

A fisherman stands on a wooden platform in a wetland at sunset. A large fishing net is stretched across the water, framing the scene. The sky is filled with colorful clouds, and the water reflects the light.

# MULTI-SECTORAL ADAPTATION ACTION PLAN FOR SIPHANDONE WETLAND (KHONG DISTRICT)

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## 1. INTRODUCTION: IMPORTANCE OF THE RESEARCH AND SCALING UP EbA

- **Significance of the Siphandone Wetland:** A crucial ecological and socio-economic resource in Laos, hosting biodiversity, supporting livelihoods, and providing ecosystem services like flood regulation, climate mitigation, and water purification.
- **Challenges:** Threats from climate change (e.g., increased temperatures, erratic rainfall, extreme weather), unsustainable practices, and policy gaps.
- **Need for Scaling Up EbA:** EbA uses natural ecosystem services to build climate resilience while supporting sustainable development. Scaling it up is vital for integrating long-term, cost-effective solutions into local and national strategies.

## 2. OBJECTIVES OF THE RESEARCH

- Develop a Multi-Sectoral Adaptation Action Plan (MSAAP) tailored for the Siphandone Wetland, specifically for Khong District.
- Enhance integration of EbA in local governance frameworks.
- Build community and institutional capacity, with a focus on gender inclusivity and equitable access to resources.
- Identify and implement practical, scalable EbA solutions.

## 3. MAIN RESULTS OR OUTCOMES: ENHANCING CLIMATE RESILIENCE THROUGH EbA IN KHONG DISTRICT

The research reveals a complex interplay of challenges, opportunities, and potential solutions for fostering climate resilience in Khong District through Ecosystem-based Adaptation (EbA). The findings are categorized as follows:

### ***3.1. Climate Impacts and Community Vulnerabilities***

The research conducted in 6 target villages (where WWF is piloting EbA approach under the funding support from the government of Australia during 2022 to 2025) in Khong District, covering 170 HHs. The research classified households into three groups based on their level of vulnerability to climate change impacts, highlighting a nuanced picture of how communities are affected:

1) Least Affected Group (Cluster 1): Comprising 24.7% of surveyed households, these communities experience minor effects such as slight temperature increases (45.2%) and limited challenges in agricultural activities (35.7%).

2) Moderately Affected Group (Cluster 2): Representing 47.6% of households, this group faces significant drought (91.4%), seasonal precipitation changes (12.3%), and reduced agricultural productivity (65.4%).

3) Most Affected Group (Cluster 3): Including 27.7% of households, this group endures severe impacts such as seasonal precipitation shifts (85.1%), reduced crop and fish yields (83%), and biodiversity loss (31.9%).

### **3.2. Livelihood Impacts and Opportunities**

The primary livelihoods in Khong District—agriculture, fisheries, livestock, and eco-tourism—are vulnerable to climate stressors, yet they offer significant opportunities for integrating EbA:

#### 1) Agriculture:

- Impacts: Reduced crop yields due to drought and erratic rainfall.
- Opportunities: Transition to climate-resilient practices such as agroforestry, which combines tree planting with crops to enhance soil fertility and water retention.

#### 2) Fisheries:

- Impacts: Declining fish stocks due to habitat degradation and unsustainable fishing practices.
- Opportunities: Sustainable aquaculture practices, including the establishment of Fish Conservation Zones (FCZs), can replenish stocks and provide alternative income.

#### 3) Livestock:

- Impacts: Increased exposure to diseases and reduced grazing land.
- Opportunities: Improved livestock management systems and integration with agroforestry practices can create resilient grazing environments.

#### 4) Eco-Tourism:

- Impacts: Disruption due to habitat loss and reduced biodiversity.
- Opportunities: Eco-tourism development based on restored wetland ecosystems can generate income while promoting conservation.

### **3.3. Successful EbA Practices Demonstrated in Target Villages**

- Wetland Restoration: Efforts to rehabilitate degraded areas in Siphandone Wetland have enhanced biodiversity and reduced flood risks.

