timely delivery of outputs.
- Report to the NPD of the respective national designated executing entity (DWR-MoNRE for Thailand and DLA-MoNRE for Vietnam) and RPSC regarding project progress.
- Develop and facilitate the implementation of a comprehensive monitoring and reporting system.
- Ensure timely preparation of detailed annual work plans and budgets for approval by the RPSC.
- Assist in the identification, selection and recruitment of staff, consultants and other experts as required.
- Supervise, coordinate and facilitate the work of the administrative/technical team (consisting of the finance and procurement assistant, local community coordinators, and national and international consultants).
- Control expenditures and assure adequate management of resources.
- Establish linkages and networks with on-going activities by other government and nongovernment agencies.
- Provide input to management and technical reports, and other documents as described in the M&E plan for the overall project. Reports should contain assessments of progress in implementing activities, including reasons for delays, if any, and recommendations on necessary improvements.
- Inform the respective national designated executing entity and RPSC, without delay, of any issue or risk which might jeopardise the success of the project.
- Liaise and coordinate with UN Environment and UNEP-IEMP on a regular basis.

Qualifications

- Master's degree in environment, natural resources management, agriculture or a closely related field.
- A minimum of 10 years' relevant work experience.
- Demonstrated solid knowledge of environmental and ecological restoration, with an emphasis on water resources management.
- Demonstrated solid knowledge of climate change adaptation management techniques, practices and technologies.

- Experience in the public participation development process associated with environmental and sustainable development an asset.
- Experience in working and collaborating with governments and assets.
- Excellent knowledge of English, including writing and communication skills.

Reporting

The PM will report to the NPD of the respective national designated executing entity. The PM will work closely with the RPSC, CTA, UN Environment and UNEP-IEMP to ensure the availability of information on progress and performance in the implementation of the project.

Terms of Reference for Chief Technical Advisor (CTA)

Scope of Work

The CTA will develop the restoration and conservation agriculture protocols, as well as provide the PMs with technical guidance on the implementation of the AF project. The position of CTA is likely to be filled by an international consultant.

The responsibilities of the CTA will include the following.

- Assist/guide the development of climate change adaptation intervention protocols.
- Provide quality assurance and technical review of project outputs.
- Undertake a technical review of project outputs (e.g. studies and assessments).
- Assist in the drafting of ToRs for technical consultants and community coordinators.
- Supervise the work of consultants.
- Assist in monitoring the technical quality of project M&E systems (including annual work plans, indicators and targets).
- Conduct financial and administrative reporting, as well as the PPR.
- Provide advice on best suitable approaches and methodologies for achieving project targets and objectives.
- Provide a technical supervisory function to the work carried out by national technical advisors, and consultants hired by the project.
- Assist in knowledge management, communications and awareness-raising.
- Facilitate the development of strategic regional and international partnerships for the exchange of skills and information related to climate change adaptation.

Qualifications

- At least an advanced post-graduate at or above M.Sc. level, in a relevant discipline, including climate change adaptation, botany/forestry/soil science, environmental management, natural resources management, agriculture, water resources or a related discipline.
- A minimum of five years' experience in a senior technical leadership position with planning and management of environmental and/or natural resources management programmes in developing countries.
- A minimum of five years in a senior technical position involved in institutional strengthening and capacity building.
- Previous similar experiences in provision of technical support to complex projects.
- Experience working in the GMS would be an advantage.
- Good communication and computer skills.

- Fluent in spoken and written English.

Reporting

The CTA will report to the RPSC. The CTA will cooperate with the NPDs, PMs, finance and procurement assistants, staff of the national designated executing entities (DWR-MoNRE for Thailand and DLA-MoNRE in Vietnam) and UN Environment task manager to ensure the availability of information on progress and performance in the implementation of the project. In the implementation of his/her duties, the CTA will work in close collaboration with the UN Environment task manager, specifically in consultation for implementation and decision-making of the project.

Terms of Reference for the Finance and Procurement Assistants

Scope of Work

The responsibilities of the Finance and Procurement Assistants will include the following.

- Standardise the finance and accounting systems of the project while maintaining compatibility with AF, government (Thailand and Vietnam) and UN Environment financial accounting guidelines.
- Prepare budget revisions of the project budgets and assist in the preparation of the annual work plans.
- Comply and verify budget and accounting data by researching files, calculating costs and estimating anticipated expenditures from readily available information sources, in particular, partner agencies.
- Prepare status reports, progress reports and other financial reports.
- Process all types of payment requests for settlement purposes, including quarterly advances to the partners upon joint review.
- Prepare periodic accounting records by recording receipts, disbursements – ledgers, cash books, vouchers, etc. – and reconciling data for recurring or financial special reports and assist in the preparation of annual procurement plans.
- Undertake project financial closure formalities, including submission of terminal reports, transfer and disposal of equipment, processing of semi-final revisions and support professional staff in preparing the terminal assessment reports.
- Assist in the timely issuance of contracts and assurance of other eligible entitlements of the project personnel, experts and consultants, by preparing annual recruitment plans.

Reporting

The Finance and Procurement Assistants will report to PMs.

Annex IV. List of endorsements and endorsement letters

i) Endorsement letter from Government of Thailand

URGENT
No. 0620/1๗2๗



Ministry of Natural Resources and Environment
92 Soi Phahol Yothin 7, Phahol Yothin Road,
Phayathai, Phayathai, Bangkok, 10400,
Thailand

๒5 July B.E. 2561 (2018)

To The Adaptation Fund Board

**Subject: Endorsement for the Adaptation Fund Project Proposal on Mekong EbA South:
Enhancing Climate Resilience in the Greater Mekong Sub-region through
Ecosystem-based Adaptation in the Context of South-South Cooperation**

In my capacity as designated authority for Adaptation Fund in the Kingdom of Thailand, I confirm that the above (Mekong EbA) full 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 Kingdom of Thailand, and the Greater Mekong Sub-region.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaption Fund. If approved, the project will be implemented by United Nations Environment Programme (UNEP), and executed by the Department of Water Resources, Thailand.

Yours sincerely,

(Mr. Suphot Tovichakchaikul)
Deputy Permanent Secretary
For Permanent Secretary

The Adaptation Fund Board
C/O Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

ii) Endorsement letter from Government of Vietnam



SOCIALIST REPUBLIC OF VIET NAM
MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT

Ha Noi, 26... July 2018

The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org

Subject: Endorsement for the Project Proposal on "Enhancing Climate Resilience in the Greater Mekong Sub-region through Ecosystem-based Adaptation (GMS-EbA) in the Context of South-South Cooperation"

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 priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Socialist Republic of Viet Nam, which is part of the Greater Mekong Sub-region.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by United Nations Environment Programme (UNEP) and executed in Viet Nam by Ministry of Natural Resources and Environment of Viet Nam supported by UNEP-International Ecosystem Management Partnership (UNEP-IEMP) and other national partners.

Yours sincerely,

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

Annex V. Grievance mechanism

Grievance Mechanism for the Mekong EbA South Project

UN Environment has established grievance mechanism that it applies to all its projects. Such a Stakeholder Response Mechanism is within the Environmental, Social and Economic Sustainability Framework to address compliance and grievance cases that arise from UN Environment projects. This Mechanism is coordinated and managed by the Independent Office for Stakeholder Safeguard-related Response. The operating procedures in the Stakeholder Response Mechanism inform and guide UN Environment staff, UN Environment implementing/executing partners, and people affected by UN Environment projects on bringing forward and responding to stakeholder concerns.

The Project Manager or the implementing/executing partners are usually the first point of contact for any project-related complaints from stakeholders. The Project Manager and project team should respond promptly and appropriately to a complaint with the goal of avoiding escalation to the Independent Office for Stakeholder Safeguard-related Response.

The Project Manager can direct the complainants to fill out the “UN Environment Project Concern Feedback Form” form and submit it to the Independent Office for Stakeholder Safeguard-related Response if the issues cannot be resolved at the project level. The Project Manager should advise complainants to provide complete information, so UN Environment can properly assess and address the complaint. The form and instructions on how to submit the complaint form are available on www.unep.org (under “Project Concern” in the “A-Z of UN Environment”) or at www.unep.org/about/eses. The form is available in all UN official languages on the different language versions of the same sites.

