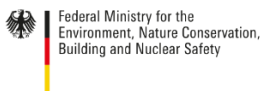




# A Regional Synthesis of Results and Lessons from Mekong WET Small Grants 2021-2022



Mekong WET: Building Resilience of Wetlands in the Lower Mekong Region





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## Acronyms

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<b>ACB</b>	ASEAN Centre for Biodiversity
<b>AHP</b>	ASEAN Heritage Park
<b>BANCA</b>	Biodiversity and Nature Conservation Association
<b>BMUB</b>	German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
<b>BPL</b>	Boeung Prek Lapouv
<b>CAWA</b>	Climate Adaptation in Wetland Areas
<b>CBD</b>	Convention on Biological Diversity
<b>CEPA</b>	Culture and Environment Protection Association
<b>CITES</b>	Convention on International Trade of Endangered Species of Fauna and Flora
<b>Cfi</b>	Community Fisheries
<b>CLMD</b>	Cambodian Lower Mekong Delta
<b>CSO</b>	Civil Society Organisation
<b>CTU</b>	Can Tho University
<b>CWS</b>	Chattin Wildlife Sanctuary
<b>EbA</b>	Ecosystem-based Adaptation
<b>EFF</b>	East Forum Foundation
<b>FCA</b>	Fishery Conservation Area
<b>FCEE</b>	Fishing Cat Ecological Enterprise
<b>FFI</b>	Fauna and Flora International
<b>FFZ</b>	Fishing Free Zone
<b>FOW</b>	Friends of Wildlife
<b>Ha</b>	Hectare
<b>GEF</b>	Global Environment Facility
<b>HADF</b>	Hill Area Development Foundation
<b>IBRRI</b>	Indo-Burma Ramsar Regional Initiative
<b>IKI</b>	Indo-Burma Ramsar Regional Initiative
<b>IPCC</b>	International Panel on Climate Change
<b>IUCN</b>	International Union for Conservation of Nature
<b>km</b>	kilometre
<b>LECA</b>	Law Enforcement Capacity Assessment
<b>LNHNR</b>	Lung Ngoc Hoang Nature Reserve
<b>m</b>	metre
<b>MIKE</b>	Monitoring Illegal Killing of Elephants
<b>MWET</b>	Mekong WET
<b>MTF</b>	Mini Trust Fund
<b>NAPA</b>	National Adaptation Plan of Action
<b>NGO</b>	Non-Government Organisation
<b>NM-ED</b>	Nature Mind ED
<b>NSBSAP</b>	National Biodiversity Strategies and Action Plan
<b>PDF</b>	Peoples Defence Force
<b>PRA</b>	Participatory Rural Appraisal
<b>R-METT</b>	Ramsar Management Effectiveness Tracking Tool
<b>RRU</b>	Rajhabhat Rajanakarinda University
<b>SMART</b>	Spatial Monitoring and Reporting Tool
<b>TSMF</b>	Tra Su Melaleuca Forest
<b>UMTNP</b>	U Minh Thuong National Park
<b>UNFCCC</b>	United Nations Framework on Climate Change
<b>VA</b>	Vulnerability Assessment
<b>WWF</b>	World Wide Fund for Nature
<b>WWT</b>	Wildfowl and Wetlands Trust

## Executive Summary

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The Indo-Burma region hosts a particularly large and diverse array of wetlands, including both freshwater wetlands, such as marshes, oxbow lakes, peatlands and flooded forests, and coastal wetlands, such as mudflats, seagrass beds, coral reefs and mangroves. These wetlands are home to nationally, regionally and globally important biodiversity, whilst also directly and indirectly supporting the livelihoods and well-being of millions of people through the ecosystem services they provide. Unfortunately, these same wetlands are also increasingly threatened by a wide range of development issues. At the same time, the growing impacts of climate change are expected to continue to increase average temperatures, change rainfall patterns, increase the intensity, duration, and frequency of extreme weather events, exacerbate cycles of floods and droughts, and increase sea levels along with a range of other environmental changes.

In response, the governments of Cambodia, Lao PDR, Myanmar Thailand and Viet Nam have ratified the Ramsar Convention and have designated a total of 37 Ramsar Sites in the Indo-Burma Biodiversity Hotspot. Assisted by IUCN, the five countries have also established the Indo-Burma Ramsar Regional Initiative (IBRRI), officially endorsed by the Ramsar Convention Standing Committee in June 2016. IBRRI acts as a unique platform to catalyse action on wetland conservation in the region, bringing together governments, academics, NGOs and Ramsar International Organization Partners to address the most pressing threats to regional wetlands, and fostering discussions on transboundary wetlands. The [IBRRI Strategic Plan \(2019-2024\)](#) was launched on World Wetlands Day in February 2019.

Funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), from 2017-2022, Mekong WET was designed to develop an effective and replicable framework for the delivery of Ecosystem-based Adaptation (EbA) and mitigation benefits from existing and planned Ramsar sites. The *“Methodology for Rapid Assessment of Climate Change Vulnerability and Adaptation Planning at Ramsar Sites”* was developed by the International Union for Conservation of Nature (IUCN), as a joint output of Mekong WET and the Climate Adaptation in Wetland Areas (CAWA) Project in Lao PDR (supported by the GEF). Researchers piloted and tested this methodology in ten Ramsar sites in Cambodia, Lao PDR, Thailand and Viet Nam. The assessments received positive feedback from stakeholders involved in the implementation. Wetlands managers of each site also participated in a ten-day national wetlands’ training to further strengthen their understanding of the process.

Mekong WET awarded a total of 17 small grants to a variety of local civil society organisations and local authorities, as well as university researchers, and national and international NGOs, for activities addressing priorities identified in vulnerability assessments and management plans. In some cases, the grants were awarded to implement the Climate Change Vulnerability Assessment and/or to develop a management plan for wetlands. The grants varied in size from EUR 5,000 to EUR 20,000 and in total added up to over EUR 300,000. Grantees provided co-financing and in-kind contributions of varying amounts.

The content of this publication is based on a thorough review of small grant project contracts; mid-term and final reports; and direct discussions with members of project teams implementing the grant projects. This publication provides a synthesis of short case studies of each of the 17 initiatives supported through these grants, highlighting both successful achievements, and challenges encountered; as well as identifying lessons learned and considerations for sustainability; and finally providing recommendations for future investment considerations.



### **Key recommendations for future IBRRI work:**

- Host trainings and workshops to increase understanding of EbA approaches, which may lead to an increase in the number of proposals to implement EbA activities in future calls for proposals.
- Future calls could also include a webinar or information session for questions and application support, which could be conducted in national languages by IUCN country offices.
- Future selection criteria, especially for short-term, low budget proposals, should consider the ongoing work of the applicant at the site and their long-term involvement at the site as part of the assessment.
- Continue to promote the Climate Change Vulnerability Assessment, and encourage its application in all 37 Ramsar Sites in the region, providing training courses on the methodology.
- In identifying adaptation options in situations where the relative impacts of climate change and other factors are not clear, so-called “no regrets” adaptation options can be identified – which will provide benefits to the local ecology and people even if it turns out that climate change is causing fewer impacts than expected.
- Organize events for sharing restoration experiences and best practices between different sites in the region, and link these to the UN Decade for Ecosystem Restoration.
- Develop a series of simple handbooks on restoration methodologies for different wetland habitats including flooded forest, seasonally inundated grasslands, mangroves and seagrass.
- Organize events and platforms for sharing and learning about livelihood support experiences and best practices between different sites in the region.
- Support long-term monitoring and research on the impacts of seasonal closures of fisheries, no-take areas, and gear restrictions in wetlands to demonstrate a clear cost-benefit assessment for fishing-dependent families through more sustainable fisheries and spill-over effects, in order to generate wider support and buy-in for these approaches. This requires a multi-disciplinary approach involving both biologists and resource economists.
- Assess the outcomes of the Department of Agriculture and Rural Development approach at Lang Sen, including the return on investment for the public sector, for the farmers and for nature. Based on the results of these assessments, IBRRI and other partners should seek additional funding to scale up this model. In a similar vein, the “Mini Trust Fund” approach of CEPA in Stung Treng should also be evaluated and considered for wider promotion.
- Give more consideration to the role and involvement of the private sector in the development of future initiatives.
- Share best practices in wetlands stakeholder identification, mapping, analysis and engagement strategies; capacity building of local communities; and classroom and outdoor wetlands education activities for youth in the Indo-Burma region.
- Conduct a stock-taking assessment of the scale of illegal activities and the use of joint patrolling approaches at all 37 Ramsar sites across the region. Assess the effectiveness of joint patrolling and identify key factors for success.
- While the Management Effectiveness Tracking Tool (METT) has already been adapted for use in Ramsar sites, consider adapting the CITES-MIKE Law Enforcement Capacity Assessment (LECA) tool to assess law enforcement at Ramsar sites and other wetlands.
- Organize tailor-made trainings on gender mainstreaming for wetlands management for Ramsar site authorities and NGOs working at the sites. This could be developed into an online training module.

## 1 INTRODUCTION

### 1.1 Background to the Development of Mekong WET

The Mekong WET project was conceived in 2014-2015 based on experience from a number of previous IUCN projects. The “Mekong Water Dialogues” funded by the Ministry of Foreign Affairs of Finland from 2008-2014, assisted the Government of Lao PDR to accede to the Ramsar Convention, and to designate its two first Ramsar sites – Beung Kiat Ngong and Xe Champone in 2010, whilst also supporting the Government of Viet Nam to designate four additional Ramsar sites (Ba Be, Con Dao, Mui Ca Mau, and Tram Chim) after a decade long hiatus since the designation of its first two sites. Other outcomes included revisions of water laws in Lao PDR and Viet Nam; inclusion of local stakeholders in the development of the 50 year vision and plan for the Mekong Delta in Viet Nam, and the setting up of community-based fisheries management to replace abolished commercial fishing lot concessions in the Tonle Sap in Cambodia.

The “Building Coastal Resilience to Climate Change” project, supported by the European Union from 2011-2015 developed participatory methodologies for climate change vulnerability assessments for a number of coastal wetlands in eight provinces of Thailand, Cambodia and Viet Nam, and supported a number of pilot adaptation activities, while IUCN’s flagship “Mangroves For the Future” Programme, largely supported by the governments of Denmark and Sweden, demonstrated the effectiveness of providing small grants to local organisations to achieve impacts on the ground.

In the Mekong River, the BRIDGE (Building River Dialogue and Governance) project, financed by the Swiss Agency for Development and Cooperation (SDC), aimed to build water governance capacities through learning, demonstration, leadership, and consensus-building, in particular in transboundary river basins in the so-called “3S” tributaries on the Mekong - the Sekong, Sre Pok and Sesan Rivers. At the same time, IUCN was starting to expand its involvement in Myanmar, including in the Gulf of Mottama, and increasing its focus on the Indo-Burma Hotspot as a biogeographical priority, supported through its function as the Regional Implementation Team for the Critical Ecosystems Partnership Fund for the Indo-Burma Hotspot.

Between 2009 and 2012, IUCN also conducted the first aquatic species Red Listing process in the Greater Mekong sub-region, assessing over 2,500 species of fish, molluscs, aquatic plants and other species, finding around 13% to be threatened with extinction, and identifying major wetlands as key biodiversity areas (KBAs).

In consideration of all of the above, it was decided to develop a project that would support the Lower Mekong/Indo-Burma countries to strengthen the effective management of their important wetlands, including building resilience to climate change through conducting vulnerability assessments and identifying adaptation actions, supported by small grants to local organisations to implement priority adaptation actions; while building upon the dialogue techniques developed under the Mekong Water Dialogues and also being tested in the BRIDGE project. Due to funding restrictions in place at the time, the project was originally designed to support Cambodia, Lao PDR, Thailand and Viet Nam, with Myanmar added later on when restrictions were lifted.

Concurrently, discussions with the late Lew Young, Asia Coordinator of the Ramsar Secretariat helped to conceptualise the idea for an Indo-Burma Regional Ramsar Initiative (IBRRI) modelled along the lines of similar Ramsar Regional Initiatives in other parts of the world.

## 1.2 Indo-Burma Wetlands

The Indo-Burma region hosts a particularly large and diverse array of wetlands, including both freshwater wetlands, such as marshes, oxbow lakes, peatlands and flooded forests, and coastal wetlands, such as mudflats, seagrass beds, coral reefs and mangroves. The people of Indo-Burma have depended on wetlands since the first cultivation of rice in the middle Mekong, 7,000 years ago, and the wetlands of the Indo-Burma Hotspot still provide direct support for the livelihoods of many communities today. Fisheries, for example, are a vital source of income and remain the single most important source of protein in the Mekong region, with the Mekong River supporting the world's most productive inland fishery generating several million tons of fish each year. The coastlines of the Mekong region support more than 896,000 hectares of mangroves, which act as nurseries for fish and crustaceans, providing millions of people with food, while the Mekong Delta is the most important rice production region in Vietnam, contributing significantly to the food security of the nation.

In recent years, however, intensification of hydropower, increased deforestation, expansion of irrigated agriculture, and increasing urbanization have resulted in a severing of the connection between spawning and feeding grounds for fish, shrinking wetland habitats, and less effective regulation of water flow, water quality, water storage and groundwater recharge in most of the region's major river basins, including the Mekong, Ayerwaddy, Chao Phraya, Mekong, Red, and Salween Rivers. In addition, fish stocks in many wetlands face severe local threats including destructive fishing methods (use of gill nets and explosives), and pollution from unregulated chemical use. Fishing pressure is exacerbated through rising demand for consumption coupled with easier market access and availability of refrigerated transportation. Local informants overwhelmingly report a decrease in fish catch in recent years, a concern echoed in literature on the Mekong fish trade.

Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam have each ratified the Ramsar Convention, the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). Wetlands are also a key ecosystem featured in both the National Biodiversity Strategy and Action Plans (NBSAPs) developed as part of the CBD commitments, and the National Adaptation Plans of Action (NAPAs) of the countries developed as part of the UNFCCC commitments. However, national policy, standards and guidelines, institutional arrangements, awareness of climate change impacts, and understanding of approaches to assessing vulnerability and identifying adaptation options for wetlands all vary significantly across the region, and there is no effective bilateral or multi-lateral collaboration for management of transboundary wetlands.

At the time of the design of Mekong WET there were 26 Ramsar sites in the Lower Mekong countries but between 2015 and 2020, this number increased to 37. However, most existing Ramsar sites in the region do not have properly developed management plans that form the basis for work plans and budget allocations. Most do not have their boundaries clearly demarcated and clear zoning of different parts of each site, including promulgation of local use rules for different areas, is not consistently practiced. More effort and budget is still required to support the engagement of local communities in the management of the Ramsar sites through participatory zoning and demarcation, developing formally recognised community fisheries agreements and other user group agreements, and the participation of community representatives in site management committees.

## 1.3 Climate Change Impacts on Wetlands and Wetland Livelihoods

Climate change in the Indo-Burma region is broadly expected to increase average temperatures, change rainfall patterns, increase the intensity, duration, and frequency of extreme weather events, exacerbate cycles of floods and droughts, and increase sea levels along with a range of other environmental changes. Such changes are expected to affect natural ecosystems, agriculture and food production, and add to the problems of meeting

increased food demand of growing populations, as well as impacting human health and threats to life. Investigations into the impacts that climate change will have on wetlands in Indo-Burma are relatively preliminary to date but suggest that:

- Rice farming, the main livelihood of wetland communities, will be affected by changes in rainfall patterns in inland areas, as well as by accelerating sea level rise and increasing saltwater intrusion in coastal areas, especially in low-lying deltas, which will impact freshwater availability and suitability/availability of land for rice-growing;
- Rising temperatures will continue to have a negative impact on coral reefs; increased turbidity from more frequent and stronger storms and increased sediment discharge from river mouths will affect survival of seagrass, and sea-level rise will affect mangroves – together significantly affecting marine biodiversity and the livelihood of fishing communities throughout coastal wetlands;
- Changes to temperature, rainfall patterns, and hydrology will also affect fish reproduction, growth and migration patterns - shorter, more intense wet seasons may support higher fish production of some species, while drier and longer dry seasons may reduce fish survival and threaten aquaculture;
- Increased temperatures will affect the sex ratio and reproductive success of turtles and other reptiles in freshwater wetlands;
- Variability in precipitation may lead to increased runoff, flash floods, soil erosion and landslides in mountainous areas as well as flooding of low-lying downstream areas, affecting both surface water quality and groundwater resources;
- Increased occurrence of such as extreme climate events floods and droughts will lead to increased outbreak of human diseases (e.g. malaria, dengue, diarrhoea, cholera, and other vector-borne diseases).

While the true extent of the impacts of climate change on wetlands are still unknown, what is clear is that it is the poor and subsistence-based wetland-dependent communities who are most vulnerable to these changes. Yet at the same time, wetlands represent the single most powerful Nature-based Solution to help address these increasingly severe threats.

Ramsar sites and other wetlands play a critical role in climate change mitigation and adaptation. Coastal wetlands and peatland ecosystems, for example, sequester and store more carbon per unit area than terrestrial forests; they are increasingly being recognised for their role in mitigating climate change.<sup>1</sup> Coastal wetlands, such as mangroves and coral reefs, also play a critical role in protecting communities and infrastructure against the impact of storms, by breaking waves and limiting erosion and coastal floods. Floodplain wetlands act as natural water infrastructure, reducing the impact of floods by retaining water during the wet season and slowly releasing it to the surface and underground water systems during the dry season. This sustains river flows, while vegetation and bacteria that grow in the wetlands are key to naturally treating wastewater. These services are provided free of charge.