- **Sustainable Fisheries Management:** Introduction of conservation zones has improved fish populations, directly benefiting local livelihoods.
- **Agroforestry:** Community-led planting of native tree species alongside crops has shown promise in improving soil quality and reducing vulnerability to climate impacts.
- **Livelihood Diversification:** Initiatives like agriculture activities, organic gardening, and afforestation provide alternative income streams while enhancing ecosystem services using Village Development Fund as source of micro finance mechanism.

### **3.4. Barriers to Scaling EbA**

Despite the demonstrated successes, several barriers hinder the widespread adoption of EbA:

- **Policy Gaps:** Limited incorporation of EbA into district-level adaptation plans, with a preference for infrastructure-heavy solutions.
- **Financial Constraints:** Insufficient funding for nature-based solutions compared to grey infrastructure projects.
- **Capacity Limitations:** A lack of technical skills and resources among local stakeholders to implement and sustain EbA projects.
- **Gender Inequality:** Underrepresentation of women in decision-making roles, despite their critical role in managing resources.

### **3.5. Ecosystem-Based Livelihood Strategies for Climate Resilience in Khong District**

Based on the findings, the following Ecosystem-Based Livelihood Strategies aligned with EbA principles are proposed to enhance climate resilience in Khong District:

#### **3.5.1. Action plan 1**

##### **3.5.1.1 Rice Cultivation**

**EbA Alignment:** Strengthens food security by building resilience to water variability.

Rice cultivation in Khong District focuses on introducing drought-tolerant and flood-resistant rice varieties to adapt to shifting water conditions caused by climate change. Farmers are encouraged to adopt water-saving techniques such as Alternate Wetting and Drying (AWD), which optimize irrigation efficiency and reduce water wastage. To further enhance soil health and productivity, organic farming methods, including composting, crop rotation, and biochar use, are promoted.

**Importance:** These actions mitigate the effects of water stress while maintaining ecosystem balance and improving agricultural productivity.

### *3.5.1.2. Fruit Tree and Vegetable Cultivation (including banana and bitter gourd)*

**EbA Alignment:** Diversifies crops to improve food security and resilience while reducing environmental impacts.

Fruit tree and vegetable cultivation contributes significantly to ecosystem-based adaptation by promoting agricultural diversity and reducing dependency on climate-vulnerable crops. Integrating fruit trees, such as bananas, mangoes, and citrus, with vegetable farming not only ensures year-round income but also enhances soil fertility and carbon sequestration. These practices support soil health through organic methods, including composting, crop rotation, and intercropping, which reduce the need for chemical inputs and mitigate erosion. Vegetables provide quick-growing, nutritious food sources, improving household food security, while fruit trees offer long-term economic stability through value-added products such as juices, jams, and dried fruits.

**Importance:** This integrated approach builds climate resilience by spreading risk across different crops, enhancing the capacity of farming systems to withstand extreme weather events. It also supports biodiversity, improves water retention, and contributes to carbon sequestration, aligning with EbA principles of sustainable and adaptive resource management.

### *3.5.1.3. Gardening*

**EbA Alignment:** Improves food security and promotes ecosystem health through home-based initiatives.

Gardening initiatives encourage households to adopt organic and climate-smart practices, such as composting and water-efficient irrigation, to improve soil quality and reduce resource dependency. Vulnerable families are supported with toolkits, seeds, and training to ensure successful implementation of sustainable gardening techniques.

**Importance:** By strengthening household food systems and reducing reliance on external inputs, gardening improves resilience to climate impacts and enhances community well-being.

## **3.5.2. Action plan 2: Livestock Raising**

**EbA Alignment:** Ensures sustainable livestock systems and reduces environmental stress.

Livestock raising integrates climate-resilient strategies which prevent overgrazing and maintain pasture health. Farmers are trained in organic feed usage, disease management, and biogas production through improved manure handling. Climate-resilient livestock shelters and water storage facilities are established to protect animals during extreme weather and drought conditions.