If the Independent Office for Stakeholder Safeguard-related Response finds that the complaint is eligible, s/he forms a team composed of internal or external experts to investigate the case and propose options for the complainant to consider.

Compliance review vs. grievance redress

The Independent Office for Stakeholder Safeguard-related Response is responsible for both compliance review and grievance redress (dispute resolution) processes:

- **compliance review** is the process used, as appropriate, to review and respond to stakeholders’ concerns that UN Environment may not be in compliance with its Environmental, Social and Economic Sustainability Framework
- **grievance redress** is a process providing people affected by UN Environment projects with access to appropriate and flexible dispute resolution procedures

The Stakeholder Response Mechanism is summarized in Table 1 below.

Table V1: Stakeholder Response Mechanism

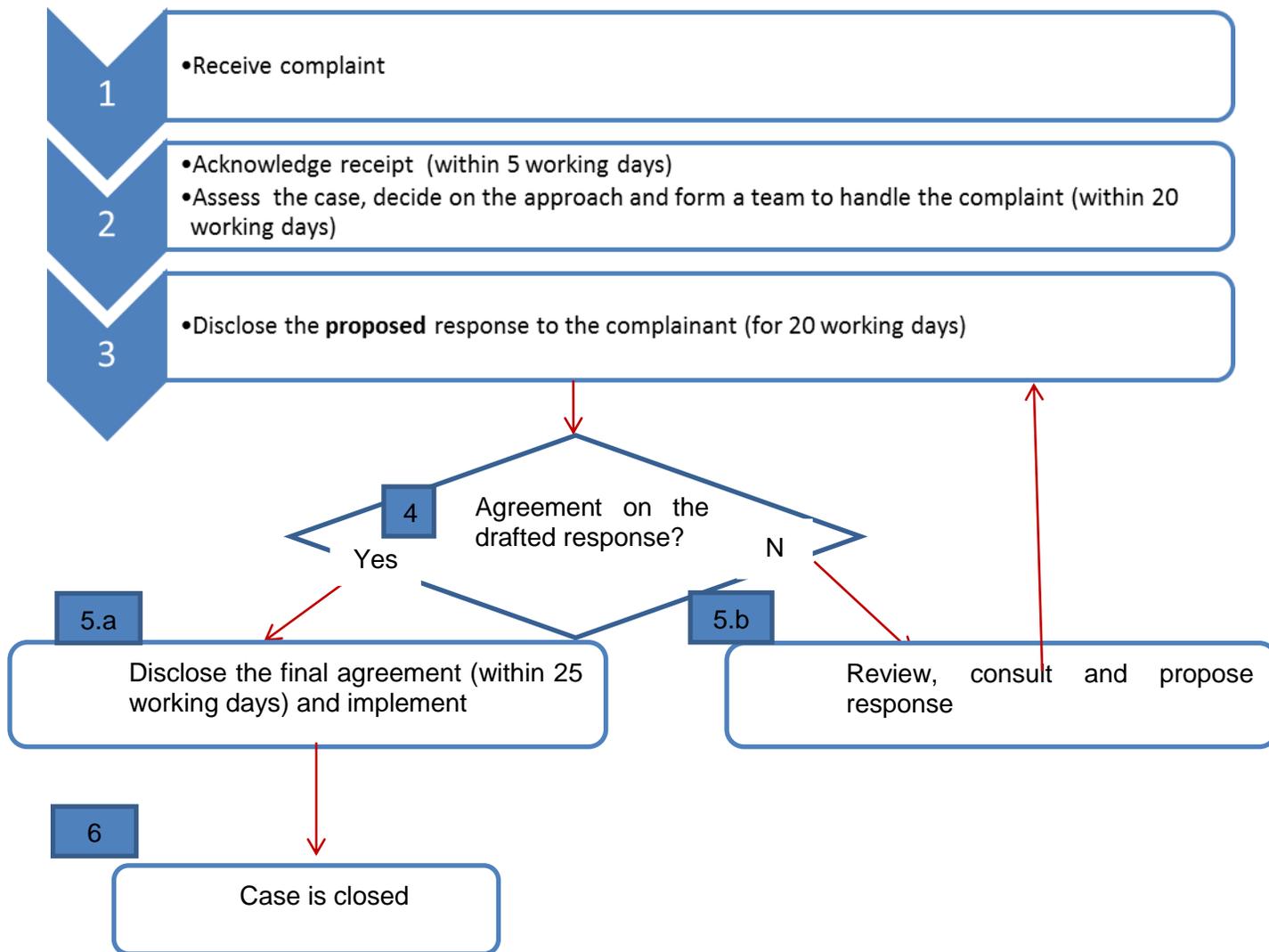
	Compliance review	Grievance response
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Complainant	Any person or group of persons who may be affected by UN Environment-supported activities. While anonymous complaints will not be accepted, requests for confidentiality will be respected.	
Channel	Complainants can contact the Independent Office for Stakeholder Safeguard-related Response via mail, phone or email. Complainants should provide full details through the “UN Environment Project Concern” form to enable UN Environment to assess eligibility.	
Eligibility requirements	<ul style="list-style-type: none"> • The complaint is directly related to Environmental, Social and Economic Sustainability issues. • The issue concerns a proposed or on-going UN Environment project. 	
Responsibility within UN Environment	Independent Office for Stakeholder Safeguard-related Response with support of relevant Regional Office and/or Divisions and/or thematic experts.	
Response	Independent Office for Stakeholder Safeguard-related Response investigates the complaint and reports findings and recommendations to the UN Environment Executive Director. UN Environment communicates the decisions and steps that UN Environment will take in response to the concerns.	Independent Office for Stakeholder Safeguard-related Response explores mediation, negotiation, conflict resolution, and/or referral to another dispute resolution mechanism.
Possible results and follow up action	<ul style="list-style-type: none"> • Measures to minimize or mitigate negative impacts from project activities. • Revision and disclosure of the project. • Permanent suspension of the project. 	<ul style="list-style-type: none"> • Proposed measures to address or compensate for negative impacts from project activities. • Resolution of issue. • Public disclosure of the case.

Internal process for handling stakeholder response cases

UN Environment has devised an internal process of how to handle stakeholder response case and this is articulated in Figure 1. Figure 1 below shows the detailed work-flow for the Independent Office for Stakeholder Safeguard-related Response under the Stakeholder Response Mechanism following a complaint.

Figure V1: Stakeholder response work flow



I. Project Overview

Identification	<i>Insert Project ID# from Programme Framework Table</i>
Project Title	Mekong EbA South: Enhancing Climate Resilience in the Greater Mekong Sub-region through Ecosystem-based Adaptation in the Context of South-South Cooperation
Managing Division	Ecosystems
Type/Location	Regional
Region	Asia Pacific
List Countries	Thailand and Vietnam
Project Description	<p>The proposed AF project will implement innovative, on-the-ground adaptation technologies and share implementation lessons across the GMS. Adaptation technologies will be demonstrated in the middle (in the Young Basin in Thailand), and lower (surrounding Tram Chim National Park in Vietnam) reaches of the Mekong River basin to build climate resilience and generate adaptation knowledge from diverse environmental and socio-economic contexts. These adaptation technologies will complement existing or planned interventions taking place in the upper reaches (China and Myanmar) as well as ongoing LDCF²⁰³ and AF projects in Cambodia and Lao PDR. The proposed project will increase the resilience of beneficiary communities to the effects of droughts and floods by implementing a suite of adaptation interventions²⁰⁴ – with a focus on EbA – including <i>inter alia</i>: i) living check-dams; ii) integrated home gardening; iii) agroforestry; iv) forest regeneration; v) water distribution canals; vi) NTFP-based and additional livelihood options; vii) climate-resilient crop varieties; and viii) natural resource-based community cooperatives. Additionally, knowledge-sharing and awareness-raising in local communities surrounding project beneficiaries will be accomplished through <i>inter alia</i>: i) knowledge-sharing days; ii) local field visits; iii) the dissemination of awareness-raising and training materials; iv) climate change centres at local schools²⁰⁵; v) grassroots adaptation sharing events; and vi) regional exchange visits. Comprehensive monitoring and evaluation, as well as small-scale research projects, will be conducted with local institutions to generate knowledge products²⁰⁶ on context-specific lessons learned.</p>

²⁰³ Least Developed Countries Fund.