However, the climate threats faced by the region's wetland ecosystems are further compounded by human activities. Despite the valuable services they provide, Indo-Burma's wetlands are under immense pressure from land-use conversion, encroachment, dam construction, pollution and rapid urbanization. In a number of freshwater wetlands, destructive wet season floods have pushed farmers to engage in irrigated, dry season cultivation, leading to reduced water levels and a decrease in fish and other freshwater products. Illegal fishing and poaching are still important threats in most of the Ramsar sites in the region. Invasive species, such as giant mimosa (*Mimosa pigra*) and water hyacinth (*Pontederia crassipes*), are leading to eutrophication and accelerated sedimentation.

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<sup>1</sup> Herr, D. and E. Landis (2016). Coastal blue carbon ecosystems: Opportunities for Nationally Determined Contributions. Policy Brief. Gland, Switzerland: IUCN and Washington, DC, USA: TNC.

## **1.4 Overview of Mekong WET: Building Resilience of Wetlands in the Lower Mekong Region through a Ramsar Regional Initiative**

Funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), from 2017-2022, Mekong WET was designed to develop an effective and replicable framework for delivery of Ecosystem-based Adaptation and mitigation benefits from existing and planned Ramsar sites through activities including:

- Development of new management plans incorporating Ecosystem-based Adaptation;
- Improving knowledge, skills and practices of site managers;
- Providing financial and technical support for pilot activities;
- Promoting recognition of the value of wetlands and the importance of Ecosystem-based Adaptation approaches in national policies, strategies and plans; and
- Establishing new arrangements for information sharing across borders and collaborative management of transboundary wetlands.

The key elements of the Mekong WET Framework were designed as follows:

- Personnel working at Ramsar sites acquire increased knowledge and skills through a combination of (i) access to Ramsar guidance information; (ii) on the job learning in conducting vulnerability assessments and participatory management planning processes with expert guidance; (iii) completion of professional in-service training; (iv) working on collaborative activities together with local communities, and supported by a combination of project grants and other sources of finance;
- Mekong WET supports best practice in community participation in governance of Ramsar sites, through recognition of traditional use rules, customary laws and rights; establishment of co-management systems, and community patrolling. Communities living in and around Ramsar sites are given opportunities to participate in vulnerability assessments (VA) and management planning (MP) processes. They are further engaged through the provision of project grants that support implementation of some of the activities they themselves helped identify and prioritise in the VA and MP processes. Some community members were trained as Citizen Journalists and told local stories through the mass media.
- The combination of trained, skilled and experienced Ramsar site personnel working together with local communities engaged through provision of financial support to implement key activities, will be the key to building climate change resilience across all target sites, and will also provide significant co-benefits in terms of improved social relations, employment and income generation, and biodiversity conservation.

Mekong WET has developed a training programme together with the Mekong Wetlands University Network, to increase wetlands management capacity; and a Citizen Journalism programme with the Thai Public Broadcasting Service (Thai PBS), to empower local communities to raise awareness of threats to their wetlands and potential solutions

## **1.5 Indo-Burma Ramsar Regional Initiative (IBRRI)**

Before the initiation of Mekong WET, the idea of a Mekong Regional Ramsar Initiative had been discussed and endorsed by the Mekong countries in previous Conferences of the Parties (CoP) to the Ramsar Convention. A Ramsar pre-CoP was held in Cambodia in November 2014, which provided a further opportunity for the Mekong countries and the Ramsar Secretariat to discuss both the proposed Mekong WET initiative and the IBRRI concept.



The Indo-Burma Ramsar Regional Initiative (IBRRI) was jointly developed by the Ramsar National Focal Points of the five countries (Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam), and IUCN's Asia Regional Office. It was officially endorsed by the Ramsar Convention Standing Committee in June 2016 as one of the 19 Ramsar Regional Initiatives globally.

IBRRI acts as a unique platform to catalyse action on wetland conservation in the region, bringing together governments, academics, NGOs and Ramsar International Organization Partners to address the most pressing threats to regional wetlands, and fostering discussions on transboundary wetlands. IUCN acts as the Secretariat for the Initiative under the leadership of the Steering Committee, which includes representatives from the five governments and the Ramsar Convention Secretariat as an observer.

The [IBRRI Strategic Plan \(2019-2024\)](#) was launched on World Wetlands Day in February 2019. It is the first regional plan on conservation and wise use of wetlands and was developed through extensive consultations facilitated by IUCN with the Ramsar authorities, national and international NGOs and academics. The Strategic Plan consists of five operational objectives to:

- share knowledge;
- ensure the conservation of key wetland species and resources;
- help develop and strengthen policy on wetlands;
- raise awareness and promote education; and
- ensure that the Regional Initiative is sound and sustainable.

During the annual meetings of the Indo-Burma Ramsar Regional Initiative in 2020 and 2021, countries reported on their plans and challenges in ensuring conservation and management of wetlands. The governments of Cambodia, Lao PDR, Myanmar, Thailand and Vietnam plan to nominate at least 18 new Ramsar sites in the coming years, increasing the current number of sites by more than 50%.

Most of the IBRRI countries reported that they have used the Ramsar Management Effectiveness Tracking Tool (R-METT)<sup>2</sup> to assess the effectiveness of the management in protected wetlands. Key challenges reported include the lack of coherence on the policy framework for wetlands linked to challenges to working across sectors, the lack of management plans and/or implementation of these plans in most sites, challenges linked to integrating climate change threats and impacts on water management in wetlands, challenges linked to agricultural impacts, and lack of sustainable financing mechanisms.

## 1.6 Climate Change Vulnerability Assessments

The "[Methodology for Rapid Assessment of Climate Change Vulnerability and Adaptation Planning at Ramsar Sites](#)" was developed by IUCN as a joint output of Mekong WET and the Climate Adaptation in Wetland Areas (CAWA) Project in Lao PDR (supported by the GEF).

A review of the existing assessment and adaptation planning methodologies was completed in order to identify and choose a suitable set of methodological tools that could be utilised, to assess the vulnerability of wetlands, wetlands species, and wetlands communities to climate change, and to identify strategies to enhance resilience at local level through an ecosystem based approach. The outcome of the review was to lightly modify (e.g. ensuring collection of gender- disaggregated data) and utilise the suite of three rapid VA tools that were developed by ICEM for the MRC (2012) Climate Change Vulnerability Assessments for the Mekong Wetlands project. The suite of tools was chosen for the following reasons:

- Simple tools with reduced training needs for field teams;

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<sup>2</sup>[R-METT](#)

- Rapid assessment with limited field survey costs;
- Provides clear and explicit guidance on field information to be collected and analysed;
- Collected information is directly related to the socio-ecological system conceptual framework of vulnerability (e.g. exposure, sensitivity, adaptive capacity);
- Built-in ecosystem (species and habitat) vulnerability matrix, which reduces the amount of expertise, time and effort required for analysis;
- Independent of any specific climate change projections;
- Ecosystem focus: Habitat and Species VA tools; the Village VA tool has an explicit focus on wetland resource use as the basis to assess community livelihoods avoiding the possibility of diverting into general rural development actions.

The three tools were the following:

1. [Habitat VA Tool](#)
2. [Village VA Tool](#) (modified to collect gender-differentiated information and supplemented by village resource use mapping and seasonal calendars)
3. [Species VA Tool](#)

Researchers piloted and tested this methodology in ten Ramsar sites in Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam. The assessments received positive feedback from stakeholders involved in the implementation. Wetlands managers of each site also participated in a ten-day national wetlands' training to further strengthen their understanding of the process. The results provide an insight into the scale and severity of the climate impacts on wetlands throughout the Indo-Burma Hotspot. The climate change vulnerability assessment and adaptation planning methodology is now part of the framework of the Indo-Burma Ramsar Regional Initiative.

## **1.7 Mekong WET Small Grants**

Mekong WET awarded a total of 17 small grants to a variety of local civil society organisations and local authorities, as well as university researchers, national and international NGOs, for activities addressing priorities identified in vulnerability assessments and management plans. In some cases the grants were awarded to implement the Climate Change Vulnerability Assessment and/or to develop a management plan. The grants varied in size from EUR 5,000 to EUR 20,000 and in total added up to over EUR 300,000. Grantees provided co-financing and in-kind contributions of varying amounts.

This publication provides a synthesis of short case studies of each of the 17 initiatives supported through these grants, highlighting both successful achievements, and challenges encountered; as well as identifying lessons learned and considerations for sustainability; and finally providing recommendations for future investment considerations. The content of this publication is based on a thorough review of small grant project contracts; mid-term and final reports; and direct discussions with members of project teams implementing the grants.

## 2 CASE STUDIES FROM CAMBODIA

### 2.1 Boeung Prek Lapouv Protected Landscape, Cambodia – Wildfowl and Wetlands Trust (WWT)



Local people's reforestation team Cambodia © WWT 2021

#### Objectives

1. Protect and restore the main wetland habitats at BPL;
2. Protect endangered and flagship bird species such as the Sarus crane;
3. Develop irrigation and infrastructure for better water management;
4. Improve awareness, knowledge and capacity of the communities on climate resilience in BPL;
5. Share experiences and best practices from BPL at national, regional and international levels.

#### Location

Takeo Province, Cambodia



#### Duration

February - September 2021

#### Grant Amount

EUR 19,952

#### Contact Details

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#### Background

Boeung Prek Lapouv (BPL) Protected Landscape is one of the largest remnants of seasonally inundated grasslands in the Cambodian Lower Mekong Delta (CLMD). BPL is one of only three known sites in Cambodia supporting a non-breeding regional population of the rapidly declining Sarus crane (*Grus antigone sharpi*), and supports several other globally threatened bird species. The site is also critically important to the livelihoods of around 5,000 local households, who depend on wetland resources including fish, edible plants, and water for farming.

The project built on the Wetlands and Wildfowl Trust (WWT)'s past work at BPL by implementing some of the priority EbA measures outlined in the Climate Change Adaptation Plan (CCAP), and delivering key

actions identified through participatory, multi-stakeholder processes, to create a successful model of Ecosystem-based Adaptation and mitigation.

Planned outputs included restoration of 5 Ha of inundated forest and 25 Ha of *Eleocharis* grassland to benefit wintering Sarus crane populations. Different approaches to water management were trialled and monthly monitoring and enforcement was undertaken and reported using SMART software.

#### Target Beneficiaries

Sangkum Meanchey, Kdul Chrum, Dey Lerk, Banteay Sleak, Derm Kroch, Chambak Em and Prolay Meas villages, Rominh Commune, and Banteay Tlay and Keo Kampleung villages, in Borey Chulsa District Takeo Province.

## Outputs and Accomplishments

Community members collected 1,600 seedlings of six different native inundated forest species and nurtured these in the nursery established by the project. Not all the desired species could be sourced from local areas, so an additional 1,200 trees and shrubs were ordered from the Tonle Sap Lake area. At the end of June, prior to the onset of the wet season, WWT staff and five community members planted the seedlings in a 5 ha site in the northern section of the Core Conservation Zone which included a former area of gallery forest historically known as a popular waterbird roost. A brief check on the seedlings in late September revealed that only a few had died.

The hydrological assessment carried out improved understanding of the site's hydrology, and updated the hydrological map of BPL and surrounding areas. From late June to September, a contractor hired by the project successfully restored degraded areas of grassland to support *Eleocharis dulcis* regeneration which is now being monitored in these areas. The outcome of these trials will be fully known in 2-3 years' time.

The law enforcement team and Field Monitoring Team (FMT) conducted 172 patrols along the main canal and key habitats of BPL. Maps and reports produced with SMART and GIS software were circulated to partners. Human activities inside the no-entry core area were recorded 37 times. Most were for collection of wetland resources, fishing, and the use of shortcut trails. On each occasion, the team explained the rules and regulations of the core area to the people encountered.

Teachers and students (292 in grades 4, 5, and 6, including 144 girls) of three schools (Kdol Chrum, Sangkom Mean Chhey, Bontey Tley), joined the Sarus crane and environmental education programme.

## Challenges Faced

COVID-19 in Cambodia restricted travel to the project sites and prevented WWT staff and partners from meeting contractors and local community members between February and May. Also due to COVID restrictions, village awareness raising meetings could not be held. As an alternative, audio messages were developed for mobile (loudspeaker) broadcast in five villages in June, and four villages in July. In addition, schools were closed from April until

the end of the project, and poor internet connection and mobile network coverage meant online teaching could not be organized for the students during the COVID lockdown. However, on 27 July 2021, an online training event was provided for 14 teachers.

Five cases of illegal encroachment occurred and around 70 hectares of natural habitat were ploughed. Ten villagers received warnings. Some of this land was quickly brought back under government control, whilst legal action was taken to regain the rest. The government adjudicated all prior land claims, and encroachment has since stopped. Buffalo grazing also impacted restoration work.

The grassland restoration was the first of its kind to use intensive methods and treatments, and it came at a sensitive time when there had been illegal encroachment using similar machinery. As a result, the authorities were rather nervous to go ahead with this and it was only approved rather late on. Fortunately, the rains also came late in 2021, so it was still possible to complete the work.

## Lessons Learned

Given the difficult and costly access to the site by boat, it may have been better to start with a smaller sized inundated forest restoration area. Drought conditions also made this activity more difficult as it was not possible to water all the plants when needed. In future, it may be better to grow saplings to a larger size in the nursery before out-planting. Also, natural regeneration could be assisted by removing climbers that smother regenerating trees.

## Sustainability

Further checks on restoration progress were made in February and June 2022 and dead trees were replaced with spare seedlings grown in the nursery. Additional funding has been secured from CEPF to continue the grassland restoration and law enforcement work, but no funds have been secured for the inundated forest work. However, the implementation of the pilot activity, and the strong community ownership and stewardship ensure that WWT is well placed to approach additional donors to support this. WWT has developed its niche in the Cambodian Lower Mekong Delta over the last 11 years and will continue to support work in Boeung Prek Lapouv in the future – making a difference in a part of the delta that is not getting as much international attention as others.



## 2.2 Integrated Conservation of Wetland Ecosystems: Koh Kapik Ramsar Site, Fishing Cat Ecological Enterprise (FCEE)



Discussing the design of the nursery area © FCEE

### Objectives

The project will implement the recommendations outlined in the Climate Change Vulnerability Assessment for Koh Kapik Ramsar Site, conducted by the Mekong WET project, including:

- Restoring and protecting the swamp and beach areas;
- Conserving and restoring catchment forests;
- Improving local management of fisheries and seagrass conservation areas (including establishment of a savings group);
- Restoring and protecting the mangrove forest;
- Establishing joint management at the commune level to participate in KKRS boundary pole demarcation

### Location

Koh Kong Province,  
Cambodia



### Duration

January- August 2021

### Grant Amount

EUR 18,730

### Contact Details

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Project Leader, Fishing Cat  
Ecological Enterprise,  
Phnom Penh,  
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### Background

Koh Kapik Ramsar Site holds one of the largest and densest mangrove forests remaining in Southeast Asia. Local communities are highly dependent on natural resources; livelihoods are mainly based around fishing, crabbing and in the past, charcoal production. Over-exploitation of wildlife and non-timber forest products, land clearance for agriculture, land grabbing, illegal hunting and fishing are major threats to this ecosystem. Over the last 20 years, many projects have worked with local stakeholders to reduce threats and recover important habitats. On the other hand, over the two years prior to the project, Fishing Cat Ecological Enterprise (FCEE) witnessed a severe increase in land clearing and illegal demarcation, even within some of the most sensitive

areas of habitat for threatened species.

FCEE planned to conduct a needs assessment of the local communities and identify actions to improve the value chain of local fisheries products, develop alternative livelihoods and promote sustainable businesses. FCEE intended to conduct biodiversity research to identify proposed Fish Conservation Areas (FCAs) to be discussed with stakeholders and subsequently demarcated, as well as areas to be restored.

### Target Beneficiaries

Community living in Koh Kapik Ramsar Site/ Peam Krasop Wildlife Sanctuary.



## Outputs and Accomplishments

FCEE conducted remote sensing, ground truthing and field research to identify potential restoration areas and determine plant species diversity within different habitats. The project identified five potential restoration areas and plans to restore between 600 and 800 hectares.

FCEE drafted restoration guidelines and joined testing and implementation of the Mangrove Restoration Tracking Tool (MRTT) developed by the Global Mangrove Alliance.

FCEE engaged local community members in sustainable collection of bamboo and rattan to build the tree nursery and finished building it in February 2022. It has four people working there and has produced 10,000 seedlings of 10 different tree species.

FCEE is planning to pilot a scheme to promote ownership and participation in restoration activities: home-growing kits will be provided to local community members along with training and support to grow their own seedlings to supply to the tree nurseries. Seedlings will be purchased by a local conservation fund, but may also be sold as part of other activities such as eco-tourism.

## Challenges Faced

In 2021, the Royal Government of Cambodia passed Sub-Decree 30 excising areas from Peam Krasop Wildlife Sanctuary and Koh Kapik Ramsar site to be re-classified as private land which halted the possibility of conducting any activities related to protected area boundary demarcation.