**Importance:** This approach enhances the resilience of livestock systems, reducing vulnerability to climate impacts while supporting ecosystem health and providing sustainable livelihoods.

### ***3.5.3. Action plan 3. Aquaculture (Fish and Frog Farming)***

**EbA Alignment:** Combines aquaculture with ecosystem conservation.

Fish and frog farming plays a critical role in supporting local ecosystems and livelihoods by maintaining biodiversity and contributing to sustainable food systems. The farming practices prioritize the introduction of climate-resilient species adapted to changing water conditions, reducing the risk of stock losses due to climate variability. Fish contribute to food security and provide essential nutrients for communities, while frogs help regulate pest populations and serve as bioindicators of ecosystem health, highlighting water quality and environmental conditions. Community-managed aquaculture systems are developed to integrate wetlands, preserving their ecological functions while enhancing productivity. Organic feed and sustainable pond management practices are promoted to minimize chemical runoff, maintain water quality, and protect surrounding ecosystems.

**Importance:** These measures create sustainable aquaculture systems that diversify incomes, enhance food security, protect biodiversity, and strengthen local resilience to climate change while ensuring the ecological balance of wetlands.

### ***3.5.4. Action plan 4. Fish and Frog Processing***

**EbA Alignment:** Adds value to aquaculture products while reducing environmental impact.

Fish and frog processing plays a pivotal role in maximizing the benefits of aquaculture by transforming raw products into value-added goods, thereby reducing waste and enhancing income opportunities. Fish contribute as a primary protein source for local communities, while frogs serve as a sustainable delicacy and support ecosystem health through their role in pest control and water quality maintenance. The processing activities emphasize eco-friendly techniques such as drying, smoking, fermenting, and pickling, which not only preserve product quality but also extend shelf life, reducing post-harvest losses. Cooperative processing facilities are developed to empower local communities by promoting shared resources and skills, fostering economic resilience. Branding and market linkages are established to position fish and frog products in both local and export markets, creating broader economic opportunities.

**Importance:** This approach adds significant economic value to aquaculture, minimizes environmental impacts by reducing waste, and aligns with Ecosystem-based Adaptation (EbA) principles by fostering sustainable livelihoods and promoting ecosystem stewardship.

### ***3.5.5. Action plan 5. Agroforestry***

**EbA Alignment:** Restores ecosystems while diversifying income sources and increasing carbon sequestration.

Agroforestry integrates tree planting with agricultural practices, offering high-value seedlings and training in intercropping to restore degraded lands and improve soil health. Market linkages are developed to support the sale of agroforestry products, creating economic opportunities while ensuring sustainable resource management.

**Importance:** Agroforestry not only supports livelihoods but also contributes to climate change mitigation by sequestering carbon and improving biodiversity.

### ***3.5.6. Action plan 6. Afforestation***

**EbA Alignment:** Restores Forest cover and enhances biodiversity and ecosystem services.

Community-led afforestation programs support the identification of degraded lands for restoration, train communities in tree planting techniques, and establish forest monitoring systems to ensure long-term sustainability. These efforts focus on improving biodiversity, mitigating soil erosion, and enhancing water retention in the region.

**Importance:** By increasing forest cover, these actions contribute to climate resilience, carbon sequestration, and the overall health of ecosystems.

### ***3.5.7. Action plan 7. Eco-Tourism***

**EbA Alignment:** Leverages biodiversity and conservation for sustainable livelihoods.

Eco-tourism development creates hubs that highlight restored wetlands and forests, attracting visitors while raising awareness of environmental conservation. Training local communities in sustainable tourism practices ensures alignment with conservation principles, while partnerships with travel agencies and targeted marketing campaigns generate income.

**Importance:** Eco-tourism fosters environmental stewardship: increase wetland and forest conservation areas, reduce plastic waste, increase ecosystem-based agricultural activities to serve tourism, diversifies livelihoods, and strengthens the connection between people and nature.