²⁰⁴ Guided by regional and national adaptation and development plans.

²⁰⁵ Such as the Som Sa Ard School in Kuchinarai District, Kalasin Province, Thailand (please see Section 5.)

²⁰⁶ E.g. EbA implementation guidelines.

	<p>The knowledge generated at the country level will be shared regionally on ways to combat drought and flood risk—specifically EbA – across the GMS in the different ecosystems of the GMS. Scaling up such measures at a Basin scale could reduce the impacts of climate change in the given country and downstream in the Mekong River Basin. Discussions on a scaling up adaptation strategy will be promoted under Component 3 linking the project experience with the available scientific information on climate change risks and the political processes in the GMS. An assessment will be undertaken to inform future decisions on the cost-effectiveness of EbA in the GMS under different socioeconomic and environmental conditions. Additionally, relevant knowledge to EbA in the GMS will be collated to produce policy briefs to inform the development and implementation of future adaptation projects and strategies across the region. These knowledge products, as well as the results of monitoring and evaluation at implementation sites, will be made widely available through existing online information platforms related to the GMS and climate change adaptation²⁰⁷. Knowledge-sharing and project coordination across the GMS – including China, Cambodia, Lao PDR and Myanmar – will be achieved through participation in regional climate change adaptation forums. The knowledge gained through the proposed project will be used to strengthen regional coordination on climate change adaptation, and will be incorporated into future versions of regional and national adaptation plans across the GMS²⁰⁸ through: i) continuous sharing of information to national and regional stakeholders; ii) participation in adaptation planning and policy workshops; and iii) the provision of policy briefs and papers.</p> <p>The UN Environment-International Ecosystem Management Partnership (UNEP-IEMP) in Beijing, hosted by the Institute of Geographic Sciences and Natural Resources Research (IGSNRR) under the Chinese Academy of Sciences (CAS) will execute the knowledge-sharing and regional coordination aspects of the project. Coordinating the project from Beijing will provide strategic advantages to: i) facilitate the South-South exchange of knowledge between CAS and other GMS countries, particularly lessons learned from the Chinese Ecosystem Research Network²⁰⁹; and ii) strengthen engagement with the Lancang-Mekong Cooperation (LMC)²¹⁰ mechanism, also hosted in Beijing, and thereby promote regional coordination on climate change adaptation. Indeed,</p>
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²⁰⁷ Including platforms operated by: i) the MRC; ii) ADB-GMS; iii) Lancang-Mekong Cooperation Mechanism; and iv) other regional projects, such as EbA South.

²⁰⁸ Such as the MASAP and NAPs.

²⁰⁹ This includes EbA interventions in Nabanhe National Nature Reserve in the Yunnan Province of southwest China

²¹⁰ Lancang-Mekong Cooperation (LMC) mechanism, initiated by China and officially launched in March 2016, is a sub-regional cooperation between China and the other five Mekong nations of Cambodia, Lao PDR, Myanmar, Thailand and Vietnam. The LMC has three pillars-- political and security issues; economic affairs and sustainable development; and social affairs and people-to-people exchanges. See more details in Section G.

	<p>the China-ASEAN Environmental Cooperation Center (CAEC), which hosts the Lancang-Mekong Environmental Cooperation Center, has expressed their willingness to work with the proposed project and collaborate with the other GMS countries (see Annex IV). Engagement with Chinese institutions is a highlight of the proposed project. For decades, the robust cooperation on transboundary resources management in the region has been limited to the middle and lower Mekong countries (Cambodia, Lao PDR, Thailand and Vietnam), through institutions such as the Mekong River Commission. Engagement with Chinese institutions in this proposed project will, therefore, facilitate engagement between upstream- and downstream countries that will enhance regional cooperation on climate change adaptation and promote South-South knowledge exchange.</p>
Estimated duration of project:	48 months
Estimated cost of the project:	USD 7,000,000

II. Environmental Social and Economic Screening Determination

A. Summary of the Safeguard Risks Triggered

Safeguard Standard Triggered by the Project	Impact of Risk ²¹¹ (1-5)	Probability of Risk (1-5)	Significance of Risk (L, M, H)
SS 1: Biodiversity, natural habitat and Sustainable Management of Living Resources	2	1	L
SS 2: Resource Efficiency, Pollution Prevention and Management of Chemicals and Wastes	2	1	L
SS 3: Safety of Dams	1	1	L
SS 4: Involuntary resettlement	1	1	L
SS 5: Indigenous peoples	2	1	L
SS 6: Labor and working conditions	1	1	L
SS 7: Cultural Heritage	1	1	L
SS 8: Gender equity	2	1	L
SS 9: Economic Sustainability	3	1	L
Additional Safeguard questions for projects seeking GCF-funding (Section IV)			

B. ESE Screening Decision²¹² (Refer to the UNEP ESES Framework (Chapter 2) and the UNEP's ESES Guidelines.)

Low risk Moderate risk High risk Additional information required

C. Development of ESE Review Note and Screening Decision:

Prepared by: Name: Nick Tye _____ Date: 9 July 2018 _____

Safeguard Advisor: Name: Yunae Yi _____ Date: 2 August 2018 _____

Project Manager: Name: Moon Shrestha _____ Date: 3 August 2018 _____

D. Recommended further action from the Safeguard Advisor:

²¹¹ Refer to UNEP Environment, Social and Economic Sustainability (ESES): Implementation Guidance Note to assign values to the Impact of Risk and the Probability of Risk to determine the overall significance of Risk (Low, Moderate or High).

²¹² **Low risk:** Negative impacts negligible: no further study or impact management required.

Moderate risk: Potential negative impacts, but less significant; few if any impacts irreversible; impact amenable to management using standard mitigation measures; limited environmental or social analysis may be required to develop a ESEMP. Straightforward application of good practice may be sufficient without additional study.

High risk: Potential for significant negative impacts, possibly irreversible, ESEA including a full impact assessment may be required, followed by an effective safeguard management plan.

III. ESES Principle and Safeguard checklist

(Section III and IV should be retained in UNEP)

Precautionary Approach
The project will take precautionary measures even if some cause and effect relationships are not fully established scientifically and there is risk of causing harm to the people or to the environment.
Human Rights Principle
The project will make an effort to include any potentially affected stakeholders, in particular vulnerable and marginalized groups; from the decision-making process that may affect them.
The project will respond to any significant concerns or disputes raised during the stakeholder engagement process.
The project will make an effort to avoid inequitable or discriminatory negative impacts on the quality of and access to resources or basic services, on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups. ²¹³

Screening checklist	Y/N/ Maybe	Comment
Safeguard Standard 1: Biodiversity, natural habitat and Sustainable Management of Living Resources		
Will the proposed project support directly or indirectly any activities that significantly convert or degrade biodiversity and habitat including modified habitat, natural habitat and critical natural habitat?	N	The project will include activities that promote the conservation of biodiversity and restoration of degraded habitats through EbA interventions implemented at demonstration sites in Thailand and Vietnam (Outputs 1.1 and 1.2). It is not anticipated that the project will contribute to the ongoing degradation of ecosystems. During the design of the proposed project, DWR-MoNRE (Thailand), DLA-MoNRE and management of Tram Chim National Park (both Vietnam) were consulted to ensure that negative impacts on biodiversity and natural habitats are averted.
Will the proposed project likely convert or degrade habitats that are legally protected?	N	Although adaptation interventions (predominantly EbA) will be implemented in and surrounding Tram Chim National Park (Vietnam; Output 1.2), these interventions will be directed