The outbreak of COVID-19, at the national level first and later on at the local level prevented FCEE from conducting activities involving gatherings of local community members, however meetings were held with provincial and local authorities to plan implementation of the project activities.

Local communities in KKRS suffered an intense COVID-19 outbreak during this period and communities meetings were only held at the end of the project, within the frame of the follow-up project funded by the Critical Ecosystems Partnership Fund (CEPF), which will provide continuation of the current project's activities.

## Lessons Learned

Continuous consultation, update and provision of information and documentation to government stakeholders at all levels of environmental authorities is necessary to ensure the granting of permission for project activities.

Embedding short-term projects within long-term projects and plans is an important way to ensure continuity. The current project is based on the work conducted by FCEE in KKRS since 2017 and is connected to two additional projects, the first led by Flora and Fauna International and funded by Blue Action Fund, from 2021 to 2026, and the second funded by IUCN CEPF from 2021 to 2023. Within this framework, despite the drawbacks brought about by the COVID-19 pandemic, FCEE was able to implement current project activities and set the stage for the forest restoration and climate change adaptation actions identified within the project.

This approach of initially connecting one small project to another, and then ultimately connecting to much larger projects is an effective strategy for a small NGO which sees the importance of staying in an area over the longer-term. FCEE staff were fortunate to have long-term relationships with the local community – otherwise it would have been very difficult to achieve anything at all in the COVID situation.

## Sustainability

Asian Development Bank (ADB) consultants expressed interest in supporting FCEE's restoration activities as part of a large upcoming project on sustainable fisheries and mangrove conservation and restoration in Koh Kong province.

The five-year (2021 – 2026) "Strengthening Marine Protected Areas, Fisheries Governance and Coastal Community Livelihoods in Cambodia" project led by Flora and Fauna International and funded by Blue Action Fund, as well as CEPF funding through IUCN, will enable the project activities to continue over the coming years.

## 2.3 Integrated Conservation of Wetlands: Stung Sen Ramsar Site Vulnerability Assessment, Fishing Cat Ecological Enterprise (FCEE)



CCVA Mapping, Cambodia © Vong Vutthy, FCEE, 2021

### Objectives

Conduct a climate change vulnerability assessment with communities in Stung Sen Ramsar Site and develop a list of priority Ecosystem-based Adaptation options.

### Location

Stung Sen Ramsar Site,  
Kompung Thom Province,  
Cambodia



### Duration

January 2021–January 2022

### Grant Amount

EUR 10,090

### Contact Details

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### Background

Stung Sen is the newest Ramsar Site in Cambodia, located on the southeastern edge of the Tonle Sap, and mainly consists of seasonal floodplain. There are numerous gallery forests, mats of herbaceous, aquatic vegetation, low-stature shrubland, and inundated submerged trees alongside the Stung Sen River. The site provides important habitat for several critically endangered fish species such as Jullien's golden carp (*Probarbus jullieni*) and small-scale mud carp (*Cirrhinus microlepis*); in addition, globally threatened mammals and water birds depend on Stung Sen and its floodplain for habitat.

Residents in Kompung Thom depend on the Stung Sen for its water supply. Local communities that live closer to the Stung Sen River rely on the river for bathing, washing animals, irrigation for crops, fishing, and transportation. Factories releasing waste into the Stung Sen River, mass fish

deaths due to lack of oxygen, and the Stung Sen running dry are some of the greatest threats to the ecosystem. The site is located within the Tonle Sap Biosphere Reserve (TBSR), the largest inland wetland, fishery and fish nursery in Southeast Asia, the unique dynamics of which are driven by an annual flood pulse which is increasingly influenced by upstream hydropower development. For the first time in documented history, in 2020 the flood pulse did not occur; because of this, normally flooded forests were unusually dry, increasing the risk of intensified fires during the 2021 dry season, leading to a massive ecological disaster.

### Target Beneficiaries

Village chiefs and community representatives in five villages within the area of influence of SSRS, as well as Toul Neang Sav Plov Loung Community Protected Area (CPA) committee.

## Outputs and Accomplishments

The vulnerability of ecosystems and livelihoods to climate change were assessed through:

- Individual interviews with 56 local community members and key informants such as village chiefs at all five villages within the area of influence of SSRS using the Mekong WET VA Village Tool.
- Completion of the Mekong WET VA Habitat Tool by the project team with the site manager for SSRS, and field research and remote sensing information.
- Completion of the Mekong WET VA Species Tool through interviews with experts from NatureLife Cambodia and BirdLife (for bird species), Fisheries Action Coalition Team (FACT - for fish species) and by the FCEE team for mammal species based on desk research as well as camera-trap and interview data.

FCEE also conducted 51 interviews with local community members at five villages focused on recording potential presence of fishing cats in the area and identifying threats to SSRS mammal species.

Potential options to address vulnerabilities and improve the resilience of wetlands and livelihoods were identified based on the results of research, the interviews above and the draft CCVA. The CCVA recommendations were provided to Toul Neang Sav Plov Loung Community Protected Area (CPA) committee for their members to conduct CCVA Validation workshops by themselves. FCEE provided a simple methodology to obtain (gender disaggregated) scores for each recommendation, gather additional suggestions from community members and select top priorities. The CCVA Validation workshops were successfully conducted during January 2022.

Throughout 2021, FCEE discussed options for forest fire prevention and mitigation with a variety of local stakeholders. Finally, it was decided that the most effective way to contribute to forest fire prevention and mitigation was to fund the construction of a watch tower at a priority site in the area overlapping SSRS and the CPA. FCEE allocated funds to build the tower from the IUCN Mekong WET budget for forest fire prevention and mitigation (33%, 2,000 USD) and from Fishing Cat Conservation Alliance (66%, 4,000 USD).

## Challenges Faced

Invasive species such as water hyacinth and *Mimosa pigra* pose a serious threat to SSRS habitats; for *Mimosa pigra* the control strategies discussed hinged on coordinating removal with habitat restoration activities, thus areas where *Mimosa pigra* is removed would get immediately replanted with appropriate native species reducing probabilities of re-growth and recovering flooded forest habitats. For water hyacinth, FCEE is looking into possible uses and commercial partnerships that would allow for development of its collection and basic processing as alternative source of income, as well as coordinating these activities within habitat restoration plans such as through the recovery of native floating plants such as Indian lotus.

## Lessons Learned

Impacts of climate change are clearly felt, however, the more extreme impacts felt over the last three years involve changes to flood pattern timings and duration due to the irregular flow of water influenced by hydropower dam management upstream in the Mekong river. This abnormal flow has had a severe impact on fish populations and fish catch rates of the local communities, who are highly dependent on fishing for their livelihoods.

Collaborating with active local community conservation groups such as Toul Neang Sav Plov Loung CPA, benefitted the project, and sharing information with other NGOs working at the site such as BirdLife, enabled them to provide expert information of species and habitats; as well as implementation of complementary activities.

## Sustainability

A number of identified priority options for climate change adaptation provide a basis for future investment by other projects of international NGOs and donors. The forest fire watch tower should assist the communities in addressing forest fires, an increasing risk to the area caused by a combination of hotter and drier weather conditions, and alterations to the flood pulse affecting seasonal inundation of the forests. Significant habitat restoration is needed but may need to consider a shift in the habitat types to be restored due to flooded forest drying out.

## 2.4 Mekong Broodstock Protection in Stung Treng Ramsar Site, Cambodia, Culture and Environment Preservation Association (CEPA)



Joint patrolling, Cambodia © CEPA, 2021

### Objectives

1. Develop two broodstock zones in Stung Treng Ramsar site with key stakeholders and develop and implement a broodstock zone management mechanism.
2. Implement sustainable financing mechanisms including Mini-Trust Fund (MTF) and Community Fisheries (CFi) credit/saving schemes for CFi near the broodstock zone to contribute to CFi management plan implementation.

### Location

Stung Treng Ramsar Site,  
Two broodstock zones in  
Stung Treng Ramsar Site



### Duration

March – December 2021

### Grant Amount

EUR 20,000

### Contact Details

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### Background

Stung Treng Ramsar Site was designated in 1999 and lies on the Mekong River between the Lao PDR border and Stung Treng town in Cambodia. It hosts a unique seasonally flooded riverine forest, and provides habitat to the Irrawaddy Dolphin (*Orcaella brevirostris*) and the Mekong Giant Catfish (*Pangasianodon gigas*) as well as many other species. More than 10,000 people, especially the Community Fishery (CFi) members, who live in or close to the Ramsar Site rely on the Mekong River for their food and livelihoods.

Existing mechanisms, including community fisheries developed by the Ministry of Agriculture, Fishery and Forestry (MAFF) supported by the Ministry of Environment (MoE), and local authorities under the Ministry of Interior (MoI), have not yet proved effective in conserving and managing fishery resources. Most fishers are not

complying with the fisheries law, and are still fishing with long drift nets, and small mesh gill nets, especially during the breeding season/annual closed season. This affects the broodstock that shelter in the deep pools during the dry season. There continues to be limited collaboration on the co-management of the fishery resources between the community and other key stakeholders. Another obstacle is the lack of resources to support the implementation of the CFi management plan. The Culture and Environment Preservation Association (CEPA) worked with CFi groups and other stakeholders to address these issues.

### Target Beneficiaries

Community Fisheries (CFi) groups in Koh Russey and Koh Traeng in the Stung Treng Ramsar Site.



## Outputs and Accomplishments

Consultation with key stakeholders on broodstock zone conservation was carried out during a co-management workshop on 29 January 2021, with 55 participants. Two broodstock protection zones in Koh Russey and Koh Traeng were defined by participants.

A consultation meeting with Community Fisheries members and fishers on broodstock zone conservation and management was conducted from 27-30 April 2021 with participation of 55 fishers in the 10 CFIs in the two identified broodstock protection zones.

Awareness-raising activities on broodstock zone conservation for the closed fishing season were conducted with 155 CFI members (70 females) in the same 10 CFIs, in April and May. In addition, five billboards on the roles of CFI members in broodfish protection, 16 banners for promoting the conservation activities, 78 signboards on the conservation of fish, flooded forest, fish habitats and biodiversity for livelihoods, were installed prominently displayed at appropriate locations.

Two patrol posts were set up in Koh Russey (covering 7 villages) and Koh Traeng (covering 3 villages) and operated for protection of the broodstock zones in the five-month closed fishing season (May to September 2021). Two boats with engines were purchased, and equipment including hammocks, flashlights walkie-talkies, raincoats and life jackets were provided to the patrol teams. The patrol teams cracked down on 11 cases of illegal fishing, confiscated 11 boats, two engines and 11 sets of gillnets with a total length of 1,965 metres. In seven cases, agreements were reached to stop the illegal fishing activities.

On 22 December 2021, a dissemination workshop on broodstock zone conservation and management was conducted with 68 participants including 8 women. The workshop presented the key results from the broodstock zone management including the high level of collaboration from key stakeholders. Most fishers were satisfied with the initiative, and a decline in illegal cases including electro fishing and floating gillnets during the closed fishing season. Participants recommended that the patrol teams should operate all year round to curb illegal activities.

One Mini Trust Fund (MTF) was established on 3 September with \$5,000 initial capital to deposit in a bank for generating interest. It is a long term fixed deposit with annual interest rate

of 7.5%. The fund had generated \$90 in income in the first three months. The income will be used for supporting the implementation of the CFI management plan, including patrolling activities, installing signboards, and fishery law dissemination.

Two Cfi credit schemes in Thmey and Anlong Kohkang were each topped up with \$4,000 on 28 October. So far, 15 of 34 members have accessed the credit scheme in Thmey Cfi, while 15 of 57 members in Anlong Koh have done so. CEPA provided financial management coaching and back-stopping to these schemes.

## Challenges Faced

The COVID-19 pandemic and associated lock-downs had some impact on project activities. Food and supplies for the patrolling teams purchased by the project were rather limited, but the Department of Environment and the District Administration also helped to support them. Some illegal fishers were unhappy with the patrol teams and deliberately sank two boats. Thus far, the perpetrators have not been caught.

## Lessons Learned

The broodstock conservation zone is an appropriate mechanism for increasing participation and collaboration from all stakeholders (FiAC, DoE, Police, CFIMC). Many fishers support and are satisfied with the broodstock zone for protecting broodfish. The broodstock conservation zone has contributed to reducing illegal fishing in the Cfi management area. The number of electro-fishing incidents and large size gillnets dramatically declined.

## Sustainability

Effective conservation of broodstock is one key aspect in helping to support longer-term sustainable fisheries and local livelihoods. The deep hole dry season fish refugia may become even more important with increasing temperatures as well as unusual seasonal changes in water levels brought about by changing rainfall patterns and upstream hydropower development.

CFI Mini Trust Funds and CFI credit schemes may ultimately provide a more sustainable source of small amounts of income necessary to maintain CFI institutions and implement management plans than donor projects.



### 3 CASE STUDIES FROM LAO PDR

#### 3.1 Climate Change Vulnerability Assessment, Siphandone Wetlands, WWF Laos



Community Mapping, Hang Sadam, Lao PDR  
© Sarah George, WWF 2021

#### Objectives

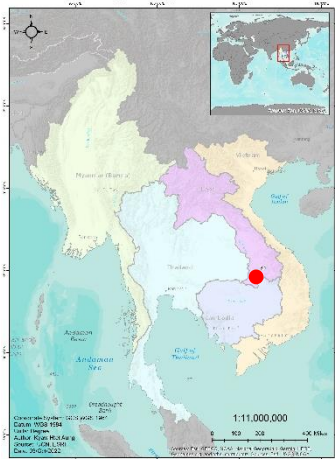
Conduct a Climate Change Vulnerability Assessment for the Siphandone wetland, assessing the vulnerability of livelihoods, ecosystems and species to climate threats, and work with stakeholders to develop adaptation options to mitigate identified risks.

#### Target beneficiaries

Villagers of Hangsadam, Khangkhone, Don Phapheng, Don Xom, Don Deth and Don Khone communities in Siphandone wetlands

#### Location

Champasak Province, Lao PDR



#### Duration

January - August 2021

#### Grant Amount

EUR 20,000

#### Contact Details

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#### Background

The Siphandone Wetland is located along a stretch of the Mekong River in Champasak Province of Southern Lao PDR consists of an intricate mosaic of hundreds of islands and braided river channels with many rapids and waterfalls, as well pools up to 70 metres deep that serve as dry season refugia for many different fish species.

Natural vegetation on the islands includes seasonally flooded forest and moist evergreen gallery forest. While this has been mostly converted to farmland on the larger islands, some valuable forest remains, especially in the southern portion of the wetland. This diversity of aquatic and terrestrial habitats supports up to 400 species of fish as well as many plant and animal species that are threatened with extinction and which have disappeared from large parts of their historical range in Southeast Asia. The Siphandone area also provides important ecosystem services to tens

of thousands of people living along its banks and beyond, on which many peoples' livelihoods are dependent. In previous studies, local people have noted the disappearance of most large mammals from Siphandone starting in the 1970s and an increase in fishing pressure since the 1990s with the wide availability of nylon filament nets and improved access to regional markets.

Hydropower development on the Mekong mainstream and major tributaries, starting in the 1990s and still continuing, has altered the natural seasonal rise and fall of water levels, and has reduced the amount of nutrient rich sediment transported downriver and reaching the Siphandone wetlands. Climate change is exacerbating these existing problems.

WWF-Laos worked with local communities to conduct a Climate Change Vulnerability Assessment (CCVA) and to develop adaptation options to mitigate identified risks and build resilience.

## Outputs and Accomplishments

A participatory baseline survey was implemented in April 2021 in the six target villages with 338 participants (198 females), mostly conducted through focus group discussions, with the findings from each group further discussed in large groups for consensus.

Thirty Vulnerability Assessment (VA) team members were selected in April 2021 (9 females), and the team was trained from 11-21 June on using the VA tools, understanding climate change challenges and designing EbA measures. The trained VA team then conducted village consultation meetings with 330 participants (197 females). The VA team used the VA tools in initial discussions in focus groups followed by sharing and consensus in large groups.

From 4-10 July the VA team subsequently summarised the key findings of the VA back to 285 members of the six communities (145 females), who then defined their long-term vision of the Siphandone Wetland; their short and medium term needs; and EbA activities based and their economic, social and environmental conditions. The communities and the district government coordinators identified activities to be co-implemented by 2022 and a larger set of actions to be implemented with the support of WWF-Laos in the coming five years.

Based on the findings of the VA, WWF-Laos' team drafted the VA report from July to September, and organized an online validation meeting on 29 September with 15 participants (three females) including eight government coordinators, six WWF-Laos staff, and the village chief of Hangkhone.

The VA found that flooded forests and shrubs of Siphandone are highly vulnerable to climate change, particularly flood and drought. The majority of livelihoods in the area, including rice cultivation, fishing, and tourism were found to be highly vulnerable to future climate impacts, potentially impacting future local incomes. In consultations, community members indicated that freshwater fishes, invertebrates and natural edible vegetation were the top three wetland resources for both men and women. Access to these resources will likely be impacted by changes in rainfall and temperature.

## Challenges Faced

Training of the VA team on using the VA tools, understanding climate change challenges, and designing EbA measures took longer than expected because of the complexity and technicality of the VA tools and in order to ensure accurate data collection.