### **3.5.8. Action plan 8. Establish and Management of FCZs**

Conserving wetland biodiversity is a critical initial step in establishing the foundation for ecosystem-based action plans, including initiatives for fishing livelihoods, fish processing, and ecotourism in Khong District. This effort emphasizes the establishment and management of new Fish Conservation Zones (FCZs) to expand protected areas, conserve a greater number of fish species, and enhance fish production in wetlands. The focus is on strengthening the conservation and sustainable management of fish and aquatic species while raising community awareness about environmental and ecosystem protection.

The action plan incorporates capacity-building initiatives, such as training programs for local authorities and community members, to deepen their understanding of fish conservation strategies and ecosystem dynamics. Educational campaigns and workshops will showcase the benefits of FCZs, including improved biodiversity, sustainable fisheries, and healthier ecosystems. Pilot projects will be undertaken to identify, establish, and manage new FCZs, supported by robust monitoring protocols to ensure their long-term effectiveness.

Aligned with Ecosystem-based Adaptation (EbA) principles, this plan harnesses the natural functions of ecosystems to enhance resilience to climate impacts. Protecting critical habitats through FCZs not only improves biodiversity and ecosystem health but also strengthens resilience to climate variability and supports sustainable livelihoods by replenishing fish stocks and promoting responsible fishing practices.

Additionally, the plan empowers local communities by fostering active participation in conservation efforts, promoting resource stewardship, and integrating scientific knowledge with local practices. This comprehensive approach reinforces the ecological integrity of the Siphandone Wetland while contributing to socio-economic stability, aligning conservation with climate adaptation and sustainable development goals.

#### 4. COMPREHENSIVE ACTION PLAN FOR MULTI-SECTORAL ADAPTATION IN SIPHANDONE (KHONG DISTRICT)

Action plan 1	Agriculture	Description	Responsible Entities	Time frame (year)
<b>Outcome 1.1</b>	<b>Rice Cultivation</b>	<b>Enhance rice productivity and resilience to climate change</b>		<b>1 to 5 year</b>
<b>Work package 1.1</b>		<b>Introduce drought-resistant rice varieties to improve yield during water shortages.</b>	<b>PAFO, DAFO, Rice Research Center &amp; Local Agriculture and Forestry College/University</b>	
Activity 1.1.1		Conduct farmer training on selecting and cultivating drought-resistant rice seeds suitable for local conditions.		Year 1
Activity 1.1.2		Distribute drought-resistant rice seeds to target farmers in vulnerable areas.		Year 1–2
Activity 1.1.3		Monitor adoption rates and track yield improvements, providing feedback to farmers for adjustments.		Year 3–5
<b>Work package 1.2</b>		<b>Implement Alternate Wetting and Drying (AWD) techniques for water conservation (using less water)</b>	<b>PAFO &amp; DAFO</b>	<b>Short-Term (2–5 years)</b>
Activity 1.2.1		Set up demonstration plots with AWD irrigation systems to showcase water conservation benefits.		Year 2–3
Activity 1.2.2		Train local farmers on managing AWD systems effectively using step-by-step demonstrations and simple guides.		Year 3–4
Activity 1.2.3		Scale AWD techniques to other villages based on the success of demonstration plots.		Year 5
<b>Work package 1.3</b>		<b>Improve irrigation systems to ensure efficient and reliable water use in agriculture.</b>	<b>PAFO &amp; DAFO</b>	<b>Year 1-5</b>
Activity 1.3.1		Assess irrigation systems in Khong District, identifying outdated methods and key areas for improvement.		Year 1–2
Activity 1.3.2		Install small-scale water-efficient systems like drip irrigation and sprinkler setups tailored to local needs.		Year 3–5
Activity 1.3.3		Train farmers in using and maintaining these new systems, focusing on ease of operation and durability.		Year 3–5
Activity 1.3.4		Develop low-cost rainwater harvesting systems using local materials to support irrigation.		Year 3–5
<b>Work package 1.4</b>		<b>Provide farmer training on climate-smart farming techniques for sustainability and resilience.</b>	<b>PAFO, DAFO, PONRE &amp; DONRE</b>	<b>Year 1-5</b>
Activity 1.4.1		Conduct hands-on workshops on crop diversification and intercropping techniques, highlighting benefits for income and resilience.		Year 1–2
Activity 1.4.2		Demonstrate the use of locally available drought-tolerant and flood-tolerant crop varieties.		Year 2-3
Activity 1.4.3		Train farmers on low-cost soil and water conservation techniques, including mulching and contour farming.		Year 3–4
Activity 1.4.4		Establish local extension networks to continuously support farmers with guidance on climate-smart tools and practices.		Year 4–5
<b>Work package 1.5</b>		<b>Improve soil fertility through organic and sustainable practices tailored to local agricultural needs.</b>	<b>PAFO &amp; DAFO</b>	<b>Year 1-5</b>