²¹³ Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to “women and men” or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

		towards the restoration of previously degraded habitats, as well as to reduce further degradation. This will benefit biodiversity, as well as strengthen the supply of ecosystem goods and services.
Will the proposed project likely convert or degrade habitats that are officially proposed for protection? (e.g.; National Park, Nature Conservancy, Indigenous Community Conserved Area, (ICCA); etc.)	N	No adaptation interventions will be implemented in any areas officially proposed for protection.
Will the proposed project likely convert or degrade habitats that are identified by authoritative sources for their high conservation and biodiversity value?	N	Although adaptation interventions (predominantly EbA) will be implemented in and surrounding Tram Chim National Park (Vietnam; Output 1.2), these interventions will be directed towards the restoration of previously degraded habitats, as well as to reduce further degradation. This will benefit biodiversity, as well as strengthen the supply of ecosystem goods and services.
Will the proposed project likely convert or degrade habitats that are recognized- including by authoritative sources and /or the national and local government entity, as protected and conserved by traditional local communities?	N	As above.
Will the proposed project approach possibly not be legally permitted or inconsistent with any officially recognized management plans for the area?	N	During the design of the proposed project, DWR-MoNRE (Thailand) and DLA-MoNRE (Vietnam) were consulted to ensure that activities are aligned with national and local laws, as well as any relevant management plans. In addition, the management of Tram Chim National Park was consulted to ensure that any activities in or around the park adhere to Vietnam's national protected area management laws and are aligned with the park's management plan.
Will the proposed project activities result in soils deterioration and land degradation?	N	The proposed project will restore – and build the resilience of – degraded landscapes, as well as reduce soil damage and erosion using an EbA approach at selected demonstration sites during the implementation phase. Furthermore, EbA interventions will result in the restoration of topsoil and enhancement of soil organic matter and nutrient content over the long-term. Much of the degradation of the soils and

		landscapes where the project activities will be implemented is human induced (for example, through agriculture and deforestation).
Will the proposed project interventions cause any changes to the quality or quantity of water in rivers, ponds, lakes or other wetlands?	Y	Adaptation interventions implemented under Outputs 1.1 and 1.2 of the proposed project include flood and drought management interventions, such as the: i) construction of living check dams; and ii) rehabilitation of weirs and canals. These interventions will attenuate flooding during the monsoon season and improve water supply in drought periods. As a result, changes to the quantity of water in canals, reservoirs and storages ponds are expected.
Will the proposed project possibly introduce or utilize any invasive alien species of flora and fauna, whether accidental or intentional?	N	Flora species used for the restoration of ecosystems under the proposed project will be indigenous. In addition, the clearing of invasive alien plant species from Tram Chim National Park and its surrounding for use in the production of handicrafts will be promoted.
Safeguard Standard 2: Resource Efficiency, Pollution Prevention and Management of Chemicals and Wastes		
Will the proposed project likely result in the significant release of pollutants to air, water or soil?	N	No pollution will be generated through the proposed project's activities.
Will the proposed project likely consume or cause significant consumption of water, energy or other resources through its own footprint or through the boundary of influence of the activity?	N	
Will the proposed project likely cause significant generation of Green House Gas (GHG) emissions during and/or after the project?	N	Project activities are likely to reduce the atmospheric concentration of greenhouse gases at the project's EbA demonstration sites. This will be achieved by reforestation and the planting of multiple other tree species (e.g. by implementing agroforestry techniques). Consequently, carbon will be sequestered in soils and plant biomass.
Will the proposed project likely generate wastes, including hazardous waste that cannot be reused, recycled or disposed in an environmentally sound and safe manner?	N	
Will the proposed project use, cause the use of, or manage the use of, storage and disposal of hazardous chemicals,	N	

including pesticides?		
Will the proposed project involve the manufacturing, trade, release and/or use of hazardous materials subject to international action bans or phase-outs, such as DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Convention on Persistent Organic Pollutants or the Montreal Protocol?	N	
Will the proposed project require the procurement of chemical pesticides that is not a component of integrated pest management (IPM) ²¹⁴ or integrated vector management (IVM) ²¹⁵ approaches?	N	
Will the proposed project require inclusion of chemical pesticides that are included in IPM or IVM but high in human toxicity?	N	
Will the proposed project have difficulty in abiding to FAO's International Code of Conduct ²¹⁶ in terms of handling, storage, application and disposal of pesticides?	N	
Will the proposed project potentially expose the public to hazardous materials and substances and pose potentially serious risk to human health and the environment?	N	
Safeguard Standard 3: Safety of Dams		
Will the proposed project involve constructing a new dam(s)?	N	
Will the proposed project involve rehabilitating an existing dam(s)?	N	
Will the proposed project activities involve dam safety operations?	N	
Safeguard Standard 4: Involuntary resettlement		
Will the proposed project likely involve full or partial physical displacement or relocation of people?	N	
Will the proposed project involve involuntary restrictions on land use that deny a community the use of resources to which they have traditional or recognizable use rights?	N	
Will the proposed project likely cause restrictions on access to land or use of resources that are sources of livelihood?	N	
Will the proposed project likely cause or involve temporary/permanent loss of land?	N	
Will the proposed project likely cause or involve economic displacements affecting their crops, businesses, income generation sources and assets?	N	

²¹⁴ "Integrated Pest Management (IPM) means the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/ipm/en/>

²¹⁵ "IVM is a rational decision-making process for the optimal use of resources for vector control. The approach seeks to improve the efficacy, cost-effectiveness, ecological soundness and sustainability of disease-vector control. The ultimate goal is to prevent the transmission of vector-borne diseases such as malaria, dengue, Japanese encephalitis, leishmaniasis, schistosomiasis and Chagas disease." (http://www.who.int/neglected_diseases/vector_ecology/ivm_concept/en/)

²¹⁶ Find more information from http://www.fao.org/fileadmin/templates/agphome/documents/Pests_Pesticides/Code/CODE_2014Sep_ENG.pdf

Will the proposed project likely cause or involve forced eviction?	N	
Will the proposed project likely affect land tenure arrangements, including communal and/or customary/traditional land tenure patterns negatively?	N	
Safeguard Standard 5: Indigenous peoples²¹⁷		
Will indigenous peoples be present in the proposed project area or area of influence?	N	
Will the proposed project be located on lands and territories claimed by indigenous peoples?	N	
Will the proposed project likely affect livelihoods of indigenous peoples negatively through affecting the rights, lands and territories claimed by them?	N	The proposed project was developed through consultation with local communities (including any indigenous peoples) and in accordance with local belief systems. Additionally, all on-the-ground activities will be community-based. The project will improve local communities' livelihoods by increasing the number of available climate-resilient income-generating opportunities.
Will the proposed project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	N	
Will the project negatively affect the development priorities of indigenous peoples defined by them?	N	
Will the project potentially affect the traditional livelihoods, physical and cultural survival of indigenous peoples?	N	
Will the project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	N	
Safeguard Standard 6: Labor and working conditions		
Will the proposed project involve the use of forced labor and child labor?	N	The proposed project conforms to all national and international guidelines and laws regarding forced labour. Extensive community engagement will prevent the use of forced labour. In addition, all required labour – which will consist only of short-term employment for meeting specific objectives – will be provided through community engagement and will be remunerated in accordance with national law.
Will the proposed project cause the increase of local or regional un-employment?	N	No long-term change in local or regional employment rates as a result of project activities is

²¹⁷ Refer to the Toolkit for the application of the UNEP Indigenous Peoples Policy Guidance for further information.

		anticipated. Alternative livelihoods based on the proposed project's EbA interventions will be developed at the demonstration sites, which will strengthen income generation and potentially provide employment opportunities.
Safeguard Standard 7: Cultural Heritage		
Will the proposed project potentially have negative impact on objects with historical, cultural, artistic, traditional or religious values and archeological sites that are internationally recognized or legally protected?	N	
Will the proposed project rely on or profit from tangible cultural heritage (e.g., tourism)?	N	
Will the proposed project involve land clearing or excavation with the possibility of encountering previously undetected tangible cultural heritage?	N	
Will the proposed project involve in land clearing or excavation?	N	
Safeguard Standard 8: Gender equity		
Will the proposed project likely have inequitable negative impacts on gender equality and/or the situation of women and girls?	N	The proposed project's targets are gender disaggregated – where applicable and will reduce the vulnerability of women and girls. As a result, at least 50% of project beneficiaries will be female. There is a low risk that by empowering women, the project may cause them to become ostracised in a male-dominated society.
Will the proposed project potentially discriminates against women or other groups based on gender, especially regarding participation in the design and implementation or access to opportunities and benefits?	N	Gender equality will be promoted under the proposed project, through the inclusion of women in project design and implementation and will strengthen the access of women to related opportunities and benefits. In addition, at least 50% of project beneficiaries will be female.
Will the proposed project have impacts that could negatively affect women's and men's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services?	N	The development and protection of natural resources by both men and women will be supported under the proposed project. Furthermore, both men and women will be given equal access to environmental goods and services provided by project interventions.
Safeguard Standard 9: Economic Sustainability		
Will the proposed project likely bring immediate or short-term net gain to the local communities or countries at the risk of generating long-term economic burden (e.g.,	N	Climate change adaptation (including EbA) options under the proposed project may provide

agriculture for food vs. biofuel; mangrove vs. commercial shrimp farm in terms of fishing, forest products and protection, etc.)?		short-term benefits but are also designed to be economically sustainable in the long-term.
Will the proposed project likely bring unequal economic benefits to a limited subset of the target group?	N	

Annex VII. Gender analysis

Introduction

This Gender Analysis document is prepared as an input to inform the design and implementation of the project titled “Mekong EbA South: Enhancing Climate Resilience in the Greater Mekong Sub-region through Ecosystem-based Adaptation in the Context of South-South Cooperation”. With a budget of US\$7 million and duration of four years, the project will be financed by the Adaptation Fund (AF).