Drafting the VA report by the WWF Lao team took longer than expected as it was the team's first experience in the IUCN Mekong WET VA approach and the report required a considerable amount of literature review and seeking external feedback to ensure the accuracy of its content.

The COVID pandemic and associated lock-downs had significant impacts on project implementation. The identification of adaptation options was done earlier than originally planned because of an impending lock-down.

Then due to the full lockdown in Champasak Province (20 July 2021 until the project end), the team was not able to organise the VA validation workshop in the field, and organised an online meeting instead. Only one of the six village chiefs was able to participate in the meeting as the others did not have internet connections.

## Lessons Learned

The Mekong-WET VA is a very useful tool. WWF will use this in other villages and other projects. It also provided the basis for an additional funding proposal.

## Sustainability

The training of local teams to conduct the VAs was an important approach to building local capacity to assess and respond to local impacts of climate change. The clear identification of adaptation activities for co-implementation in 2022, and a longer-term set of activities for implementation with support from WWF, provides a clear way forward for the next five years agreed between the communities, local government representatives, and WWF.

WWF has developed a follow-up proposal to the IUCN Global EbA Fund, to establish EbA activities and influence policy in integrating adaptation in broader planning in the province. In addition, WWF has secured funding from the Department of Foreign Affairs and Trade (DFAT) of Australia, and the Swiss Development Corporation (SDC) which has allowed WWF to go back in to Siphandone and continue working there.

## 4 CASE STUDIES FROM MYANMAR

### 4.1 Indawgyi Lake Vulnerability Assessment and Ecosystem-based Adaptation, Fauna & Flora International (FFI)



Vulnerability Assessment Lwe Mun village Myanmar ©FFI

#### Objectives

1. Conduct a Vulnerability Assessment for Indawgyi Lake
2. Develop Ecosystem-based Adaptation measures to be integrated in the Indawgyi Ramsar site/ Biosphere Reserve management plan and ICDP implementation plan
3. Share results and lessons learned through IBRRI and UNESCO Biosphere Reserve networks, as well as locally via the Indawgyi Wetland Education Centre

#### Location

Kachin State, Myanmar



#### Duration

March – September 2021

#### Grant Amount

EUR 20,000

#### Contact Details

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#### Background

The Indawgyi Lake Basin has multiple conservation designations, highlighting its global importance for wetland conservation as Ramsar Site and Flyway Network Site; and for its global and regional importance for biodiversity conservation as a Biosphere Reserve and ASEAN Heritage Park. Indawgyi is an important feeding, resting and wintering ground for more than 20,000 migratory water birds. It is important for three Critically Endangered birds – the slender-billed vulture (*Gyps tenuirostris*), white-rumped vulture (*Gyps bengalensis*), and Baer's Pochard (*Aythya baeri*) as well as many other vulnerable species. Five species of globally threatened turtles have been recorded from Indawgyi Lake, while the lake and streams also host at least 93 species of fish, including two endemics and six species new to science. Indawgyi's

seasonally flooded grassland is critical for the Endangered hog deer (*Axis porcinus*), while its forests also host a number of threatened mammals. Indawgyi Lake and its wetlands are surrounded by rain-fed rice fields and watershed forests. Integrating ecosystem-based adaptation to climate change into the Indawgyi Ramsar Site/ Biosphere management is critical to maintain ecosystem functions of Indawgyi's wetlands and watershed for biodiversity conservation, as well as for the livelihoods of local communities.

#### Target Beneficiaries

Two small towns and eight wetland dependent villages - Nan Mon and Indawgyi towns, Mine Naung, Lon Sant, Ywa Thit, Lwe Mun, Nyaung Pin, Ton San Kha, Ma na Hkaw and Loi Paw villages.

## **Outputs and Accomplishments**

In early May 2021, FFI established the project Vulnerability Assessment (VA) team with six members including research team leader, representatives of local stakeholders, volunteers and local experts, and training was carried out. The VA was conducted by the team between May and July 2021.

The VA team with the park warden of Indawgyi wildlife sanctuary/ Biosphere Reserve and members from two CSOs (Inn Chit Thu and Indawgyi Natural Framing Association), conducted assessments through consultation meetings in ten places including two small towns and eight villages with 182 participants who depend on wetland resources for their livelihoods, and are therefore vulnerable to climate impacts. A total of six habitats types distributed in the present areas were assessed using the baseline and climate vulnerability questionnaire responses from nine experts. Twenty species of globally threatened species including eight species of birds, five species of freshwater fish and seven species of mammals and were assessed in collaboration with nine experts.

According to findings from the stakeholder consultation workshops, the main drivers of land use change are agricultural encroachment, illegal firewood extraction and gold mining. Furthermore, fishing in the lake is one of the most important economic activities of the people who live around the lake. Fishing pressure until recently has been fairly low, with the use of non-motorized boats. However, the numbers of non-motorized fishing boats are now increasing rapidly and resulting in overfishing. Law enforcement and sound policy are therefore urgently needed to prevent the illegal logging in the natural forest and the overfishing in freshwater lake.

A draft VA report was prepared, and the results were validated in stakeholder workshops. Over 20 recommendations for livelihood adaptation and ecological adaptation were produced. Seven workshops with 87 participants (37 male and 50 females) were organized from October to December 2021 to prioritize the recommendations. The final results of the VA will be shared regionally through the Indo-Burma Regional Ramsar Initiative, as well as in other workshops and web platforms.

## **Challenges Faced**

During this period, due to the COVID-19 situation it was very difficult to gather the local communities together in the same place. In one case, for Loi Paw village, the assessment team collected the data by interviewing village representatives online. Due to the limits imposed on the size of gatherings, stakeholder consultations were split into seven separate events, taking up much more time to plan and implement, leaving only a shorter period available for reporting. Also due to the COVID-19 situation, almost no students attended school. For this reason, it was impossible to conduct awareness raising activities for schools and students through the Indawgyi Wetland Education Center during the project period.

In terms of gender equality, equal numbers of males and females were invited to meetings in every village, but sometimes actual participation did not reflect this. Moreover, many female participants were hesitant in fully partaking in the discussions.

For the species and habitat VA, there were late responses by some experts with busy work schedules. Consequently, there was a rush to analyse and interpret the experts' data in time.

Following the military coup, unregulated gold mining has begun, due to a lack of enforcement, and run-off is affecting water quality in the lake.

## **Lessons Learned**

There have been five floods in the last 10 years – three in the last year alone. While this may be a result of climate change, the lack of long term climate data means that it is difficult to draw conclusions with certainty. In the 30 years of data available, periods of high temperature and drought occur every 10 years or so.

## **Sustainability**

FFI has had a long-term presence with an office in the area since 2011, and Indawgyi will continue to be a focus. The grant enabled FFI to add a climate change element to their existing activities on PA management and livelihood development. They will focus more on integrating adaptation in the future – e.g. including climate-smart agriculture in the work of the Organic Farming Association they are strengthening with support from ACB. Having developed experience in climate change vulnerability assessments, they will now transfer this to other areas such as mangroves in Tenasserim.



## 4.2 Kye-in Lake Wetland Management & Climate Change Vulnerability Assessment, Friends of Wildlife (FOW)



Vulnerability Assessment, Sin-gaung Village © FOW 2021

### Objectives

Supporting improved wetlands management and conducting a climate change vulnerability assessment of Kye-in Lake

### Target Beneficiaries

Kye-in, Sat-tha-chaung and Sin-gaung communities, in Kaw-lin Township.

### Location

Sagaing Region,  
Myanmar



### Duration

February 2021- March 2022

### Grant Amount

EUR 19,445

### Contact Details

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### Background

The 910 acre Kye-in Lake, in the north-west corner of Chatthin Wildlife Sanctuary (CWS) is one of the most famous wetlands in Myanmar in terms of bird species abundance and migratory birds. The Nature and Wildlife Conservation Division (NWCD), Forest Department (FD) has carried out annual winter bird surveys in the area since 1990.

Sagaing Regional Government (SRG) is interested in nature conservation, protected area management and tourism development of CWS. The lake is a key site for ecotourism development of CWS.

The lake also hosts a variety of fish species that support local communities. There are about 80-90 fishermen who depend on the fisheries in this lake. They fish during the closed season, although it is prohibited by the Fishery

Law. Due to unsustainable fishing practices, fish populations have decreased, and some breeding sites were destroyed. FOW's rapid assessment found that about 11 fish species have disappeared. One guard post is already at Kye-in Lake and a total of 3 staff are now assigned for the conservation of its area. In addition, the community has expressed concerns about sedimentation and the vulnerability of the lake and wetland species to climate change.

The Sanctuary has a five-year management plan developed in 2019, and officials planned to set up a fishing-free zone (FFZ) in Kye-in Lake in 2021. Friends of Wildlife (FoW) supported this with community engagement meetings, agreeing on management for the FFZ, and assessment of climate change vulnerability and adaptation planning.



## **Outputs and Accomplishments**

Together with the Sanctuary's senior staff, FOW implemented engagement meetings at three villages. A total of 56 villagers (41 males and 15 females) attended at Kye-in, 40 people (17 males and 23 females) at Sat-tha-chaun, and 67 people (57 males and 10 females) at Sin-gaung. A stakeholder meeting was conducted at Kaw-lin Township with the CWS warden and officers from the township Forest Department. Officials from the District and Township General Administration Department, Department of Fisheries, and three representatives from three communities attended.

An education and awareness program began in March 2022, mainly focused on the Kye-in community where wetlands dependence is about 78%. The team also erected 12 awareness signboards along the main roads of three villages. A one-day wetland management training was carried out at Sanmyaung Camp of CWS in September 2021 for 18 CWS staff.

FOW translated the Climate Change Vulnerability Assessment (VA) Tools from English to Burmese and conducted a three-day VA training course attended by 13 participants (two CWS staff, six community youths [four males, two females] and five FOW staff). Then the research team conducted surveys at three villages. The draft report for Vulnerability Assessment was completed in September and translated from Burmese to English.

A 10 acre FFZ was established in early March. Buoys were used for boundary demarcation, and CWS staff started to conduct regular monitoring. Community joint patrolling was adopted during the closed season. A five-member team jointly led by one representative from Kye-in village community and one FOW staff patrolled the lake and its watershed area at least 10 days per month. During the closed fishing season, the community patrol team found at least 1-2 fishermen every day (76 in total), CWS staff did not take action. The team noted the name of perpetrators, their villages, date and location. The team explained sustainable fishery practices and biodiversity and wetland conservation to them and gave them a warning. No other punishment was given. However, three cases of illegal timber extraction were submitted to the warden's office. The project team analysed the data and information collected from the field, communities, and sanctuary office, and drafted the Kye-in Lake Management Plan.

## **Challenges Faced**

A military coup took place at the beginning of the project. As a result, a planned World Wetland Day event in February was cancelled. As fighting between the Military and the People Defence Service (PDF) in the project area got worse, no CWS staff remained inside the sanctuary, which has been occupied by the PDF, and local communities were more concerned about politics, than wetland conservation.

The wetland management training was planned for five days, but this was not possible due to both the political and COVID situation. Although FOW tried their best to carry out a multi-stakeholder meeting between September 2021 and March 2022, it did not happen. In addition, FOW also tried to meet the warden and senior staff of CWS to review the drafts of VA report and Kye-in Lake Management Plan. However, field staff were not allowed to travel due to both civil war and COVID-19 situation.

## **Lessons Learned**

Unexpected large-scale events beyond FOW's control—in this case a military coup and COVID-19, can have major impacts on projects.

Village youth are very keen to learn about zoning systems, management planning and other conservation topics.

## **Sustainability**

Local communities are very familiar with FOW and the high level of trust helped with implementation in difficult circumstances. FOW also understands their situation and aspirations. FOW is committed to continue to assist CWS for the long term sustainability of the FFZ. When the political situation normalizes, multi-stakeholder meetings to finalise the MP and the VA report can be conducted, and joint patrolling and monitoring of the FFZ can be continued. The approved management plan can then provide the basis to source funding for the next 3-4 years.

### 4.3 Pyu and Paleik Lakes Wetland Management & Vulnerability Assessment, Biodiversity And Nature Conservation Association (BANCA)



Waterbird Survey at Pyu Lake © BANCA 2022

#### Objectives

Conduct Climate Change Vulnerability Assessments for Pyu and Paleik Lakes, assessing the vulnerability of livelihoods, ecosystems and species to climate threats, and work with stakeholders to develop adaptation options to mitigate identified risks.

#### Target Beneficiaries

Pyu Kan, Ywar Taw Lay, Myin Thei, Yae Ga Moe, Kyauk Taing, Moe Nan Chon, and Kyauk Kan villages near Pyu Lake and Myauk Nay, Sait Ta Ya, Myauk Kaing and 12 kaing villages near Paleik Lake.

#### Location

Mandalay Region, Myanmar



#### Duration

January – August 2021

#### Grant Amount

EUR 19,605

#### Contact Details

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#### Background

The dry zone is the most water stressed region in Myanmar, and one of the most food insecure in the country, with a maximum temperature of 46°C and a maximum annual rainfall of 1,189 mm. The remaining wetlands play a vital role for significant East Asian-Australasian Flyway water bird populations, particularly for the critically endangered Baer's Pochard (*Aythya baeri*). The wetlands also provide critical ecosystem services for the livelihoods of rural low-income populations.

Dry zone wetlands are extremely vulnerable and often degraded. Smaller sized wetlands can completely dry out when water is drained for agriculture and other uses. The Biodiversity And Nature Conservation Association (BANCA) documented the following threats: (a) loss of habitat due to agricultural and settlement encroachment; (b) illegal hunting and electric fishing, unsustainable fishing

methods; (c) pollution caused by agricultural runoff and poor sanitation, (d) invasive species, and (e) effects of climate-change, with increased risk of floods and droughts.

BANCA conducted the Climate Change Vulnerability Assessments (VAs) at two sites – the 480 ha Paleik Lake and the 1,900 ha Pyu Lake. Both sites are located in semi-urban areas adjacent to local villages, and support irrigation, agriculture and fishing. The VAs were conducted using historical records as well as participatory appraisals with local communities and authorities. VAs provide the basis to identify adaptation actions to be integrated into future management plans for the sites.

## Outputs and Accomplishments

The VA was carried out as planned. The VA results identified that the marginal vegetation (*Typha augustifolia*) and seasonally emergent vegetation were found to be the most vulnerable habitats to climate change in Pyu Lake, while open water with *Ottelia chordata* was determined to be the most vulnerable habitat to climate change in Paleik Lake. The Baer's Pochard (*Anthra baeri*) and the bronze featherback (*Notopterus notopterus*), an economically important fish species, were the species found to be most vulnerable to climate change impacts at both wetlands.

In Pyu and Paleik Lake, the villagers are mainly engaged in agriculture. The main crops are rice, peanuts, chickpeas and sesame. Sesame and pulses are grown in the early rainy season and paddy in the middle of the rainy season. In the late monsoon season, chickpeas are grown. The agriculture was historically rain-fed, but now it is increasingly dependent on the Pyu Lake. Villagers reported that the weather is different from previous years. Now when it rains, it can rain continuously for 45 days, and when it does not rain, it lasts for up to two months. Due to the rising temperature, short-term paddy and sunflower plants are grown alternately. The number of cattle raised has declined dramatically as it is increasingly difficult to find food.

The majority of climate change coping mechanisms suggested by community group were based on home business such as making Myanmar traditional snacks with local products; making chairs with palms and making bamboo products as alternative livelihoods to rice farming, and increasing water security through increased water pumping for irrigation. The VA suggests the following additional recommendations:

- Establish community-based wetland management committees to enhance protection of wetland biodiversity and development of conservation measures for sustainable wetlands management, including developing plans for community-managed fisheries;
- Develop site management plans for Pyu Lake and Paleik Lake;
- Designate and develop collaboratively managed wetland conservation areas that benefit globally important wetland biodiversity and fill an important gap in Myanmar's protected area network. Such status would provide protection for the most

important lake wetlands in Myanmar's dry zone, whilst providing a legal framework to promote the wise use of wetlands and offering protection from large scale threats;

- Develop and pilot sustainable farming systems for the wise of wetlands.

In December 2021, BANCA also trained several members of the local community-based organisation (CBO) Shwe Kanthayar Nature Conservation Association to use SMART software for long-term conservation activities and to reduce illegal hunting in Pyu and Paleik Lakes.

## Challenges Faced

Both COVID-19 and political issues seriously affected the project's implementation. With travel restricted, BANCA trained Shwe Kanthayar Nature Conservation Association through online meetings to conduct analyses on wetland resource use, seasonal resources calendar and climate events and threats. The CBO members conducted the village vulnerability assessment and returned it to BANCA while BANCA collected the historical climate data from the township report by the General Administrative Department. A focus group discussion about the future coping and management strategy was held at a village consultation meeting. However, it was not possible to hold the stakeholder meeting with relevant government agencies to design and develop the community fisheries management plan and wetland management plan.

## Lessons Learned

Habitat, species and village vulnerability assessments are very detailed but created a strong interest to learn more about the ecosystem.