Activity 1.5.1		Promote the use of composting pits and green manure using locally available organic materials.		Year 1–2
Activity 1.5.2		Introduce crop rotation practices with common local crops like legumes to enrich soil nitrogen.		Year 3–5
Activity 1.5.3		Provide portable soil testing kits to farmers and train them on interpreting results to improve soil health.		Year 3–5
Activity 1.5.4		Train farmers how to make and use biochar from agricultural residues to improve soil productivity.		Year 3–5
<b>Work package 1.6</b>		<b>Raise environmental awareness among farmers to promote sustainable agriculture, ecosystem conservation and including dissemination all associated legislatives.</b>	<b>PAFO&amp;DAFO, PONRE &amp; DONRE and school</b>	<b>Year 1-5</b>
Activity 1.6.1		Organize village-level awareness campaigns on the benefits of protecting natural resources and ecosystems.		Year 1-2
Activity 1.6.2		Use radio programs, leaflets, and posters in local languages to spread messages about sustainable practices.		Year 2-3
Activity 1.6.3		Incorporate environmental education into training sessions, emphasizing the role of healthy ecosystems in agriculture.		Year 3-5
<b>Outcome 1.2</b>	<b>Fruit trees and Integrated Vegetable Cultivation</b>	<b>Diversify household income and improve food security</b>	<b>PAFO, DAFO &amp; Villagers (including Women's participations)</b>	<b>1-10 years</b>
<b>Work package 1.2.1</b>		<b>Introduce diverse vegetable varieties such as tomatoes, cabbage, eggplants, spinach, water spinach, and chili peppers to boost local food production</b>		<b>1–5 years</b>
Activity 1.2.1.1		Train farmers on crop rotation techniques and composting to improve soil fertility and ensure long-term productivity.		Year 1
Activity 1.2.1.2		Establish organic vegetable demonstration farms in key villages to showcase successful farming practices and results		Year 2–3
<b>Work package 1.2.2</b>		<b>Promote organic farming practices for fruit trees (including coconut) and integrated vegetable cultivation to reduce chemical use and support ecosystem health</b>	<b>PAFO, DAFO, Agriculture College/University, PONRE, DONRE &amp; Villagers (including Women's participations)</b>	<b>Medium-Term (5–10 years)</b>
Activity 1.2.2.1		Set up local collection centers and small-scale processing facilities for fruit and vegetable products.		Year 6–7
Activity 1.2.2.2		Develop value-added products such as fruit jams, dried vegetables, and pickles to diversify income sources.		Year 8–10
<b>Work package 1.2.3</b>		<b>Train farmers on advanced techniques for cultivating fruit trees and integrating vegetables to maximize productivity</b>	<b>PAFO, DAFO &amp; Villagers (including Women's participations)</b>	<b>Year 1-5</b>
Activity 1.2.3.1		Conduct hands-on training on organic fruit tree cultivation and vegetable farming to enhance knowledge and skills.		year 1-2