Gender and ecosystem-based adaptation

Women in developing countries are disproportionately affected by the impacts of climate change, including floods and droughts. Women commonly experience disparities in the social, cultural, economic and political areas. Furthermore, they are often afforded fewer opportunities and legal rights compared to men. These disadvantages increase the vulnerability of women to the negative effects of climate change²¹⁸. The responsibilities of women in both households and communities place them in unique positions with invaluable knowledge that is necessary to understand current and develop additional climate change adaptation measures and strategies. In particular, as managers of natural resources, women have the experience and knowledge that is required to build the resilience of their communities. Therefore, their participation and consideration are vital in adapting to the adverse impacts of climate change, such as droughts and floods²¹⁹.

A complementary or alternative approach to traditional hard infrastructural flood and drought risk reduction measures, such as dykes (which can cause harmful side effects on communities depending directly on natural resources), is ecosystem-based adaptation (EbA)²²⁰. EbA is the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change²²¹. EbA can be a cost-effective alternative strategy to traditional climate change adaptation methods, which is accessible to and inclusive of vulnerable groups such as women. Consequently, EbA is a promising means of strengthening the role of women in climate change adaptation. Moreover, EbA can: i) support the integration and maintenance of traditional knowledge and cultural values into adaptation; and ii) generate multiple social, economic and cultural co-benefits for local communities²²². However, there is limited available knowledge on how to design and implement EbA in a manner that supports the role of women in climate change adaptation²²³.

The integration of EbA into and strengthening the role of women in flood risk management is currently being explored under two projects of the Global Resilience Partnership Water Window

²¹⁸ Pham TDM, Hagedoorn L, Dillenardt L, Lasage R and Bubeck P. 2017. Ecosystem-based adaptation as a means to strengthen the role of women in flood risk management and climate change adaptation. Policy brief. Available at: https://www.weadapt.org/system/files/force/policybrief-drreditionofyouth_pham_et_al_final.pdf?download=1

²¹⁹ UNISDR. 2008. Gender perspectives: Integrating Disaster Risk Reduction into Climate Change Adaptation. Good practices and Lessons Learned.

²²⁰ ISPONRE. 2013. Operational framework for ecosystem-based adaptation to climate change for Viet Nam. A Policy Supporting Document. Hanoi.

²²¹ Source: <https://www.cbd.int/>.

²²² CBD Secretariat. 2009. Connecting Biodiversity and Climate Change Mitigation and Adaptation. Report on the Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change. CBD Technical Series No. 41.

²²³ UNISDR, UNDP, IUCN. 2009. Making Disaster Risk Reduction Gender-Sensitive. Policy and Practical Guidelines. Geneva.

(GRP) in Central Vietnam²²⁴. The planned activities include the joint implementation EbA with women's groups and local authorities, capacity building for women, a holistic valuation of the multiple benefits of EbA measures and research on the impact of floods on the well-being of women, both in an urban and coastal environment. An important barrier for a systematic shift towards a more inclusive approach to climate change adaptation comprising EbA-measures is the lack of awareness and evidence of their cost-effectiveness and benefits. The multi-faceted economic, social and cultural benefits of EbA measures are difficult to determine through traditional cost-benefit analyses. This often results in the reluctance to implement EbA²²⁵. The two GRP seed projects are attempting to overcome this barrier by providing evidenced-based support on the holistic value of EbA at the local level. Similarly, the proposed AF-financed project plans to conduct cost-effectiveness analyses of concrete on-the-ground EbA in communities in Thailand and Vietnam (including an assessment of the impacts of interventions on women) that are faced with similar climate change threats (droughts and floods).

When approached from a political ecology and climate justice perspective, the potential of social and economic marginalisation, uneven access to natural resources, and a lack of gender equitable participation in environmental decision-making to result in EbA having adverse impacts on certain vulnerable groups can be determined. When women do gain access to remunerative or economic resources in traditionally patriarchal societies, case studies have shown an increase in gender-based violence. Therefore, it is crucial to recalibrate male sensitisation within remunerative EbA activities that may seek to empower women.

Understanding the social and gender aspects related to climate change impacts (such as droughts and floods) and designing activities around the needs of different community groups, such as women, is necessary for the effective planning and implementation of EbA. Additionally, the monitoring of targets needs to provide transparency and accountability to all stakeholders, particularly with regards to understanding the gender-disaggregated impact of the proposed project.

Status of Gender Equality

Major Indicators and Political Participation

Thailand

Although ranked midway in the Gender Inequality Index^{226,227} (GII; 79th out of 159 countries), Thailand is categorised as a Group 1 country according to the Gender Development Index (GDI)²²⁸ with a value of 1.001. As a Group 1 country, Thailand is considered to have a high quality in Human Development Index (HDI) achievements between women and men²²⁹. Thailand is ranked 75th on the Global Gender Gap Index (GGGI), which takes into consideration the following indicators: i) economic participation and opportunity; ii) educational

²²⁴ Source: <http://www.globalresiliencepartnership.org/news/2017/03/15/Water-Window-Challenge-Winners-Announced>

²²⁵ ISPONRE. 2013. Operational framework for ecosystem-based adaptation to climate change for Viet Nam. A Policy Supporting Document. Hanoi.

²²⁶ UNDP. 2013. Human Development Report 2016. Thailand.

²²⁷ Reflects gender-based inequalities in three dimensions: reproductive health, empowerment and economic activity.

²²⁸ UNDP. 2013. Human Development Report 2016. Thailand.

²²⁹ *Ibid*

attainment; iii) health and survival; and iv) political empowerment²³⁰. While Thailand ranks relatively well in terms of economic participation and opportunity (24th), as well as health and survival (51st), there is still a disparity between genders regarding educational attainment (106th) and political empowerment (127th). For example, women only hold ~5 and ~11% of parliamentary seats and ministerial positions, respectively. The limited representation of women in politics in Thailand results in underrepresentation in decision-making processes related to the environment and climate change.

Vietnam

Vietnam is ranked slightly higher than Thailand on the GII (71st) and is also considered a Group 1 country according to the GDI²³¹. Ranked 69th on the GGGI, Vietnam is ahead of Thailand in terms of educational attainment (97th) and political empowerment (97th). However, Vietnam lags behind Thailand on economic participation and opportunity (33rd), as well as health and survival (138th). Politically, women in Vietnam hold ~27% of parliamentary seats, but only ~5% of ministerial positions. Similar to Thailand, women are underrepresented in environmental- and climate change-related decision-making processes.

Economic Participation

Thailand

Approximately 70% of Thai women, as opposed to ~86% of men, between the ages of 15 and 64 actively participate in the country's labour force^{232,233}. This is despite the greater access of women to tertiary education (see Literacy and Information below). Furthermore, vertical gender segregation in the labour market means that in general, women are more economically disadvantaged than men, as inferred by their relative concentration in low-paid and -skilled occupations. Most Thai women are employed in the services and agriculture sectors (Table VII1). However, increasing numbers of women prefer to seek employment in the former. Since 2000, the shift of women workers from the agriculture to the services sector has been considerable, with employment rates changing from 33 and 50% to 50 and 30%, respectively²³⁴. In terms of incomes, the estimated annual total²³⁵ for Thailand's female labour force is US\$ 14,785, ~23% lower than that of males – US\$ 19,153²³⁶. This difference is related to inter alia the country's wage equality for similar work ratio between women and men of 0.76, and the lack of a law mandating equal pay amongst genders²³⁷.