## Sustainability

While it is not yet possible to implement all the VA recommendations, progress is being made with the preparation of an information sheet for proposed designation as a Ramsar site/Flyway site, the annual Asian Water Bird Census, communication, education, participation and awareness (CEPA) activities at seven villages around Pyu Lake and training on wetland conservation, financial management and organization procedures to strengthen local engagement in Baer's Pochard conservation, implemented with funding from the East-Asian Australasian Flyway Partnership. Shwe Kanthayar has also applied to WWF Myanmar for a grant for 2022-23 wintering bird patrol surveys and hunting surveys. Additional activities are planned for 2023.

## 5 CASE STUDIES FROM THAILAND

### 5.1 Enhancing Community Participation for Climate Change Adaptation in the Bang Pakong Estuary, Rajahbhat Rajanagarinda University (RRU)



Wat Boonyarasri School education activities, Thailand  
© Gunn Tuttiyakul, Friends of Bangkok

#### Objectives

1. To work with local communities in Bang Pakong to strengthen coastal resource management, address coastal erosion and adapt to climate change.
2. To encourage community members and youth to conserve coastal resources and biodiversity and raise awareness of climate change impacts in Bang Pakong River estuary.

#### Location

Bang Pakong Estuary,  
Chachoengsao and  
Chonburi Provinces



#### Duration

February - September 2021

#### Grant Amount

EUR 5,000

#### Contact Details

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#### Background

The Bang Pakong River flows through four provinces - Prachinburi, Nakorn Nayok, Chachoengsao and Chonburi, before emptying into the Gulf of Thailand at Songkhlong sub-district in Chachoengsao and Khlong Tumru sub-district in Chonburi. Communities in Song Khlong on the western side of the estuary are mostly small-scale fisherfolk collecting mussels and crabs, and catching mullet, four-finger threadfin and catfish, with some farming of seabass and gourami in the brackish water and tilapia in the more northern fresh-water part of the sub-district. Khlong Tamru on the eastern side of the estuary is a flat area along the coastline, which would naturally be covered in mangroves and has no local freshwater source. Many families in Khlong Tamru are migrants from other areas and are employed in industrial factories. Climate

change is significantly impacting biodiversity along the river. The estuary is at especially high risk, with increasing sea level, sea temperatures and storm severity, leading to increased coastal erosion, flooding and land subsidence. Overfishing, land-based waste and waste water, as well as marine litter, are also threatening its unique biodiversity.

#### Target beneficiaries

Community members and 40 pupils of Wat Samae Khao Wittaya School in Song Khlong Subdistrict, Bang Pakong District, Chachoengsao Province;

Community members and 40 pupils of Wat Boonyarasri School, Khlong Tamru Subdistrict, Mueang District, Chonburi.

## **Outputs and Accomplishments**

Participatory appraisal of the community context and situation included construction of timelines and seasonal calendars.

Coastal erosion, land subsidence, marine waste and declining marine resources were identified as important issues in Song Khlong. While coastal erosion has been identified as a problem starting more than 30 years ago, it was suggested that reduced sediment flow to the estuary caused by the upstream Bang Pakong Dam, may have exacerbated coastal erosion since its construction in 1999, while the construction of rock dams 1 km into the sea had helped to some extent with the regeneration of mangroves.

The community identified construction of additional rock dams; issuance of a sub-district ordinance on appropriate house construction to avoid flooding; ecotourism development; raising awareness of waste management and fining waste dumpers; as well as developing plans to reduce decline in economic species, as activities to enhance their resilience to climate change.

In Khlong Tamru, coastal erosion, flooding and increasingly shallow creek channels were also identified as problems. The solutions identified included establishment of an early warning system for flooding by the sub-district administration; dredging of creeks by the provincial authorities; and participatory water quality monitoring (community/government/businesses).

Forty pupils from each of the two schools participated in bird watching and nature walk activities, to learn about the flora and fauna of the mangrove areas. They also learned about coastal ecology, climate change, and damage to biodiversity as well as the local culture and way of life.

## **Challenges Faced**

Changes in personnel in important positions in the local government have delayed the uptake and implementation of action plans developed by the project.

## **Lessons Learned**

Building connections between villagers, government organisations and other institutions around nature conservation and restoration is key to success. Government agencies have

been an important source of information regarding climate change adaptation.

## **Sustainability**

The students from Wat Samae Khao School were already familiar with fisheries, mangrove ecosystems, and local culture because they are locals, and their families are mostly fisher-folk. On the other hand, many students from Wat Boonyarasri School in-migrated from other areas as their parents came to work in the nearby industrial estates. The educational activities may help to provide them with a "sense of place" and a better understanding of their new environment, as a basis for further involvement in stewardship of the area in the future. The university is also continuing to assist the communities in terms of developing value-added processing and marketing of their products such as four-finger threadfin fish.



## 5.2 Promoting Community-Driven EbA Options and Communication, Ing River Wetland Forest, Hill Area Development Foundation (HADF)



Pa Kha Wetland Forest Ordination, Thailand  
© Kraithong Ngaonoi, HADF

### Objectives

1. Promote community participation in the Ing River wetland management; and development of climate change adaptation options
2. Support communication to promote wetland resilience and the planned Ramsar nomination

### Target beneficiaries

Ban Pak Ing Tai and Ban Boon Reuang communities, Chiang Khong District; and Ban Ngam Muang and Ban Pha Kha communities, Khun Tan District, Chiang Rai Province

### Location

Chiang Rai Province,  
Thailand



### Background

The Ing River, a major tributary of the Mekong in Northern Thailand's Chiang Rai Province, hosts a seasonally flooded wetland forest connected to the Mekong River. Historically, the Mekong monsoon floods naturally inundate the Ing River wetland forests from July-September, allowing migratory Mekong fish to spawn in the biologically lush wetland. When dry season water levels recede, nutrient rich Ing River wetland forest sediments flow back to the Mekong mainstream.

Local community networks have promoted wetland conservation through establishment of 25 community-governed wetland forests and sanctuaries along the river. They have developed rules to conserve and utilize the wetland forests in a sustainable manner.

Threats to the wetland include the shift in land use to large-scale agriculture, plans to develop a special economic zone and large

dam operations on the Upper Mekong that affect the flood pulse in the basin. In the past two years, the absence of a seasonal flood from the Mekong in the wetland areas has affected the wetland functions.

To improve recognition of the importance and values of the wetland forest, the Ing River community, together with civil society organizations, has been working to promote the Ramsar designation of the Ing River Basin. The Hill Area Development Foundation has been actively working with Chiang Rai provincial government and the Ministry of Natural resources and Environment (MONRE), to support this process.

### Duration

February- November 2021

### Grant Amount

EUR 10,361

### Contact Details

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## Outputs and Accomplishments

Community capacity-building workshops on assessing impacts of climate change were conducted for 27 male and 23 female participants of Ban Pak Ing Tai Community, Chiang Khong District, as well as for 18 male and 12 female participants of Ban Ngam Muang community, Khun Tan District. The communities identified the changing rainfall patterns, hotter weather and stronger winds, as important issues, and highlighted the need to develop community adaptation guidelines, including the need for more knowledge, identification of adaptation options, and establishing action plans. Action Plans identified included:

- Capacity-building plan to support communities learning collaboratively with local authorities and the private sector;
- Media production and knowledge dissemination plan – courses and manuals for local schools and learning centres;
- Community research plan -collecting information on river basin resources, including wetland biodiversity and ecosystem services and the economic value of wetlands;
- Resource management plan;
- Participatory wetland management and climate adaptation plan including fish sanctuaries and social enterprises.

Workshop activities to assess the impacts of climate change on the Ing-Khong River Basin were conducted for 21 male and 14 female participants at Ban Pa Kha community, Khun Tan district; for 20 male and 14 female participants at Ban Ngam Muang community, Khun Tan district, and for 20 male and 12 female participants at Ban Boon Rueang Community, Chiang Khong District.

As a result, the communities proposed that the government establish a local weather station to

improve forecasting and assist in their agricultural planning. They also recommended that the government and local people jointly manage the Ing River Basin with clear rules and agreements for land-use, wetlands management and water sharing.

Communications activities to support wetlands resilience and the campaign for Ramsar site nomination developed 15 news articles and videos published through various channels to create awareness of the wetlands, and increase understanding of the problems faced, to highlight community activities, and support the Ramsar nomination.

A workshop to create media for public communication was held with 10 male and 30 female participants to improve the skills of local people in developing media and story-telling. This resulted in five media pieces jointly produced between local people and professional media outlets.

## Challenges Faced

The COVID-19 pandemic and associated lock-downs had some impact on the timing of project activities, requiring a contract extension to complete the activities.

Changes in the natural flooding patterns of the Mekong are significantly impacted by upstream hydropower developments over which the local communities in Chiang Rai have no control.

## Lessons Learned

Clear action plans jointly developed by local communities and local authorities will provide an important basis for moving forwards with resilience building.

## Sustainability

The nomination of the site as a Ramsar Site will increase recognition of the importance of the wetland, encouraging more local and national government attention and support for the area, as well as motivating and creating a sense of pride within the local communities.

### 5.3 SEAGONG Community-based Seagrass and Dugong Conservation Project Krabi, NatureMind-ED



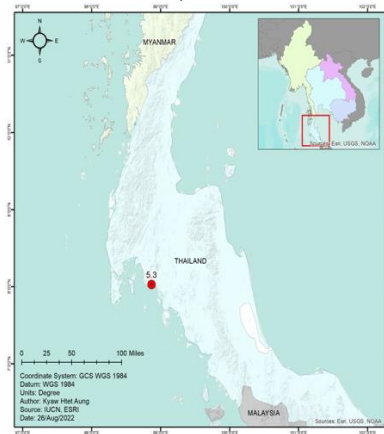
Seagrass propagation event, Koh Phu  
©Guillaume Lebout, NM-ED 2021

#### Objectives

- Involve stakeholders in the participatory design of conservation areas;
- Build technical capacity of local communities on monitoring and management of seagrass and dugongs;
- Assess financial needs and develop Nature-based Solutions business models for each site;
- Design Seagrass Education Curriculum for schools; tourist/citizen science material, and eco-tourism guide certification
- Implement communications through dedicated project website, social media and special events; sharing open-access data; and writing scientific papers

#### Location

Krabi Province, Thailand



#### Duration

March-December 2021

#### Grant Amount

EUR 19,730

#### Contact Details

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#### Background

Seagrass ecosystems have enormous importance for Andaman coastal communities who rely on them to nurture the marine life on which they depend for livelihoods and food security. Seagrass also protects marine and coastal health by filtering sediments, nutrients, and pollutants and providing a buffer against extreme weather events. Andaman seagrass areas support globally important populations of dugongs and sea turtles. Seagrass also serves a key role in climate change mitigation, sequestering twice as much carbon per hectare as terrestrial forests. With seagrasses remaining largely unmonitored and unmanaged, major seagrass losses in the region are driven primarily by coastal and port development, agricultural and industrial runoff, and destructive fishing practices such as trawling and blasting.

Estimated seagrass loss is 20-30% in Thailand. Regardless of policies set at the national level, at the local level, income-producing activities (e.g. destructive fishing practices), cost-cutting strategies (e.g. dumping untreated waste) and tourism activities (e.g. anchors, sedimentation, noise disturbances) often take precedence over long-term conservation especially in open-access unprotected areas.

#### Target beneficiaries

Koh Siboya, Koh Pu Koh Jum and Laemsak communities; Baan Laempho and Baan Aonamao schools.

## Outputs and Accomplishments

The project team developed standard operating procedures for drone observations and field methods and a research agenda was jointly developed with Prince of Songkhla University (PSU). The team conducted a stakeholder mapping for the area, identifying key issues.

The project established a seagrass nursery in a prominent location in a restaurant on the edge of the seagrass meadow, helping to support awareness-raising amongst visitors. It was used as an outdoor “lab” for eight school events with 120 students (Thai and international) and three community events with 60 participants.

Time series of dugong feeding trails were compiled through regular drone monitoring to estimate seasonal trends in presence and population size of dugongs, together with the Seaweed and Seagrass Research Unit at Prince of Songkhla University.

Four community consultations with 120 participants identified Nature-based Solutions for community livelihood development and engagement in seagrass management, such as setting up crab banks in which female crabs with eggs that caught by fisherfolk are kept until the eggs hatch and larvae are robust enough to be released in the seagrass meadow.

In collaboration with the Environmental Justice Foundation (EJF) the project held “Net Free Seas” workshops. A successful model was developed in the Laemsak community where two tons of discarded nets have been recycled.

An eco-guide training programme proposal developed together with the President of the Krabi Hotel Association was presented in the three communities of Koh Phu, Koh Klang and Aonamao with strong interest demonstrated by the community members and leaders. This will allow key community groups to be trained to perform routine monitoring and data collection and host unique experiential tourism activities.

The project finalised a five-day “Seagrass and Dugong Conservation Curriculum,” which was used to educate 160 students, and ten “Seagrass Days” have been held using a condensed version. Discussions were initiated with Baan Laempho and Baan Aonamao schools about integration into the school curriculum. A dedicated webpage was

developed and numerous social media posts were made throughout the project.

## Challenges Faced

The COVID-19 pandemic and associated lockdowns had a major impact on the ability to implement the project as in-person meetings and workshops could not be implemented and therefore momentum for engagement was slow. The COVID impacts on people dependent upon seasonal tourism jobs limited conservation commitment, pointing to the need for alternative income generation strategies to be presented alongside conservation goals. At the same time, local support for extension of a pier to facilitate tourism expansion, despite the likely impacts on the seagrass, made design of new conservation areas more difficult than expected, however, discussions are ongoing.

Influencing the Ministry of Tourism and Tourism Authority of Thailand to accept new training and certification of eco-guides, is complex but is moving forward slowly.

## Lessons Learned

Through local knowledge and ground observations, the project team learned that *Enhalus acaroides* propagation leads to the engineering of the mudflat as their seedlings have strong root systems, and the leaf blades are large and robust which together contribute to attenuate wave impact, and capture more sediment, eventually facilitating the settlement of other more fragile species, such as *Halophila* sp., a preferred species for dugongs. Seeds of *E. acaroides* are also easier to find and maintain in nursery settings with a survival rate so far of about 80%.

## Sustainability

The project paved the way for the formation of the Krabi Coastal Conservation Club through which the project team is continuing to mobilize, engage and implement activities towards community-led coastal resources management and social-ecological resilience.

Strong collaboration with PSU led to additional research funds becoming available; and the Department of Coastal and Marine Resources has invited NM-ED to play a leading role in Krabi in the implementation of the next five-year National Dugong and Seagrass Conservation Plan.



## 5.4 Capacity building for climate change resilience of local communities focusing on water onion habitat in Ranong wetlands, East Forum Foundation (EFF)



Planting water onions, Ranong © East Forum Foundation 2021

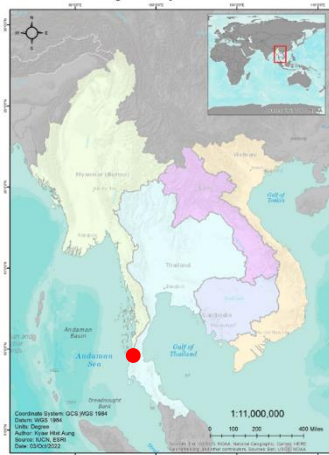
### Objectives

To rehabilitate wetlands in Ranong and mitigate the negative impacts of climate change on biodiversity with local communities, though:

1. Rehabilitating wetland ecosystems by planting water onions in their original habitat to reduce canal erosion, and provide habitat, food, and breeding structure for aquatic species.
2. Planting native species to improve land and reduce riparian erosion
3. Conducting trainings on 'how to live with climate change'
4. Organising a farm ecosystem management workshop

### Location

Kuraburi and Suksamran Districts, Ranong Province



### Duration

January - August 2021

### Grant Amount

EUR 20,000

### Contact Details

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### Background

*Crinum thaianum*, or water onion, is an IUCN Red-list critically endangered species in the Amaryllidaceae family dubbed the 'Queen of the River.' The flower blossoms during October-December and can only be found in running streams in Ranong and Phang Nga Provinces.

The water onion is threatened with extinction due to a combination of dredging waterways, intensive farming adjacent to the waterways, illegal smuggling and trade and natural disasters.

Ranong is naturally one of the wettest places in Thailand, with the rainy season lasting for about eight months. Climate change is causing decreased rainfall and increasing temperatures and is seriously threatening Ranong's aquatic ecosystems. The increased frequency of drought affects the water onion and other species. In addition, farmers surrounding water onion habitats are under pressure

to use excessive chemical fertilizers to increase their crop yields. Excessive use of fertilizer damages the plants and reduces soil fertility.

This project built on previous work of the East Forum Foundation during 2018-2020 which started the process of getting various stakeholders to work together to revive water onion growth in natural habitats by preserving canals and promoting organic agriculture.

### Target beneficiaries

Teachers, students, government agencies, farmers, volunteers and community leaders.



## Outputs and Accomplishments

The project identified two sites for nurseries, and 10 sites for water onion planting. 61 youth and schoolchildren collected 37,500 water onion seeds that were germinated in 2,500 pots. Subsequently 379 people participated in the planting of the water onions in the 10 identified sites including teachers and pupils from Baan Suanmai, Kaper Withaya, Kurabiri, Baan Bang Yai, and Baan Tumnung schools; as well as officials from Khlong Naka Wildlife Sanctuary and Sri Phang-nga National Park. Monitoring and follow-up of the planted water onions indicated survival rates between 60-90% at the different sites.