Activity 1.2.3.2		Demonstrate water-efficient irrigation methods, such as drip irrigation, using low-cost and locally available materials		Year 2-3
Activity 1.2.3.3		Provide workshops on crop rotation and eco-friendly pest control methods to ensure healthy crop yields without harming the environment		Year 3-5
<b>Work Package 1.2.4</b>		<b>Raise environmental awareness to promote sustainable practices and protect ecosystems during agricultural activities, including dissemination all associated legislatives.</b>	<b>PAFO, DAFO, PONRE, DONRE, Local Authority and school.</b>	<b>Year 1-10</b>
Activity 1.2.4.1		Organize village-level campaigns highlighting the benefits of organic farming and protecting natural resources.		Year 3-10
Activity 1.2.4.2		Develop educational materials, such as posters and guides in local languages, to raise awareness about soil and water conservation.		Year 1-5
Activity 1.2.4.3		Host eco-friendly farming festivals to engage communities and celebrate sustainable practices.		Year 3-10
<b>Outcome 1.3</b>	<b>Banana</b>	<b>Increase banana production and improve yield through sustainable farming practices.</b>		Year 1-5
<b>Work package 1.3.1</b>	<b>Banana</b>	<b>Capacity-building and technical training for banana farmers to adopt sustainable practices. (villagers/people).</b>	<b>PONRE, DONRE, PAFO, DAFO, &amp; Villagers</b>	year 1-2
Activity 1.3.1.1		Conduct hands-on training sessions on sustainable banana farming techniques, such as soil management, pest control, and water efficiency.		year 1-2
Activity 1.3.1.2		Develop simple, user-friendly manuals in the local language on organic banana farming methods		year 1-2
Activity 1.3.1.3		Distribute disease-resistant, high-yield banana saplings to farming households, prioritizing vulnerable areas.		year 1-2
<b>Work package 1.3.2</b>		<b>Infrastructure improvements to support sustainable banana farming</b>	<b>PAFO, DAFO &amp; Villagers</b>	<b>year 1-3</b>
Activity 1.3.2.1		Build small-scale irrigation systems to ensure consistent water supply for banana fields, using affordable local materials.		year 1-3
Activity 1.3.2.2		Improve access roads to banana farming areas to facilitate transportation of inputs and harvested bananas.		year 1-3
Activity 1.3.2.3		Establish banana collection and storage centers with cooling facilities to reduce post-harvest losses.		year 1-3
<b>Work package 1.3.3</b>		<b>Market access and value chain development to enhance banana profitability.</b>	<b>PAFO, DAFO, POICE and DOICE, LWU Provincial and District Levels &amp; Villagers</b>	<b>year 3-5</b>
Activity 1.3.3.1		Identify new markets for banana exports, focusing on regional and international demand.		year 3-5
Activity 1.3.3.2		Train farmers in value addition, such as processing bananas into chips, dried bananas, or banana flour.		year 3-5
Activity 1.3.3.3		Organize farmer-market linkages through trade fairs and buyer-seller networking events.		year 3-5