Table VII1. Gender disaggregated indicators related to employment in Thailand, 2016²³⁸.

Indicator	Female	Male
Employment rate in agriculture	31%	35%
Employment rate in industry	20%	25%

²³⁰ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²³¹ UNDP. 2013. Human Development Report 2016. Vietnam.

²³² World Economic Forum. 2017. The Global Gender Gap Report 2017.

²³³ This includes the proportion of the country's population that engages actively in the labour market, either by working or looking for work. Labour force data does not take into account workers employed abroad.

²³⁴ Source: <http://datatopics.worldbank.org/gender/country/thailand>

²³⁵ Purchasing Power Parity (PPP).

²³⁶ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²³⁷ *Ibid*

²³⁸ Source: <http://datatopics.worldbank.org/gender/country/thailand>

Employment rate in services	49%	39%
Unemployment ²³⁹ rate	1%	0.9%

Regarding access to economic and other productive resources, Thailand's laws generally do not discriminate on the basis of gender: i) men and women have equal rights to inheritance and land ownership; and ii) genders have equal access to credit and bank loans²⁴⁰. Thailand's maternity leave law allows for 90 days of leave, of which the first 45 days are at 100% pay, with the remainder at 50%. The employer pays for the first 45 days, with the rest being covered by the government. However, women working in the informal sector and as unpaid labourers are not eligible for these social benefits²⁴¹.

Vietnam

Female labour force participation in Vietnam is ~80% (~87% for males)²⁴², one of the highest rates in the region. However, many female labourers are employed as unpaid family workers²⁴³. In addition, gender segregation in the labour market concentrates women in low-skilled and low-paying occupations. As is the case in Thailand, the majority of Vietnamese women are employed in the agriculture and services sectors (Table VII2). During the period 2000–2016, the number of women working in the agriculture sector has decreased by ~22%, while those working in the services sector has increased by ~12%²⁴⁴. This is predominately related to an increase in migration to urban areas because of a reduction in agricultural activity, which can partly be attributed to the impacts of climate change. In industries dominated by female labourers, such as garments, textile, and footwear, workers tend to be unskilled, earning low salaries while working long hours and enjoying little access to training or promotion²⁴⁵. On average, women earn 20% than men²⁴⁶. This difference is related to inter alia the country's wage equality for similar work ratio between women and men of 0.65²⁴⁷. However, this income gap is gradually decreasing because of: i) the presence of a law mandating equal pay between genders²⁴⁸; ii) an increasing level of education and training completed; and iii) a rise in the type of education and employment received amongst women²⁴⁹. However, women continue, in most cases, to be overlooked for promotions and managerial positions. Only 5% of presidents and 10% of vice presidents of large companies in Vietnam are female²⁵⁰, will only 30% of top managerial positions are held by women²⁵¹. These disparities are influenced by the retirement age of 55 for women, while that for men is 60. Furthermore, a combination of low education levels, limited access to skills training, lack of access to credit and financial services, and gender segregation in the labour market hampers the likelihood of women getting hired for well-paid jobs²⁵².

²³⁹ Percentage of active labour force, 15–64 years old.

²⁴⁰ ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

²⁴¹ ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

²⁴² World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁴³ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

²⁴⁴ Source: <http://datatopics.worldbank.org/gender/country/vietnam>

²⁴⁵ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

²⁴⁶ Average annual incomes are US\$ 5,799 for women and US\$ 7,062 for men. Source: World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁴⁷ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁴⁸ *Ibid*

²⁴⁹ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

²⁵⁰ Japan International Cooperation Agency (JICA). 2011. *Country Gender Profile: Viet Nam Final Report*. Ha Noi.

²⁵¹ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁵² ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

Table VII2. Gender disaggregated indicators related to employment in Vietnam, 2016²⁵³.

Indicator	Female	Male
Employment rate in agriculture	44%	40%
Employment rate in industry	21%	29%
Employment rate in services	36%	31%
Unemployment rate	2%	2.2%

Several studies suggest that low financial inclusion rates for women not only constrain productivity and business innovation but also adversely affect food security, nutrition and investments in education. In addition, the lower economic participation of women reduces their resilience to the negative impacts of climate change.

Public Decision Making

Thailand

Thailand's prime minister position has only been held by a woman on one occasion – for 2.8 years²⁵⁴ – and in general, women are underrepresented in Thailand's government. In 2017, women comprised only ~5 and ~11% of parliamentary and ministerial positions, respectively²⁵⁵. Women wishing to stand for office in Thailand face considerable challenges, including discouragement from their families from entering a “male domain” and a lack of access to patronage networks²⁵⁶. Outside of government, women seem to fare better, with firms with female (co-) owners and top managers (CEOs) outnumbering those without²⁵⁷.

Vietnam

Vietnam has never had a female head of state. Although women are represented at the national government level, the majority of positions are held by men. Women make up ~27% of Vietnam's national assembly, while females hold only ~4% of ministerial positions²⁵⁸. At the sub-national level, female participation rates in government councils are ~24% at the provincial level, ~23% at the district level and ~20% at the commune level²⁵⁹. The civil service – especially the defence and security, law, justice, economics, foreign affairs and finance department – is dominated by men, who hold between 85 and 92% of positions. Although still relatively low, the number of women employed by the departments of culture, education, social affairs, technology and environment is higher, ranging from 28 to 37%²⁶⁰. Female party leaders are generally better educated than their male counterparts at the commune level. This suggests that to gain the support of local party members women require a relatively higher educational achievement compared to men. Additional barriers to the participation of women in public decision-making processes include: i) unequal burdens of household and reproductive responsibility; ii) traditional values and attitudes related to women's roles in society; iii) official rules and

²⁵³ Source: <http://datatopics.worldbank.org/gender/country/vietnam>

²⁵⁴ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁵⁵ *Ibid*

²⁵⁶ UN Committee on the Elimination of Discrimination Against Women (CEDAW). 2004. CEDAW Report.

²⁵⁷ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁵⁸ *Ibid*

²⁵⁹ UN Vietnam. 2009. UN Gender Briefing Kit: Gender Relations through History.

²⁶⁰ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

regulations that are gender biased; and iv) unequal opportunities for training and capacity development²⁶¹.

A lack of female representation at the governmental and other public decision-making levels may limit the consideration of women in plans, strategies and policies related to climate change adaptation, increasing their vulnerability.

Education, Literacy and Information

Thailand

Education enrolment in primary and secondary education in Thailand is relatively high, with rates being similar for men (94 and 83%) and women (87 and 82%). In terms of tertiary education, far more Thai women (57%) are enrolled at universities and colleges than men (41%)²⁶². Despite these relatively high enrolment rates, education attainment rates lag behind. For example, only 32% of adult women and 34% of adult men complete their secondary education²⁶³. A mother's attainment of secondary education has a positive correlation with her children's completion of school^{264,265}. In addition, data suggest that children from ethnic minorities and cross-border migrant families are particularly affected, with girls likely to be worse off²⁶⁶. Apart from this, the main education challenges include ensuring that: i) all enrolled children complete their primary education; ii) ethnic minority children can access schools; and iii) there are improvements in the quality and gender sensitivity of teaching and learning curricula²⁶⁷.

Relatively high literacy rates in Thailand (91 and 95% for men and women, respectively) enhance the access of both genders to climate information and promotes the uptake of positive climate change coping strategies, such as the implementation of EbA. However, limited access to internet amongst both genders (~40% of each)²⁶⁸ may inhibit the dissemination of climate information, especially to the most vulnerable rural communities. Consequently, alternative methods for the dissemination of climate information, such as awareness-raising campaigns in rural areas, are advised.

Vietnam

Gender equality in primary and secondary education in Vietnam is good, with females making up approximately 50% of students at both levels²⁶⁹. Enrolment in tertiary education, although dominated by females in the past, is also equal between sexes – ~29% of both males and females²⁷⁰. However, gender disparities persist in primary and secondary education in rural and

²⁶¹ *Ibid*

²⁶² World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁶³ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁶⁴ Mothers' completion of secondary education increases the net primary school completion rate of their children to 91%, while the rate for children whose mothers had no education is 56%.