The East Forum Foundation together with Khlong Naka Wildlife Sanctuary and Sri Phang-nga National Park collected seeds of 13 different native riparian tree species, and germinated 5,000 seedlings. Trees were planted in upper watershed forests and canals that are inhabited by the water onion, including Khlong Tam Nang, Khlong Nang Yon, Khlong Kam Phuan, Khlong Bang Pru, and Kaper Community Forest. This selection of mixed species quickly establishes a forest structure that in turn encourages the reappearance of other components of the riparian ecosystem. Some seedlings were distributed to rubber farmers who decided to replace rubber trees with economic timber trees.

EFF held a training on 'how to live with climate change' for 30 farmers and youth in Ranong wetland, using the European Union's Climate Vulnerability and Capacity Analysis Handbook. Participants identified areas at risk of flooding and drought in their communities, as well as noting trends in increasing frequency of these extreme events. Notably, they identified that the current level of variability exceeds the level at which their traditional knowledge can provide appropriate solutions. A household economy risk-reduction strategy of planting a mixture of drought tolerant and water hungry crops was recommended.

The project also supported in-farm ecosystem management training for 17 participants. This included topics on integrated farming, soil and water conservation techniques including mulching, green manure and mixed species plantings, production of organic fertilizer, and maintaining buffer zones between farmland and

water onion habitat. Twelve of the participants have used these methods in an area of about 5 ha.

## Challenges Faced

Some farmers regard the riparian area and the water courses themselves as part of their land, and farm to the edge of the water. Some dispose oil palm waste and rubber residues into the stream. In addition, some people were reluctant to participate in project activities, as a result of previous experience of unsuccessful attempts at water onion restoration.

There is sometimes competition between activists and CSOs on conservation efforts. This discourages participation of newcomers, and reduces opportunities for wider network synergies over larger areas.

The COVID-19 pandemic and travel restrictions affected some of the activities.

## Lessons Learned

Based on a number of different efforts since 2011, a model of community-based propagation and planting of water onion, and habitat restoration, while inculcating a sense of local ownership has been developed. At the same time, longer-term continuity of support is necessary to build capacity of local organisations to achieve lasting results.

## Sustainability

The relatively high survival rate of restored water onions (60-90%) in the first year, suggests the restoration efforts may be successful over the longer-term.

The significant involvement of youth in hands-on restoration activities, is an important aspect of their environmental education and involving the protected area authorities in the activities is a good basis for longer-term collaboration

It is important to target farmers in the riparian areas of the water courses where water onion habitat is found. This can improve farm ecosystems/agro-ecology and is an approach that EFF will continue. EFF has secured funding from various sources to continue working with local communities and the Ranong and Phang-nga Water Onion Conservation Committees until 2026, at which point they will conduct a new Red-List Assessment of the water onion.

## 6 CASE STUDIES FROM VIET NAM

### 6.1 Flood-Based Livelihood Models in Lang Sen Wetland Reserve, Department of Agriculture and Rural Development (DARD)



Lotus fields, Lang Sen, Viet Nam © DARD, 2021

#### Objectives

Plant 30 ha of lotus in Tan Hung and Vinh Hung district and 120 ha of floating rice in Tan Hung district to help households increase their income through adapted livelihood models in the flood season, reducing chemical runoff and contributing to climate change adaptation.

#### Target Beneficiaries

Communities in Vinh Loi, Vinh Dai, and Vinh Thanh communes in Tan Hung District

#### Location

Long An Province



#### Duration

June – December 2021

#### Grant Amount

EUR 17,784

#### Contact Details

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#### Background

Dong Thap Muoi, a 700,000 ha low-lying area in the upper Mekong Delta, is dominated by annual flooding, with Tan Hung District of Long An Province, covering 497 km<sup>2</sup> and home to 51,038 people.

Farmers in this low-lying area primarily cultivate two rice crops per year. Several households have begun to cultivate lotus-based crops in the last decade, including rice and lotus in rotation, lotus monoculture, and integrated lotus – fish aquaculture. The scale of production however remains fragmented and unstable, and current farming systems have low productivity and economic efficiency.

Farmers' reluctance to adopt alternative flood-based livelihood systems, lack of technology and investment

capital, and the fluctuating lotus price, are the primary culprits.

Flood-based livelihood models for farmers include reducing rice production from 2-3 crops to 1 crop per year and promoting lotus/floating rice cultivation. This not only benefits water retention, but also increases income from fish farming, and eco-tourism opportunities. The models create diversified jobs for local farmers, and knowledge and lessons learned can be shared to bring increased benefits to the area. At the same time, the local biodiversity will also increase, along with the capacity to absorb and store water, helping to minimize negative impacts from climate change.

## Outputs and Accomplishments

The project successfully established a floating rice and lotus farming model in the vicinity of the Lang Sen Ramsar Site and the Tan Lap Floating Village Tourist Area, in order to build flood-resistant lives that are more profitable than intensive rice farming, which produces 2-3 rice crops per year. This approach can be replicated in other adjacent places with comparable conditions, supporting rice farmers in transforming cultivation methods during flooding.

The model, combined with tourism, aims to generate new income sources for farmers, create a market strategy for clean lotus products, and minimize pesticide residues that adversely affect the lives and biodiversity of Lang Sen Ramsar Site. The project subsidized farmers' efforts in developing lotus/floating rice cultivation models and supplied input materials. Farmers bore a portion of the costs and provided labour.

30 ha of lotus was planted in the two communes of Vinh Loi and Vinh Dai in Tan Hung District. The total subsidy was VND 159,000,000 (about 25% of the total cost of production) and the expected VND 2.25 billion revenue from harvest of should generate VND 1.2 billion total profit.

Lotus farming models for roots were implemented in Vinh Thanh commune, Tan Hung District, on a total area of 12 ha. Once again, the project subsidized about 25% of production costs. Expected total profit is about 367 million VND.

The floating rice farming model was implemented in Vinh Dai commune, Tan Hung District, on a total area of 93 ha with the project subsidizing 34% of the costs and an expected profit of around 2.7 billion VND.

Local authorities also facilitated model implementation and enforced public policies that supported (amongst other things) crop restructuring, agricultural extension, and training on sustainable farming.

## Challenges Faced

A high initial expenditure is required to plant lotus, and the COVID-19 pandemic wreaked havoc on the lotus market, resulting in a decline in revenues. These systems require significant labour (due to a lack of mechanization), and the local population tends to gravitate toward industrial zones for employment.

Climate change can destabilize water resources, resulting in periods of surplus and scarcity.

## Lessons Learned

Locals acknowledged that the flood-based lotus and rice farming model is suitable for unexpected weather conditions.

Local officers claimed that the floating rice and lotus farming model benefited low-lying areas. It not only increases household income and employment, but also contributes to the improvement of rural landscapes and ecological environments by boosting secondary products and services such as tourism and art.

The approach, according to agricultural officers' assessments of the Mekong Delta in general and the upstream area in particular, contributes to increased water retention areas, a diverse ecological habitat, and aquatic species. This technique also gradually instils living skills in the community and enables people to adapt to climate change situations, particularly droughts and major, abrupt floods.

Locals are investigating how lotus products, clean rice, and fish may help disadvantaged households and women with jobs near their homes, particularly those who can participate in future community tourism. Women can spend time with their families and children without having to leave their houses to work.

## Sustainability

Given the foregoing benefits, it is recommended that sponsors continue to support a model for combining lotus seed and seed pod cultivation with floating rice farming. This will undoubtedly result in a reduction in rice intensification and an increase in freshwater retention, both of which are critical and beneficial to the local population.

DARD suggests that IUCN pursue opportunities to obtain additional funding for early help to form cooperatives and cooperative groups, connect markets and process value-added lotus products to increase income.

## 6.2 Lung Ngoc Hoang Nature Reserve Vulnerability Assessment – Can Tho University (CTU)



Field visit to Lung Ngoc Hoang, Viet Nam  
© Hong Nhien 2022

### Objectives

Conduct a climate change vulnerability assessment for Lung Ngoc Hoang Nature Reserve to understand threats to the species, habitats and community livelihoods surrounding the site.

### Target Beneficiaries

Phuong Hoa, Long Phung A, Phuong Lac, Phuong Quoi A and Binh Hoa hamlets in Phuong Binh commune, Phung Hiep District

### Location

Hau Giang Province



### Duration

January – November 2021

### Grant Amount

EUR 17,325

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### Background

Lung Ngoc Hoang Nature Reserve (LNHNR) covering 2,805.37 ha, in Phuong Binh Commune of Phung Hiep District, Hau Giang Province, is known for its *Melaleuca* forest wetland ecosystem, hosting diverse species of native flora and fauna. Natural fish sources exploited by local communities provide 97% of the feed for aquaculture fish, without which, the costs of raising fish will increase, resulting in decreased farmer incomes. Studies of the area have shown that around 9.25% of households have insufficient income and 28.75% households earn just enough money to live. Many households have no or very little land for farming, so their main income comes from fishing in the reserve area.

Recent climate changes are leading to altered rainfall patterns, impacting biodiversity and local livelihoods. The impacts of climate change are

accelerated by large sluice gate constructions on Cai Lon and Cai Be Rivers. The sluice gates aim to prevent increased salinity in the area. Unfortunately, this changes the dynamic hydrology regime to a static hydrology regime, leading to increased water pollution from agricultural and aquaculture waste, runoff, and industrial and urban waste. It also leads to an increase of alien species such as water hyacinth. Inside the reserve zone, water exchanged is limited, resulting in extremely low dissolved oxygen. Can Tho University assisted LNHNR to implement a vulnerability assessment, an important step towards preparation of a comprehensive management plan for the site.

## Outputs and Accomplishments

A training course was organized at Can Tho University, after which the climate change vulnerability assessments were carried out from 26-28 May 2021 with participation of 40 local people (18 female) whose livelihoods are mainly rice-fish farming (two rice crops and one fish crop), growing fruit trees and participating in agricultural and non-agricultural hired labour. The local participants all resided in the buffer zone (Phuong Hoa and Long Phung A hamlets), administrative - service area (Phuong Lac hamlet), ecological restoration area (Phuong Quoi A hamlet) and strictly protected area (Binh Hoa hamlet) of the Nature Reserve. They are already experiencing the impacts of climate change, manifesting as poor water quality due to drought and floods, directly affecting their quality of life.

The project selected four habitats: *Melaleuca* forest, agricultural habitat, “Lung” habitat (lowland wetland grasslands), open water habitat and four species of flora and fauna: *Melaleuca cajuputi*, *Elaeocarpus hygrophilus*, bronze featherback (*Notopterus notopterus*) and giant snakehead (*Channa micropeltes*) to assess vulnerability. The Mekong Delta region has a high risk of flooding from sea level rise, significantly threatening all four habitats studied. The combined impacts of drought and high temperature will increase the risk of forest fires in *Melaleuca* habitats, and the quantity and quality of open water habitats will decrease. In addition, in the dry and high temperature conditions, the growth of vegetation will be inhibited, and the soil quality will be degraded. One of the main threats to the open water and Lung habitats is the proliferation of invasive alien species. *Melaleuca* habitat is also affected by non-climatic factors such as encroachment for agricultural cultivation, decreasing water quality and relatively thick tree density.

A one-day validation workshop was organized to present the assessment results to decision makers and Lung Ngoc Hoang management board on 22 October 2021 with 31 participants. The research team recommendations include:

- Develop a water management plan to ensure the survival and growth of fish species, limit the risks to species and habitats, address peoples’ water needs and avoid conflicts over water sources;
- Increase coverage of *Melaleuca* forest, planting trees on bare land, including after relocations of households from the strictly protected zone;
- Study reproductive behaviour of fish species to make informed decisions about conservation activities;
- Strengthen the banks of the canals using native plants and partially clear invasive vegetation in the Lung habitat improving environment for fish species;
- Diversify crops to increase resilience and reduce damage and loss to the impacts of climate change;
- Develop policies to support local people and increase investment in economic development to limit pressures on resources from LNHNR.

## Challenges Faced

Project activities followed the original step-wise plan; however, the project implementation time was longer than the proposed schedule due to delays caused by the complicated COVID-19 situation in the study area.

## Lessons Learned

The active participation of young scientists from CTU and staff from LNHNR contributed to the success of the project. The vulnerabilities due to climate risks of local people’s livelihoods and major habitats were well evaluated using IUCN’s Mekong WET tools. However, the future policies of LNHNR management may have greater impact than that of climate change. Consideration of management policies and approach should be addressed as one part of the VA tools.

## Sustainability

The project was only to conduct the vulnerability assessment and make recommendations, which has been completed. Future possibilities for sustainability will depend upon the extent to which the recommendations from the study are fully implemented.



### 6.3 Phu Yen Habitat viability assessment for the conservation of critical habitat for the endemic Vietnamese Pond Turtle, Asian Turtle Program of Indo-Myanmar Conservation (ATP/IMC)



Habitat in Suoi Lanh, Viet Nam © ATP/IMC 2022

#### Objectives

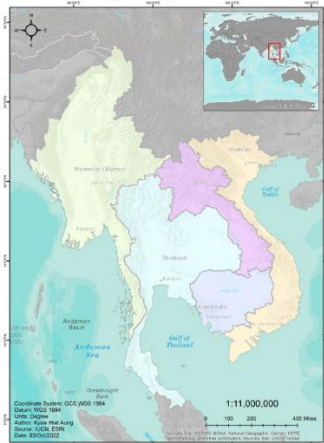
Conduct a habitat viability and climate change vulnerability assessment in wetlands of Tay Hoa and Song Hinh Districts.

#### Target Beneficiaries

Ea Ngao and Ha Roi villages in Hoa Thinh commune, Tay Hoa district; and My Dinh Village in Song Hinh commune, Song Hinh district, Phu Yen Province.

#### Location

Phu Yen Province, Viet Nam



#### Duration

March 2021– March 2022

#### Grant Amount

EUR 19,414

#### Contact Details

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#### Background

The project focuses on a series of small, globally significant wetlands in Tay Hoa and Song Hinh Districts, Phu Yen Province. These wetlands, situated north of Deo Ca Special Use Forest, cover an area of around 32.43 km<sup>2</sup> (Song Hinh) and 1.28 km<sup>2</sup> (Cold Stream) but unfortunately are shrinking and will continue to do so unless the area undergoes significant assessment and protection. The fringes of the wetland are experiencing significant encroachment by expanding urban and agricultural development, as well as the environmental and ecological effects of climate change. Recent droughts have compounded agricultural expansion as local communities look to increase their farmland to combat drought-driven yield losses.

The international importance of these wetlands has been identified by the work of the Asian Turtle Program of Indo-Myanmar Conservation (ATP/IMC) over the last five years. One wetland area, the Cold Stream Swamp, has been identified as wild habitat for the Vietnamese Pond Turtle (*Mauremys annamensis*), critically endangered and endemic to the lowlands of central Vietnam. The species has historically occurred in seven provinces, from Da Nang in the north to Phu Yen in the south. The Cold Swamp Forest is the single largest intact piece of wetland habitat in the species range, with approximately 128 ha of wetland habitat remaining, of which 80 ha is swamp forest.

## Outputs and Accomplishments

ATP/IMC completed vulnerability assessments for the three target villages in March and May 2021. The team conducted participatory mapping exercises in each village to understand past and present land-use. Researchers completed socioeconomic questionnaires for 9 households in Hao Roi village, 10 households in Ea Ngao village and 11 households in My Dinh village during March and May of 2022. In Ea Ngao village, the ethnic groups present include Cham, and E De, while Ha Roi village has BaNa. In My Dien village, the population is made up of Kinh (the majority ethnic group of Viet Nam).

Extensive small rice fields are located in and around Suoi Lanh Swamp, with 800 individual parcels ranging from 43.5 – 2,350 m<sup>2</sup> in size. Some of the fields extend into the flooded area of the swamp and are inundated with water for some months of the year, in the southwest of the swamp some cleared areas are not included in the official land allocation for the commune, these likely represent areas more recently cleared for agricultural use. For Hao Roi and Ea Ngao Villages, land ownership has not been recorded yet, as this is a more remote, ethnic area.

For Song Hinh Lake, remote sensing images from 1980 show a largely forested river valley with evergreen forest on the hills and shrubland in the northern lower elevations. By the year 2000, shrubland was almost completely converted to agricultural land with some areas of hill forest also converted to cropland. By 2018, the valley was flooded, with water bodies in the study area increasing from 13 ha in 1980 to 6,094 ha in 2020 while closed canopy broadleaf evergreen forest reduced from 8,453 ha in 1980 to only 3,525 in 2020.

For Suoi Lanh Swamp remote sensing in 1980 showed broadleaf evergreen closed forest coming down and into the swamp from the south, with 126 ha of this habitat type, which is reduced to 100 ha in 2000 and replaced by 243 ha of open/thin evergreen broadleaf by 2010 which is reduced to 77 ha in size by 2020. This suggests the area has undergone extensive selective logging followed by clearance for agriculture.

ATP/IMC conducted biodiversity surveys were at Suoi Lanh Area, Hoa Thinh Commune, Tay Hoa District; Song Hinh Lake, Song Hinh District; and Mount Hon Den, Ea Bar

Commune, Song Hinh District, using day and night transect surveys, non-lethal traps and camera-trap methodologies.