<b>Outcome 1.4</b>	<b>Bitter gourd</b>	<b>Promote bitter gourd cultivation as an alternative income source and climate-resilient crop.</b>		<b>Year 1-5</b>
<b>Work package 1.4.1</b>		<b>Capacity-building for bitter gourd farmers to adopt organic and resilient farming techniques. (villagers/people)</b>	<b>PAFO, DAFO &amp; Villagers</b>	<b>year 1-2</b>
Activity 1.4.1.1		Train farmers in organic cultivation methods, including pest management and composting, tailored to bitter gourd.		year 1-2
Activity 1.4.1.2		Provide high-quality seeds of improved bitter gourd varieties suited for local climatic conditions.		year 1-2
Activity 1.4.1.3		Regularly monitor crop growth, provide technical support, and address challenges faced by farmers.		year 1-2
<b>Work package 1.4.2</b>		<b>Develop infrastructure and facilities to support bitter gourd farming</b>	<b>PAFO, DAFO, POICE, DOICE, LWU Provincial &amp; District Levels, and Villagers</b>	<b>year 1-3</b>
Activity 1.4.2.1		Install affordable small-scale irrigation systems for consistent water supply, especially in dry periods.		year 1-3
Activity 1.4.2.2		Upgrade farm-to-market roads to ensure smooth transport of bitter gourd crops and products.		year 1-3
Activity 1.4.2.3		Establish community farming equipment hubs where farmers can share tools and reduce individual costs.		year 1-3
<b>Work package 1.4.3</b>		<b>Market development for bitter gourd products to maximize economic returns.</b>	<b>PAFO, DAFO, POICE, DOICE, LWU Provincial &amp; District Levels, and Villagers</b>	<b>year 3-5</b>
Activity 1.4.3.1		Support processing initiatives for value-added bitter gourd products, such as tea, dried snacks, and pickles.		year 3-5
Activity 1.4.3.2		Facilitate market linkages by organizing trade fairs and connecting farmers with buyers and distributors		year 3-5
Activity 1.4.3.3		Create promotional materials highlighting the nutritional benefits of bitter gourd for local and international markets.		year 3-5
<b>Outcome 1.5</b>	<b>Gardening</b>	<b>Improve food security through sustainable gardening</b>	<b>PAFO, DAFO &amp; Villagers</b>	<b>5-10 years</b>
<b>Work package 1.5.1</b>		<b>Promote home gardening as a reliable way to enhance food security for households.</b>	<b>PAFO, DAFO &amp; Villagers</b>	<b>5-10 years</b>
Activity 1.5.1.1		Train households, especially women and vulnerable groups, on climate-smart gardening techniques, including crop rotation and integrated pest management.		5-10 years
Activity 1.5.1.2		Distribute seedlings of fast-growing and nutrient-rich vegetables, along with basic gardening toolkits, to vulnerable families.		5-10 years
<b>Work package 1.5.2</b>		<b>Develop community gardens to promote collective farming and resource sharing.</b>	<b>PAFO, DAFO &amp; Villagers</b>	<b>5-10 years</b>
Activity 1.5.2.1		Establish community gardens in schools, public spaces, and unused lands to support shared food production and learning opportunities.		5-10 years
<b>Work package 1.5.3</b>		<b>Build capacity for sustainable gardening practices to enhance productivity and ecosystem health.</b>	<b>PAFO, DAFO &amp; Villagers</b>	<b>5-10 years</b>
Activity 1.5.3.1		Provide hands-on training to farmers and households on organic gardening methods, including soil mulching and the use of natural fertilizers.		5-10 years
Activity 1.5.3.2		Introduce low-cost, water-saving irrigation systems, such as drip or bottle irrigation, tailored for small gardens.		5-10 years
Activity 1.5.3.3		Conduct workshops on composting and soil health management to maximize productivity and minimize chemical use.		5-10 years
Work Package 1.5.4		<b>Raise environmental awareness about the role of gardening in ecosystem preservation and climate resilience including dissemination all associated legislatives.</b>	<b>PAFO, DAFO, PONRE, DONRE, Advocacy &amp; Information Units, Village Authorities, Schools and Villagers</b>	5-10 years