²⁶⁵ UN Children's Fund. 2007. Multiple Indicator Cluster Survey, 2005–2006.

²⁶⁶ ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

²⁶⁷ *Ibid*

²⁶⁸ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁶⁹ 48.5% for primary education, and 48.2% and 49.3% for lower and upper secondary education respectively.

Source: ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

²⁷⁰ World Economic Forum. 2017. The Global Gender Gap Report 2017.

mountainous areas, especially amongst girls and women from ethnic minorities²⁷¹. Barriers include: i) distance to schools; ii) language of instruction; iii) persistent gender stereotypes; iv) the lack of gender-sensitive and locally relevant curricula, teaching methods, as well as qualified female teachers. Enrolment in tertiary education, although dominated by females in the past, is also equal between sexes – ~29% of both males and females²⁷². Nevertheless, gender imbalances related to field of study²⁷³ and academic staff are common at this level. Furthermore, there is often limited labour market demand in Vietnam for the tertiary qualifications that many women obtain²⁷⁴.

Relatively high literacy rates in Vietnam (91 and 96% for men and women, respectively) enhance the access of both genders to climate information and promotes the uptake of positive climate change coping strategies, such as the implementation of EbA. However, a lack of technical skills – 71% of women and 60% of men in the labour force in 2007 were found to have no technical education – may impede the implementation of adaptation activities in the country, particularly by women²⁷⁵.

Health

Thailand

The life expectancy of Thai women is ~69 years, higher than that of men, which is ~65 years. This is attributable to in part, advances in the country's health care system, which has, for example, reduced the maternal mortality rate (MMR)²⁷⁶. Thailand's MMR steadily declined from 26 per 100,000 live births in 2005 to 20 in 2015²⁷⁷. The leading causes of maternal death are haemorrhage, sepsis and embolism, unsafe abortion, malaria and HIV/AIDS²⁷⁸. Decreases in maternal deaths over the last decade are primarily attributable to 99.6% of births being attended to by skilled health personnel²⁷⁹. However, in the south, where MMR is the highest in the country, a larger proportion of births within Muslim families take place at home and are attended to by traditional birth attendants. The main reasons for the higher MMR in the south include delays in accessing emergency obstetric care, costs of travel to hospitals, security concerns limiting travel to hospitals and cultural barriers related to the faith of health care professionals deterring Muslim women from hospital deliveries²⁸⁰. Unsafe abortions associated with teenage pregnancy contribute to maternal mortality. Abortion is illegal in Thailand, except in circumstances where the women's health and life are in danger²⁸¹ and special circumstances of rape²⁸².

²⁷¹ Ethnic minority girls have the lowest enrolment and attendance rates of any group. They also have the highest rates of repetition and dropout rates and lowest rates of primary school completion and transition from primary to lower secondary school. Source: United Nations Children's Fund (UNICEF). 2010. *An Analysis of the situation of children in Viet Nam*. Ha Noi.

²⁷² World Economic Forum. 2017. *The Global Gender Gap Report 2017*.

²⁷³ Men tend to specialise in engineering and technical studies (40%) and women in education and business studies (55%). Source: UN Viet Nam 2010. Japan International Cooperation Agency (JICA). *Country Gender Profile: Viet Nam Final Report*. 2011. Ha Noi.

²⁷⁴ ADB. 2012. *Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis*.

²⁷⁵ ADB. 2012. *Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis*.

²⁷⁶ For women between 15 and 49 years of age.

²⁷⁷ Source: http://www.who.int/gho/maternal_health/countries/tha.pdf

²⁷⁸ ADB. 2013. *Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis*.

²⁷⁹ World Economic Forum. 2017. *The Global Gender Gap Report 2017*.

²⁸⁰ ADB. 2013. *Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis*.

²⁸¹ World Economic Forum. 2017. *The Global Gender Gap Report 2017*.

²⁸² ADB. 2013. *Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis*.

Thailand continues to experience the highest HIV infection rate in Southeast Asia, and the second highest in Asia after China. Partner to partner transmission of HIV in Thailand is approximately 36%²⁸³. HIV remains a particular problem for migrant women from neighbouring countries. The nature of their livelihoods (for example, prostitution, begging and factory work), together with limited access to information, HIV prevention, care and treatment services, increase their vulnerability to HIV infection. Health problems, such as HIV, reduce the adaptive capacity of women and increase their vulnerability to the impacts of climate change.

Vietnam

As with Thailand, Vietnam has made considerable progress in reducing MMR. Between 2005 and 2015, MMR dropped from 61 to 54²⁸⁴. However, progress has been unequal with rural areas lagging far behind urban areas, and ethnic minorities falling behind the Kinh ethnic majority²⁸⁵. Improving the access of ethnic minorities to qualified healthcare professionals and skilled birth attendants is the main challenge in the battle against maternal mortality. Indeed, only ~46% of minority childbirths are attended by skilled birth attendants, less than half of that Kinh births (~96%)²⁸⁶. Unsafe abortions contribute to a relatively high MMR in rural areas and among ethnic minorities. Vietnamese law permits abortion to preserve a woman's physical health²⁸⁷, however, this is not always respected. An emerging problem is an increase in sex-selective abortions and pressure to adhere to the country's two-child policy²⁸⁸. This together with Vietnam's current female to male ratio of 0.98, is expected to result in men outnumbering women by 10% in 2035. The adverse implications of this will include rising demand for sex work, marriage migration, trafficking of women and an increase in HIV transmission²⁸⁹.

The HIV rate among Vietnamese adults (15–49 years of age) in 2016 was 0,4%²⁹⁰, at least 25% of which are women. The percentage of Vietnamese women infected by AIDs is expected to increase over time mainly because both men and women underestimate the risk of a woman contracting the disease from her partner²⁹¹. Health problems, such as HIV, reduce the adaptive capacity of women and increase their vulnerability to the impacts of climate change.

Gender-based violence

Thailand

Approximately 44% of Thai women experience gender-based violence (physical or sexual) during their lifetime^{292,293}. This is partly associated with the widespread social perception that domestic violence is a private matter, and as a result many incidents are not reported or dealt with appropriately by the relevant authorities. The UN's Committee on the Elimination of Discrimination Against Women (CEDAW) advocates that female victims of domestic violence

²⁸³ *Ibid*

²⁸⁴ Source: http://www.who.int/gho/maternal_health/countries/vnm.pdf

²⁸⁵ UNICEF. 2010. An analysis of the situation of children in Viet Nam. Ha Noi.

²⁸⁶ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

²⁸⁷ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁸⁸ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

²⁸⁹ *Ibid*

²⁹⁰ Source: <http://www.unaids.org/en/regionscountries/countries/vietnam>

²⁹¹ UNICEF. 2010. An analysis of the situation of children in Viet Nam. Ha Noi.

²⁹² ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

²⁹³ World Economic Forum. 2017. The Global Gender Gap Report 2017.

have access to immediate assistance and protection, and that perpetrators are effectively punished²⁹⁴. The Government of Thailand has established one-stop crisis centres for victims of violence in provincial and district hospitals, an intervention recognised as good practice. However, despite existing domestic violence response services, multisector response coordination remains a challenge²⁹⁵.

Vietnam

Violence against women remains a concern in Vietnam, with it affecting 34% of women^{296,297}. Although the country does have laws advocating the protection of women against domestic violence (such the Prevention and Control of Domestic Violence Law), weak enforcement, traditional cultural perceptions, limited female knowledge of their rights and negative gender stereotypes contribute to its persistence in the country²⁹⁸.

Threats or fear of domestic violence may reduce the freedom of women to participate in climate change adaptation planning and activities. As a result, the vulnerability of these women to the impacts of climate change is increased.

Conflict

Thailand

With the ongoing insurgency in the southern Muslim majority provinces of Thailand, women are both victims of violence or left behind as heads of households when men are killed or detained. Households headed by women are inherently poorer than those headed by men. Furthermore, women are not adequately included in peace-making and conflict resolution processes²⁹⁹, increasing their vulnerability to the effects of conflict, which ultimately decreases their resilience to climate change.