Important finds included two species listed in the Vietnam Red Data Book 2007, the Chinese water dragon (*Physignathus cocincinus*); and the helmeted toad (*Ingerophrynus galeatus*); and six species endemic to Viet Nam: Truong's gecko (*Gekko truongi*); Kingsada bent-toed gecko (*Cyrtodactylus kingsadai*); Vietnam spadefoot toad (*Leptobrachium pullum*); cloaked moss frog (*Theloderma palliatum*); big-eyed litter frog (*Leptobrachella macrops*); and Murphy's tree dragon (*Acanthosaura murphyi*). In addition, two species are listed in the IUCN Red List: *Rhacophorus annamensis* (VU) and *Theloderma palliatum* (EN), were found.

Camera-trap results included the endangered large spotted civet (*Viverra megaspila*) yellow-throated marten (*Martes flavigula*), common long-tailed macaque (*Macaca fascicularis*) and stump-tailed macaque (*Macaca arctoides*).

## Challenges Faced

The COVID-19 pandemic and associated lock-downs had some impact on timing of project activities, requiring the project to be extended. Suoi Lanh Swamp camera traps were collected in October 2021 and Song Hinh Lake in February 2022, unfortunately 13 of the 30 cameras were either lost or damaged during this time.

## Lessons Learned

During the remote sensing, the swamp forest with canopy cover was not identified as wetland, but instead classified along with forest types from the surrounding hills, this could be because of the limited area of this swamp forest habitat type to be included in the model learning.

## Sustainability

During the field survey, 19 alien species of plants were identified which could threaten the future viability of this critical habitat.

## 6.4 Vulnerability Assessment of Tra Su Melaleuca Forest, An Giang – Nong Lam University



Lotus habitat, Tra Su, Viet Nam © Han T.N. Le, 2021

### Objective

Conduct a climate change vulnerability assessment for Tra Su Melaleuca Forest, assessing the vulnerability of livelihoods, ecosystems and species to climate threats, and work with stakeholders to develop adaptation options to mitigate identified risks.

### Location

An Giang Province, Viet Nam



### Duration

February 2021-January 2022

### Grant Amount

EUR 20,000

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### Background

Tra Su Melaleuca Forest (TSMF) located in Tinh Bien district, An Giang Province, is one of 10 priority wetland sites in the Mekong River Delta. In 1983, TSMF was planted to improve acid sulphate soil. Since then, it has become home to a range of plants, fish, wetland birds and animals. TSMF covers an area of 1,050 ha, including settlement and agriculture, open swamp, 85 grassland and Melaleuca. There are at least 70 bird species with three globally near- threatened species recorded: painted stork (*Mycteria leucocephala*), Oriental darter (*Anhinga melanogaster*) and the Asian golden weaver (*Ploceus hypoxanthus*).

In 2005, TSMF was recognized as a special-use forest – protecting the landscape as part of the national special-use forest. Since its establishment as a protected landscape, wild birds such as the grey-headed swamp hen (*Porphyrio poliocephalus*) and the Asian openbill (*Anastomus oscitans*) have begun returning during the

breeding season. The site's diverse habitats make it attractive for domestic and international tourism, welcoming more than 30,000 visitors annually, providing an additional source of income for locals. However, TSMF's biodiversity and landscape are under threat due to drought, fire and deforestation caused by human impacts and climate change. Moreover, TSMF is highly vulnerable to fragmentation due to its small size. Hence, there is a need to conduct research using the Vulnerability Assessment tool developed by the Mekong WET project to strengthen the site's resilience to climate change.

### Target Beneficiaries

Tra Su Melaleuca Forest Management staff and surrounding communities.

## Outputs and Accomplishments

From March-April 2021, the team conducted field trips for data collection. Group discussions were held in December 2021, followed by a workshop in January 2022 to present initial results and receive recommendations from Tra Su forest's staff and representatives of local communities.

The results show that local people rely on TSMF resources, which provides them additional income. The main impacts of climate change include extreme weather events, for instance, strong wind and long scorching heat, and drought. Regarding species and habitat, grassland and open swamps inside TSMF are more vulnerable than the *Melaleuca* forest. Ecotourism brings benefits to the surrounding community and biodiversity (through wild bird protection). It also poses a threat to the *Melaleuca* forest due to the practices of maintaining water levels needed for boat transportation. Through discussion with Tra Su Forest Station, communities, and experts, adaptation and management options were developed as follows:

- Develop a water management plan that helps species and habitats of TSMF to adapt to changes in climate and Mekong River hydrology. The plan should balance the ecological needs of species and habitats and the requirements of forest fire control, taking into consideration water flows and movement of aquatic organisms in and out of the reserve, as well as the exchange of water and species among management units of the core zone.
- Encourage local people, especially those living in the buffer zone, to take part in forest monitoring and protection and further develop community-based ecotourism to promote local lifestyle and culture and bring additional income.
- Develop an environmental monitoring system that can provide data on air, water, soil and vegetation to improve water management planning and other ecosystem management activities.
- Reinforce the capacity of TSMF's staff in climate change adaptation management and in wetland protected area management.
- Enhance local community knowledge on climate change impacts on the biodiversity and habitats of TSMF and encourage them to support ecosystem conservation.

## Challenges Faced

The COVID-19 pandemic and associated restrictions impacted both the timeline and the methods used in the project.

Changes in timeline: The original duration was from February 2021 until September 2021. As the positive cases of COVID-19 increased, Viet Nam implemented strict social distancing so the deadline was extended to December 2021. At the end of 2021, COVID cases in the study site were still high, therefore the deadline was extended until January 2022 with changes in the data collection approach.

Changes in methods: The methods required group discussions with local people, however gathering in the big groups was not allowed for significant periods of the project. The project shifted group discussion to half-interviews half-discussion with local people (2-3 people at once time) and authorities (Tra Su forest protection station, head of villages and An Giang Forest protection board) to confirm and complete the missing data. Generally, interviews were conducted with 30 people (15 males, 15 female) in each commune in December 2021 (Van Tra, Vinh Dong and Long Thuan commune). The final workshop was performed virtually in Jan 2022.

## Lessons Learned

Ecotourism is a suitable model to help local people generate income and support wildlife. However, it is necessary to consider the natural flooded condition of the area and the demand of storing water for ecotourism activities. Ecotourism operations should be compatible with the hydrological condition of the ecosystem. Storing water for sightseeing year round has negative impacts on the *Melaleuca* forest and the whole ecosystem in the long term.

## Sustainability

To take further steps, TSMF will need technical support to develop targeted funding proposals to the Stockholm Environment Institute, Mekong Institute, Nagao Foundation and others due to language barriers and capacity.

Nong Lam University and the University of Science are developing a concept note to develop alternative livelihood and capacity building for TSMF.



## 6.5 Ecological Agriculture and “Ramsar” labelling, U Minh Thuong Ramsar Site – Can Tho University



Discussing opportunities with local farmers © Ly Van Loi

### Objectives

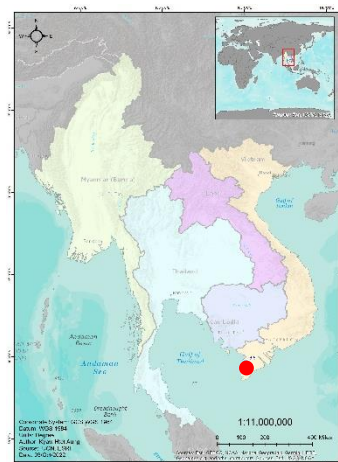
Promote ecological agriculture in the buffer zone of U Minh Thuong National Park/ Ramsar Site and market agricultural produce using a “Ramsar” label.

### Target Beneficiaries

3,267 households living between the inner and outer dykes of U Minh Thuong National Park/Ramsar Site

### Location

U Minh Thuong National Park



### Duration

January – December 2021

### Grant Amount

EUR 19,712

### Contact Details

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### Background

U Minh Thuong National Park (UMTNP) in the Mekong Delta is what now remains of once vast *Melaleuca* forest - in the 1930s it covered 142,000 ha. Almost one third of this was destroyed by Agent Orange and napalm bombs in the American War. Economic development after the 1975 reunification caused further destruction. The remaining 21,800 ha was enclosed by a dyke in 1978. Destruction continued and in 1992, a second inner dyke parallel to the first, was built to protect the 8,038 ha core. The area between the outer and inner dykes is now a 14,192 ha buffer zone, inhabited by 19,602 people in 3,267 households.

UMTNP stores fresh water in the rainy season, which is used in fire prevention and released to the communities for agriculture in the dry season. UMTNP supports at least 187 bird species, 32 species of mammals and 37 species of fish. It is an important source of wild food and income for the local people.

However, local people derive little benefit from its status as a Ramsar Site, and stricter protection of the core zone has reduced access and use. More recently, climate change induced abnormal rainfall droughts and floods are causing crop losses, resulting in people turning to illegal hunting fishing and honey collection in UMTNP. The project focused on ecologically friendly or organic agriculture in the buffer zone, marketing higher value produce with a “Ramsar” label, approved by UMTNP. Can Tho University supported marketing, responding to increasing consumer demand for organic produce.



## **Outputs and Accomplishments**

The project developed a framework assessment for granting of the “Ramsar label” and trained three staff and two villagers at U Minh Thuong National Park on the assessment process.

The grant produced a short film about the values of the Ramsar site and the buffer zone as well as the meaning of the Ramsar label. The team also developed a brochure providing an overview of the Ramsar site and buffer zone products.

According to the assessment there are currently nine buffer zone products eligible for Ramsar labelling. The main products are unprocessed fruit such as bananas, jackfruit and dragon fruit, as well as snails. These products also provide an important source of food for a number of forest animals such as monkeys eating bananas in banana gardens and otters regularly eating fish in snail ponds.

An experiential tourism program connecting UMTNP with the buffer zone community through the Ramsar label has been developed and will be piloted in the near future - the existing ecotourism program of UMT does not have activities to connect and visit the surrounding community. The idea is that visitors will understand the true value of the Ramsar site to the community and the life of the surrounding community. Visitors can experience the actual activities of the people as well as the typical local products. The tour will include a boat trip to the bird sanctuary; visiting different wetland habitats to understand ecosystem functions; a visit to a wildlife rehabilitation centre; a visit to a model “forest garden” and listening to local people share stories about the origin and importance of each product.

The project has developed suggestions for developing additional products matching the criteria of the Ramsar label, including: sustainable tourism combined with Ramsar-label product sales points in the surrounding community; providing research and education support services in parallel with tourism services; supporting the community (start-up) to process raw materials at a small scale with local characteristics; developing a model of “Forest Garden” for buffer zone communities.

Project events have linked together and created direct connections between the business communities, start-up groups, scientists and protected area personnel.

## **Challenges Faced**

The workshop to promote Ramsar products for U Minh Thuong National Park was held later than originally planned due to the complicated situation of COVID in Vietnam.

The lack of close connection between the Ramsar site management board and the buffer zone community is still a challenge.

The application of information technology in the Ramsar site is still limited, especially in terms of the capacity of users.

## **Lessons Learned**

Local people face many challenges, but have strong potential solutions, however, there are no comprehensive “information hubs” to help them. There is a need to support the development of local start-ups to strengthen sustainable livelihoods for buffer zone community in accordance with natural conditions.

There are many unexpected adverse factors, such as COVID-19, therefore, it is necessary to have a backup plan be able to implement project activities.

## **Sustainability**

The workshop to promote Ramsar products was attended by 73 people, including three businesses – Mekong Organics, Abavina, and Thao Dien Phu My, as well as the Centre for Trade, Tourism and Investment Promotion. There is a high level of interest in “Ramsar” labelled produce, which could provide the basis for its commercial viability. People are in the process of building a display area at the park, and completing their products. If successful, the approach can be taken up at the policy level and used in the management of other similar Ramsar sites and Biosphere Reserves.

Oxfam is also funding a small project to improve the livelihoods of a group of women in the buffer zone to cope with climate change.

## 7 CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Small Grants Solicitation and Awarding

The main objectives of the small grants were to implement Ecosystem-based Adaptation activities and strengthen site-level wetlands management in IBRRI wetlands, focusing on Mekong WET project sites and Ramsar sites. The intended main approach was to implement and build on adaptation options already developed by stakeholders during the project, or to identify such options at sites where this has not already been done.

In January 2020, IUCN started the process of requesting permission from BMU-IKI for permission to issue small grants – and to include Myanmar as an eligible country to apply for small grants (in the initial IUCN Mekong-WET proposal to BMU-IKI, Myanmar was not included due to German government restrictions). Approval was received in October 2020, and IUCN issued calls for proposals for each country (Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam) posted on the IUCN webpage and shared on IUCN's social media accounts, email lists and by country offices, with a deadline for submission on 25 November 2020.

A total of 36 proposals were submitted for consideration by the selection committee. Three proposals were not reviewed because they were not within the focus of the project. The remaining on-topic proposals were grouped by country, and sent to a review team consisting of wetland specialists and those working on the project in each country. The reviewers scored each submission from 0-5 using the 10 Criteria below, and were also asked whether or not they would recommend each proposal for funding.

1	<b>Proposal focus on EbA measures or VA in wetlands (climate adaption focus)</b>
2	<b>Clear benefits provided to wetlands ecosystems or species AND communities</b>
4	<b>Work in MWET project site (or a Ramsar site)</b>
5	<b>Uses/builds on MWET tools and methodologies</b>
6	<b>Overall technical quality of the proposal</b>
7	<b>Includes local communities and stakeholders (including government) in the design and implementation of the project</b>
8	<b>Feasibility of completing the project in 9 months</b>
9	<b>Overall budget (including % staff time and activities cost, and costs relative to proposed outcomes)</b>
10	<b>Experience of the applicant (organisation and individual CVs) working on wetlands in the region</b>

Ultimately 17 proposals were funded under the Mekong WET small grants component - four in Cambodia, one in Lao PDR, three in Myanmar, four in Thailand and five in Viet Nam, as follows:

#### **Cambodia**

1. Integrated conservation of wetland ecosystems in Cambodia: Koh Kapik Ramsar Site - Fishing Cat Ecological Enterprise (FCEE)
2. Integrated conservation of wetland ecosystems in Cambodia: Stung Sen Ramsar Site Vulnerability Assessment (FCEE)
3. Enhancing wetland resilience for improved biodiversity and livelihoods in Cambodia, Boeung Prek Lapouv Protected Landscape - Wildfowl & Wetlands Trust (WWT)
4. Stung Treng – Culture and Environment Protection Association (CEPA)

## Lao PDR

1. Participatory climate change vulnerability assessment of Siphandone wetland to identify valuable and cost-effective ecosystem-based adaptation measures - WWF Laos

## Myanmar

1. Supporting the Systematic Management of Kye-in Lake in Chatthin Wildlife Sanctuary - Friends of Wildlife (FOW)
2. Climate Change Vulnerability Assessments for Paleik Lake and Pyu Lake in Myanmar - Biodiversity and Nature Conservation Association (BANCA)
3. Ecosystem-based Adaptation for Local Communities at Indawgyi Ramsar Site - Fauna & Flora International

## Thailand

1. Enhancing Community Participation to Strengthen Adaptation to Climate Change in the Bang Pakong River Estuary - Rajabhat Rajanagarindra University (RRU)
2. Capacity Building for Climate Change Resilience of Local Communities Surrounding the Habitat of Water Onion (*Crinum thainum*) in Ranong Wetland - East Forum Foundation (EFF)
3. SEAGONG – a community-based seagrass and dugong conservation initiative safeguarding food security and resilience in vulnerable Andaman coastal communities in a changing climate - NatureMind ED (NM-ED)
4. Promoting Community-driven Ecosystem-based Adaptation Options and Communication for Ing River Wetland Forest - Hill Area Development Foundation (HADF)

## Viet Nam

1. Habitat viability assessment for the conservation of critical habitat for the endemic Vietnamese Pond Turtle in Deo Ca Forest - Indo Myanmar Conservation (IMC)
2. Climate Change Vulnerability Assessment in Tra Su *Melaleuca* Forest - Nong Lam University (NLU)
3. Developing wetland friendly certifications with local communities to overcome climate change threats in U Minh Thuong National Park - Can Tho University (CTU)
4. Climate change vulnerability assessment in Lung Ngoc Hoang Nature Reserve - CTU
5. Piloting flood-based livelihoods in support of a water retention strategy for the Upper Vietnamese Mekong Delta - Lang Sen Wetland Reserve- Department of Agriculture and Rural Development (DARD)

The portfolio of projects represents a selection of approaches on Vulnerability Assessments and Ecosystem-based Adaptation at Ramsar sites (7 projects) and other wetlands (10 projects) in the Indo-Burma region, and integrates a range of partners including local/national NGOs (BANCA, CEPA, EFF, FCEE, FOW, HADF, NM-ED); local government agencies (DARD); universities (Can Tho, Nong Lam, Rajabhat Rajanagarinda) and international NGOs (FFI, IMC, WWF, WWT). In two cases (FCEE in Cambodia and Can Tho University in Viet Nam), the same organization received two grants but for different projects in different sites.