Water supply and sanitation

Vietnam

Inequalities in water supply and sanitation exist between urban (87%) and rural (54%) areas, as well as between majority Kinh (67%) and ethnic minorities (27%). In addition, awareness of the benefits of hygiene in terms of the reduction in the prevalence of waterborne diseases (such as cholera) is limited. Affected women are adversely affected in terms of workload, time allocation, health and well-being, as they are mainly responsible for household and community sanitation, as well as caring for the sick and elderly³⁰⁰. The impacts on women are expected to be compounded by future climate change conditions (increases in droughts and floods), further increasing their vulnerability.

Policy Environment

²⁹⁴ UN Committee on the Elimination of Discrimination Against Women (CEDAW). 2004. CEDAW Report.

²⁹⁵ ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

²⁹⁶ UN Viet Nam. 2010. Gender Based Violence, Issue Paper, Hanoi.

²⁹⁷ World Economic Forum. 2017. The Global Gender Gap Report 2017.

²⁹⁸ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

²⁹⁹ ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

³⁰⁰ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

Legal framework

Thailand

Thailand ratified the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) in 1985, as well as its Optional Protocol in 2000. In addition, the country endorsed the Beijing Platform for Action (BPFA) and the Millennium Development Goals (MDGs). Thailand has developed additional goals, under its MDG Plus, to ensure that the MDGs are aligned to the country's socio-economic development context. The MDGs Plus (MDG+) related to women include: i) doubling the representation of women in parliament, local administrative organisations and senior administrative positions in public offices (MDG3+); and ii) reducing the MMR by half, especially in the mountainous areas, and northern and southern border provinces (MDG5+)³⁰¹. Thailand has made considerable efforts to integrate international gender principles and instruments into its policy and programming framework. This is evident in the country's Protection of Victims of Domestic Violence Act B.E. 2550 (2007), which includes anti sex discrimination and gender equality provisions. This act provides for protection and rehabilitation of victims, requiring members of the public to report alleged abuse, and obliging law enforcement officers to respond to reports of violence. Furthermore, the country's penal codes and sex discrimination laws have largely been revised^{302,303}.

Thailand's constitution guarantees equality between men and women and prohibits discrimination on multiple grounds, including on the basis of sex (Article 30 of the Constitution of the Kingdom of Thailand). Based on this, legislative amendments have been made to enhance the rights of women. In 2005, the Name Act was amended to allow women the right to choose a family name. The Penal Code was amended in 2007 to criminalise marital rape, and the Civil Code amended to provide women and men with equal grounds for divorce. The Prevention and Suppression of Human Trafficking Act was passed in 2008.

Recognising that the participation of women in decision-making, especially at the political level, is crucial for generating political will for the promotion of gender equality, Thailand has developed and is currently implementing The Memorandum of Understanding on the Campaign and Promotion of Women's Participation in Local Politics and the Protection of Women's Rights³⁰⁴.

Vietnam

Vietnam is committed to gender equality and women's empowerment, as reflected in the Law on Gender Equality, 2006, which guarantees equal rights to women and requires gender strategies at the ministerial level. In 2007, parliament passed the Domestic Violence Prevention law and subsequently launched a public awareness-raising campaign targeting men. This was followed in 2011 by the adoption of the National Program on Gender Equality (2011–2015). Other relevant legislation to protect the rights of women includes the Anti-Human Trafficking Law, which was passed in 2011. Vietnam's penal code provides the legal framework for prosecuting crimes of rape, including marital rap under the Domestic Violence Law³⁰⁵.

³⁰¹ Source: http://www.unescapsdd.org/files/documents/Beijing15_questionnaire_Thailand.pdf

³⁰² Source: <http://asiapacific.unwomen.org/en/countries/thailand>

³⁰³ ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

³⁰⁴ Source: http://www.unescapsdd.org/files/documents/Beijing15_questionnaire_Thailand.pdf

³⁰⁵ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

Gender Bodies

Thailand

The Office of Women's Affairs and Family Development (OWAFD; established in 2002), Ministry of Social Development and Human Security, is the national body responsible for promoting gender equality and the empowerment of women. It serves as the secretariat of the National Inter-ministerial Committee on Policy and Strategy for the Improvement of the Status of Women, chaired by the Prime Minister. The office is responsible for the development of policies and measures aimed at enhancing women's social security, as well as setting up mechanisms for promoting coordination between relevant government departments. It is also responsible for the implementation of the National Women's Development Plan, which is revised every five years^{306,307}. The current plan falls under the period 2017–2021. Within each of Thailand's 131 government departments and agencies, a chief gender equality officer and gender focal point are responsible for providing and coordinating gender mainstreaming support³⁰⁸.

Vietnam

The Gender Equality Department was established under the Ministry of Labour, Invalids and Social Affairs to implement Vietnam's Gender Equality Law. Vietnam's Women's Union (VWU), a mass organisation, includes a vast network of members from the national to the sub-national level, with branches in every province and commune. The VWU implements an array of programmes in a range of sectors, including those related to health, education, credit, and training, to support women's development. Women have to become members of the VWU to receive support, with special attention given to the poor. The VWU is an effective vehicle for the enhancement of gender equality, but uneven capacity among VWU officials constrains effectiveness, particularly in ethnic minority areas³⁰⁹.

Gender and Environment

Thailand and Vietnam

Through capacity building on links between gender and biodiversity, provided by UN Environment, the Governments of Thailand and Vietnam have developed specific actions to mainstream gender into the implementation of their National Biodiversity Strategy and Action Plans (NBSAP)³¹⁰. For example, Thailand³¹¹ and Vietnam's³¹² NBSAPs include gender-related measures such as raising awareness on the importance and roles of women in conservation and the sustainable utilisation of biodiversity. These are aligned with Aichi Biodiversity Target 14³¹³: "Ecosystems that provide essential services, including services related to water, and

³⁰⁶ Source: <http://asiapacific.unwomen.org/en/countries/thailand>

³⁰⁷ ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

³⁰⁸ ADB. 2013. Country Partnership Strategy: Thailand, 2013–2016. Gender Analysis.

³⁰⁹ ADB. 2012. Country Partnership Strategy: Vietnam, 2012–2015. Gender Analysis.

³¹⁰ Source: <https://www.unenvironment.org/regions/asia-and-pacific/regional-initiatives/promoting-gender-quality-and-environment>

³¹¹ Office of Natural Resources and Environmental Policy and Planning, MoNRE. Master Plan for Integrated Biodiversity Management B.E. 2558–2564 (2015–2021).

³¹² MoNRE. Vietnam National Biodiversity Strategy to 2020, Vision to 2030.

³¹³ Under Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services. Source: <https://www.cbd.int/sp/targets/>

contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable”.

Gender and Climate Change

Thailand

The participation of women and gender equality are included in Thailand’s Climate Change Master Plan (2015–2050), as well as its 12th National Economic and Social Development Plan (2017–2021). Although action related to the integration of gender equality into climate change adaptation activities remains limited. However, it is expected that gender equality, and the participation of women will be mainstreamed further in the activities of Thailand’s NAP, which will be finalised and published in 2018.

Vietnam

The importance of gender equality within the context of climate change is acknowledged in Vietnam’s: i) National Target Program to Respond to Climate Change (NTP-RCC; 2008); ii) National Strategy on Climate Change (2011–2020); and iii) National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020 (2007). These policies are considered to be an important basis for mainstreaming gender equality into climate change adaptation, although related actions are currently limited³¹⁴. Policy and programme planning, budgeting, implementation and monitoring procedures should allow for the integration of gender equality and women’s empowerment principles into climate change adaptation across all levels and sectors in Vietnam. A multi-stakeholder approach involving gender expertise, both genders, ethnic minority groups, as well as representatives from government, civil society, the private sector and the broader development community³¹⁵.

Conclusion

A gender-sensitive, inclusive and participatory approach to EbA is at minimum low-cost and no-regret, with the potential to contribute considerably to gender equality, social inclusion and community buy-in. As gender equality is becoming more and more important in the work of the Adaptation Fund and UN Environment amongst others, the proactive gender approach of the proposed project, if implemented effectively, has the potential to become a good practice to shed light to other climate resilience projects in Thailand, Vietnam and the rest of the Greater Mekong Sub-region, as well as globally. UN Environment is committed to working closely with DWR-MoNRE (Thailand) and DLA-MoNRE (Vietnam), and to provide any support needed to implement the gender actions.

³¹⁴ Ray-Ross S. 2012. USAID/Vietnam Gender Analysis.

³¹⁵ *Ibid*