Fewer grant applications were received than originally anticipated. The approval from BMU-IKI to solicit grant applications was delayed, necessitating a rushed grant solicitation and

awards process, which may not have allowed enough time to effectively promote and communicate the availability of the grants, or to address language barriers of potential applicants. A lack of understanding of EbA, and the Due Diligence requirements may also have been off-putting to some potential applicants, while yet others may have decided not to apply because of the COVID-19 situation and its potential to disrupt project implementation. Many applications that were received, were for assessments and research, whereas Mekong-WET preferred to support on the ground implementation of EbA measures. Only a few of the applications were from small, local CSOs. Even for the selected applications, the situation was of course further complicated by the difficulties for the grantees to hold community meetings and meetings with governments to get approval for their work.

Interestingly, the ongoing activities of the grant applicants, and their long-term commitment to the sites was not identified as a specific criterion in project selection– yet in many ways this turned out to be a major strength of the portfolio of projects. Long-term presence of a grantee at a site, and their continued future commitment to the same site, provided two major advantages for the implementation of the projects:

- (i) While COVID-19 prevented or reduced the opportunities for face-to-face interactions between the project team and the local communities, the existing relationships and trust developed over years of working at the site enabled activities to progress through direct implementation by local people on the ground and remote management through virtual discussions and meetings. Without pre-existing relationships, in many cases, activities may not have progressed at all in the situations where COVID-19 travel restrictions prevented regular in-person meetings. This was specifically identified for Kye-In Lake in Myanmar, and Koh Kapik in Cambodia.
- (ii) With the challenges presented by COVID-19, many projects were not able to make as much progress as they intended to – however because of their continued commitment to working at the same site, they have been able to follow-up and progress the activities further after the end of the project, with other sources of funding. This was specifically identified true for Boeung Prek Lapouv, Koh Kapik, Cambodia and Indawgyi Lake in Myanmar.

In addition, embedding short-term Mekong WET small grant activities within the broader portfolio of work of a grantee provided advantages to the grantees in terms of supporting continuity of their efforts and broadening their scope of activities. For example, the grant to FCEE to work in Koh Kapik, built on work already done there since 2017, and further enabled FCEE to connect to two other projects - the first led by Flora and Fauna International and funded by Blue Action Fund, from 2021 to 2026, and the second funded by IUCN CEPF from 2021 to 2023. This approach of initially connecting one small project to another, and then ultimately connecting to much larger projects is an effective strategy for a small NGO which sees the importance of staying in an area over the longer-term.

### **Recommendations:**

1. Understanding of EbA approaches, and the number of proposals to implement EbA activities on the ground in response to future calls, could be increased through trainings and workshops hosted by IBRRI.
2. Future calls could also include a webinar/information session for questions and application support, which could be conducted in national languages by IUCN country offices.

3. Future selection criteria (especially for short-term, low budget proposals) should consider the ongoing work of the applicant at the site and their long-term involvement with/commitment to the site as part of the assessment.

## 7.2 Vulnerability Assessments

Regardless of the diversity of agencies implementing the grants, the issues tackled, and the approaches used were quite similar. Seven of the grants were for awarded to implement Vulnerability Assessments at the sites, using the methodology developed by the Mekong-WET project (Stung Sen in Cambodia; Siphandone in Lao PDR; Indawgyi Lake, Kye-in Lake, Pyu and Pailek Lakes in Myanmar; Lung Ngoc Hoang, Phu Yen and Tra Su in Viet Nam). At Boeung Prek Lapouv and Koh Kapik in Cambodia, it was very clear that the activities implemented responded to priorities identified through vulnerability assessments that had already been implemented by Mekong WET. At the remaining sites, activities generally seemed like they would help to address local vulnerabilities, but reporting did not explicitly link the selection of activities to vulnerability assessments.

The organisations that used the Mekong WET Vulnerability Assessment methodology all said that they found it a useful framework for understanding climate vulnerability. Some grantees noted that it was quite complex and took longer to implement than they initially anticipated, but all were appreciative that they now had the experience and capacity to be able to implement these vulnerability assessments. Several suggested they would consider using it at other sites and in other projects that the organization was managing, with one noting that this had strengthened their ongoing work at the site by allowing them to add a climate change element to their existing portfolio of activities.

Climate hazards such as floods and droughts as well as coastal erosion were identified as problems related to climate change, and in some cases anecdotal evidence of changes in the frequency or intensity of these types of events was reported by local people. At the same, it is clear that impacts of infrastructure development, particularly water sector infrastructure, are also causing similar changes. Some impacts of climate change and water infrastructure may be mutually reinforcing. In many cases when looking at a particular impact, it may be difficult to disentangle the relative contributions of various infrastructure developments and of climate change to the causes of that impact.

In Stung Sen and Stung Treng in Cambodia, and Siphandone in Lao PDR, upstream developments on the Mekong have affected the flood pulse on which the ecology of these areas depends – and in Stung Sen in particular, may have caused the drying out of inundated forest and increased the risk of fire, which is compounded by climate change related higher temperatures and longer dry spells. Similarly, in the Ing River in Northern Thailand, historically, the Mekong monsoon floods naturally inundated the Ing River wetland forests during July-September, allowing migratory Mekong fish to spawn in the biologically lush wetland. When dry season water levels recede, nutrient rich Ing River wetland forest sediments flowed back to the Mekong mainstream. However, this is now being impacted by changes to the Mekong mainstream river hydrology caused by upstream hydropower dam construction as well as by degradation of the wetlands themselves.

In Bang Pakong in Thailand, coastal erosion was already occurring before the construction of the Bang Pakong dam in 1999, but the reduced sediment load transported to the estuary since its construction has only exacerbated this.

In Lung Ngoc Hoang in Viet Nam, The impacts of climate change are accelerated by big sluice gate constructions on Cai Lon and Cai Be Rivers. The sluice gates aim to prevent increased salinity in the area. Unfortunately, this changes the dynamic hydrology regime to a static hydrology regime, leading to increased water pollution from agricultural and aquaculture



waste, runoff, and industrial and urban waste. It also leads to an increase of alien species like water hyacinths. Inside the reserve zone, water will no longer be exchanged, resulting in extremely low dissolved oxygen and affecting aquatic animal biodiversity.

### **Recommendations:**

1. IBRRI should continue to promote the Climate Change Vulnerability Assessment tool that has been developed, and encourage its application in all 37 Ramsar Sites in the Indo-Burma Region (including through the organisation of additional training courses on the methodology).
2. In identifying adaptation options in situations where the relative impacts of climate change and other factors are not clear, so-called “no regrets” adaptation options can be identified – which anyway will bring benefits to the local ecology and local people even if it turns out that climate change is causing less of the impacts than expected.

## **7.3 Habitat Restoration**

A number of the projects had a clear focus on habitat restoration. In Cambodia, at Boeung Prek Lapouv, the Wildfowl and Wetlands Trust (WWT) had a major focus on restoration of flooded forest (replanting a five hectare area) and restoration of grassland. WWT constructed a tree nursery, and collected seeds from the area to produce saplings of local species. When the full diversity of local species could not be sourced locally they were brought in from other areas of the Tonle Sap. Because the grassland restoration required the use of heavy machinery including tractors and diggers, at a time when similar machinery had been used to encroach on other parts of the wetlands, the authorities were initially very concerned about how this activity may be perceived, and it took a long time to get the activity approved. In a normal rainfall year, by the time the activity was approved it would have already been too late and too difficult to implement. The 2021 rains came late, therefore, the activity was still possible.

At Koh Kapik in Cambodia, the Fishing Cat Ecological Enterprise (FCEE) also supported construction of a mangrove nursery and production of saplings. In Thailand, the East Forum Foundation (EFF) supported nurseries for propagation of water onions, while in Krabi, Nature-Mid ED (NM-ED) supported the development of seagrass nurseries. The Krabi seagrass nursery was established next to a local restaurant, increasing its visibility and helping to ensure its sustainability. All of these nurseries have continued to operate, and restoration work is continuing beyond the lifespan of the Mekong-WET small grants.

### **Recommendations:**

1. IBRRI should organize events and platforms for sharing and learning of restoration experiences and good practices between different sites in the region, and link these to the UN Decade for Ecosystem Restoration.
2. A series of simple handbooks on restoration methodologies for different wetland habitats (including flooded forest, seasonally inundated grasslands, mangroves and seagrass) could be developed.

## **7.4 Local Community Livelihoods**

In a general sense, all of the projects considered the importance of local livelihoods in relation to sustainability of the wetlands. Many of the projects had ambitions to do more in relation to livelihoods than they were actually able to achieve within the project period, and given the constraints posed by COVID-19.

The four projects that created nurseries and engaged in other restoration activities (above) directly provided income to local people through these activities. A few of the projects had a very specific focus on some aspects of livelihood, including:

- In Lang Sen, Viet Nam, the Department of Agriculture and Rural Development (DARD) supported farmers to trial different livelihood models as alternatives to the standard two crops/year of monoculture rice. This included rotational cropping of rice and lotus; lotus and fish-raising; and growing of floating rice (long-stemmed rice which can survive very deep floods). Subsidies were provided to the farmers to reduce their risk of adopting these innovative approaches.
- In U Minh Thung, Viet Nam, Can Tho University (CTU) promoted the idea of “Ramsar” labelling as a way to add-value to products of the local communities living in the buffer zone, and provided support in marketing and making connections between the communities and private sector supply chain actors.
- In Stung Treng, Cambodia, the Culture and Environment Protection Association (CEPA), promoted protection of broodstock of important species, was seen as a way to make local fisheries more sustainable, and thereby contribute to long-term security of local fishing livelihoods

In the global development field, “Blended Finance” approaches are increasing in popularity – whereby public money is used to reduce the risk for the private sector to invest in improving various aspects of sustainability. DARD’s approach in Lang Sen could be considered as “micro-blended finance” subsidizing the risk for farmers to adopt innovative new practices that it is hoped will benefit both their income and the environment.

Apart from CTU assisting with linkages to the private sector for products from U Minh Thuong communities, and the collaboration with a restaurant by NatureMind-ED in Krabi, there was very little involvement of the private sector in the projects.

### **Recommendations:**

1. IBRRI should organize events and platforms for sharing and learning about livelihood support experiences and best practices between different sites in the region.
2. Long-term monitoring and research on the impacts of seasonal closures of fisheries, no-take areas, and gear restrictions in wetlands needs to be conducted to demonstrate a clear cost-benefit assessment for fishing-dependent families through more sustainable fisheries and spill-over effects, in order to generate wider support and buy-in for these approaches. This requires a multi-disciplinary approach involving both biologists and resource economists.
3. The outcomes of the DARD approach at Lang Sen should be followed up in some detail by IUCN Viet Nam, and assessments made on the return on investment for the public sector, for the farmers, and for nature. Based on the results of these assessments, IBRRI may decide to promote this kind of approach in a much more wide-spread way. In a similar vein, the “Mini Trust Fund” approach of CEPA in Stung Treng should also be evaluated and considered for wider promotion.
4. In the development of future initiatives, IBRRI should give more consideration to the role and involvement of the private sector.

## **7.5 Community Capacity Building, Multi-stakeholder Approaches and Education**

All of the projects included aspects of local capacity-building – including the elements of capacity-building for habitat restoration and livelihood development described above. In Thailand, the Ing River Project of the Hill Area Development Foundation (HADF) had a strong element of capacity-building for shared learning approaches, while the SEAGONG project of Nature Mind-ED built capacity of local people to monitor seagrass and dugongs. The water onion project of East Forum Foundation in Ranong provided training on living with climate change and on-farm ecosystem management.

Many of the projects included some aspects of education for youth. In Ranong this was very hands on, with schoolchildren and youth directly involved in collection, propagation and planting of water onion. In Krabi, the seagrass nursery was used as an outdoor “lab” for schoolchildren. In Bang Pakong, with the educational activities implemented with children from two schools. In one of the schools the children were all locals, the sons and daughters of fishers and farmers, and had good knowledge of their local environment. In the other school, the children were the sons and daughters of migrants who had come to the area for factory jobs, and had very little knowledge of the local environment. In Boeung Prek Lapouv, education activities included teacher training and a focus on integration into the classroom curriculum.

All of the projects involved more than one stakeholder group. The water onion project in Ranong had the broadest selection of stakeholders working together on practical project activities, including local communities, schools, local authorities, and protected area authorities. These very hands-on joint activities involving all stakeholders are important for building relationships and trust, which are essential to success in many situations.

### **Recommendations:**

1. IBRRI should share best practices in wetlands stakeholder identification, mapping, analysis and engagement strategies; capacity building of local communities; and classroom and outdoor wetlands education activities for school children and youth in the Indo-Burma region.

## **7.6 Law Enforcement**

Illegal activities, and therefore the need to support law enforcement, was an obvious consideration at several sites, and although not a focus of project activities, may also be a concern at other sites.

At Boeung Prek Lapouv, the law enforcement team and Field Monitoring Team (FMT) conducted a total of 172 patrols within the project period along the main canal and key habitats of BPL. During these patrols, 37 instances of human activities inside the no-entry core area were recorded. Most instances were to collect wetland resources, fishing, and use shortcut trails. On each occasion, the enforcement team explained the rules and regulations of the core area to the people encountered. In addition, five cases of illegal encroachment occurred during the project implementation period, and around 70 hectares of natural habitat were ploughed. As a result, 10 villagers received warnings. Some of this land has now been brought back under government control, whilst legal action is underway by the government to regain the remaining land.

In the Stung Treng Ramsar Site, many fishers are not complying with the fisheries law, and are still fishing with long drift nets, and small mesh gill nets, especially during the breeding

season/ annual closed season. Two patrol posts were set up in Koh Russey (covering seven villages) and Koh Traeng (covering three villages) and operated for protection of the broodstock zones in the five-month closed fishing season (May to September 2021). Two boats with engines were purchased, and equipment including hammocks, flashlights walkie-talkies, raincoats and life jackets were provided to the patrol teams. The patrol teams cracked down on 11 cases of illegal fishing, confiscated 11 boats, two engines and 11 sets of gillnets with a total length of 1,965 metres. In seven cases agreements were reached to stop the illegal fishing activities. However, some illegal fishers unhappy with the patrol teams deliberately sank two boats. So far, the perpetrators have not been caught.

At Kye-in Lake a ten acre FFZ was established in early March 2021. Buoys were used for boundary demarcation, and protected area staff started to conduct regular monitoring. Community joint patrolling was adopted during the closed season. A five-member team patrolled the lake and its watershed area at least 10 days per month. During the closed fishing season, the community patrol team found at least 1-2 fishermen every day (76 in total). The team noted the name of perpetrators, their villages, date, place, etc. The team explained sustainable fishery practice and biodiversity and wetland conservation to them, and warned them. No other punishment was given. However, three cases of illegal timber extraction that were found, were submitted to the warden's office.

In Pyu and Paleik Lakes, in December 2021, BANCA trained several members of the local CBO Shwe Kanthayar Nature Conservation Association, to use SMART software for long-term conservation activities and to reduce illegal hunting.

### **Recommendations:**

1. IBRRI should conduct a stock-taking assessment of the scale of illegal activities and the use of joint patrolling approaches at all 37 Ramsar sites across the region. Assessment of the effectiveness of joint patrolling should be carried out, and key factors for success identified.
2. While the Ramsar Management Effectiveness Tracking Tool has already been adapted for use in Ramsar sites, consideration might also be given to adapting the CITES-MIKE Law Enforcement Capacity Assessment (LECA) tool to assess law enforcement at Ramsar sites and other wetlands.

## **7.7 Gender Considerations**

Most grantees clearly made efforts to ensure women's participation. However, of all the information provided in reports on numbers of participants in various project activities, sex-disaggregated information was only provided for about two-thirds of the total. Based on this information, 47.5% of adult participants in activities were female, and 49% of youth participants in educational activities were female.

Beyond this there was very little evidence of gender mainstreaming in project activities outside of the Climate Change Vulnerability Assessment Results. There was, for instance, no identification of how male and female perception of climate change impacts differed; no assessment of differences in male and female use of resources in the target site, no indication of differences in male and female ideas about appropriate EbA activities; and no analysis about how the proposed interventions would differently affect the situation of men and women e.g. in terms of labour requirements, income potential, etc.

### **Recommendations:**

1. IBRRI should organize tailor-made trainings on gender mainstreaming for wetlands management to be offered to Ramsar site authorities and NGOs working at the sites. This could also be developed into an on-line training module.

## 7.8 Overall Conclusions

With a restricted time window for implementation, rather limited budgets, and the difficult situation in the midst of the COVID-19 pandemic and a military coup in Myanmar, the 17 grant projects have achieved significant results. This was also enabled by effective, efficient, and flexible administration and management throughout the life-cycle of the grants.

### Key Numbers

**55,300** seedlings, saplings and plants of inundated forest, riparian forest, mangrove seagrass and water onion species were produced and planted

**1,455** people were involved in project consultations, workshops and trainings (47.5% female)

**612** schoolchildren participated in educational activities (49% female)

**379** people planted water onions

**93** hectares of floating rice and **42** hectares of lotus were planted

Despite the difficult circumstances, a high level of sustainability is likely, due to the long-term commitment of many of the grantees to the same sites. Many have already identified additional resources to continue and build on the work supported by Mekong WET small grants.

While Mekong WET as a time-bound project has ended, the Mekong WET approach must continue to be promoted by IBRRI and IUCN, and IUCN should seek additional donor support to continue and build on the work of Mekong WET.

The 15 recommendations identified in this report can be used as input to the design of future funding proposals by IUCN.





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