Activity 1.5.4.1		Organize campaigns to highlight the environmental benefits of sustainable gardening, such as biodiversity preservation and soil health improvement.		5-10 years
Activity 1.5.4.2		Create educational materials, including posters and videos in the local language, to encourage sustainable gardening practices.		5-10 years
Activity 1.5.4.3		Host gardening competitions and festivals to engage communities and celebrate sustainable practices.		5-10 years
<b>Action plan 2</b>	<b>Livestock Raising</b>	<b>Description</b>	<b>Responsible Entities</b>	<b>Time frame (year)</b>
<b>Outcome 2</b>	<b>Livestock Raising</b>	<b>Enhance Livestock Resilience to Climate Impacts – Strengthen livestock health, disease management systems, and farmers are partly self-sufficient in livestock inputs (feed, chicks...) to reduce disease risks, investment risks and promote sustainable practices (reduce soil, water and air pollution) with an emphasis on native chicken raising</b>	<b>PAFO &amp; DAFO</b>	
<b>Work package 2.1</b>		<b>Improve livestock health and control diseases to ensure resilience against climate-induced risks.</b>	<b>PAFO &amp; DAFO</b>	<b>Year 1-5</b>
Activity 2.1.1		Conduct vaccination programs to prevent diseases in livestock		Year 1–2
Activity 2.1.2		Train farmers on feeding techniques for livestock care tailored to local conditions.		Year 1-3
Activity 2.1.3		Establish accessible community-based veterinary services to ensure timely veterinary interventions.		Year 4–5
<b>Work package 2.2</b>		<b>Promote sustainable livestock management systems to enhance productivity and reduce environmental stress.</b>	<b>PAFO &amp; DAFO</b>	<b>Year 1-5</b>
Activity 2.2.1		Introduce climate-resilient livestock breeds		Year 2-3
Activity 2.2.2		Train farmers on manure management for organic fertilizer production and biogas systems to improve sustainability.		Year 3-4
<b>Work package 2.3</b>		<b>Build climate-resilient livestock facilities to mitigate the effects of extreme weather</b>	<b>PAFO, DAFO, PONRE &amp; DONRE</b>	<b>Year 1-5</b>
Activity 2.3.1		Construct heat-resistant and flood-proof housing for livestock.		Year 1–3
Activity 2.3.2		Develop water storage systems, such as small reservoirs or tanks, to secure livestock water needs during droughts.		Year 2–4
Activity 2.3.3		Establish early-warning systems for extreme weather events that could impact livestock health and productivity.		Year 4–5
<b>Work Package 2.4</b>		<b>Promote native chicken raising as a sustainable and climate-resilient livelihood option.</b>	<b>PAFO &amp; DAFO</b>	<b>Year 1-5</b>
Activity 2.4.1		Distribute disease-resistant native chicken breeds and provide starter kits to households.		Year 1–3
Activity 2.4.2		Train farmers in low-cost feeding practices using locally available resources, such as agricultural by-products.		Year 2–4

Activity 2.4.3		Establish shared community chicken coops to reduce costs and increase accessibility for vulnerable families.		Year 4–5
<b>Work Package 2.5</b>		<b>Raise environmental awareness about sustainable livestock raising and its role in protecting ecosystems. Including the advocacy and dissemination of Lao associated legislatives.</b>	<b>PAFO, DAFO, PONRE, DONRE and school</b>	<b>Year 1-5</b>
Activity 2.5.1		Conduct village-level campaigns on the environmental benefits of manure recycling, and native chicken farming.		Year 1–2
Activity 2.5.2		Develop simple educational materials in local languages, highlighting the importance of climate-resilient livestock practices.		Year 2–3
Activity 2.5.3		Organize livestock farming festivals to celebrate and share sustainable practices among communities.		Year 3–5
<b>Action plan 3</b>	<b>Aquaculture (Fish and Frog Farming)</b>	<b>Description</b>	<b>Responsible Entities</b>	<b>Time frame (year)</b>
<b>Outcome 3</b>	<b>Aquaculture (Fish and Frog Farming)</b>	Combines aquaculture with ecosystem conservation		
<b>Work package 3.1</b>		<b>Introduce climate-resilient fish and frog species to adapt to changing water and environmental conditions.</b>	<b>PAFO, DAFO &amp; Agriculture College/University</b>	<b>Short-Term (1–5 years)</b>
Activity 3.1.1		Conduct research and trials to identify fish and frog species resilient to local climatic conditions and water variations.		Year 1–2
Activity 3.1.2		Train farmers on pond management techniques, such as maintaining water quality and creating suitable habitats for both fish and frogs.		Year 2–3
Activity 3.1.3		Promote organic feed for fish and frogs, using locally available agricultural by-products to reduce dependency on industrial feed.		Year 4–5
<b>Work package 3.2</b>		<b>Expand sustainable aquaculture practices for fish and frog farming.</b>	<b>PAFO, DAFO</b>	<b>Medium-Term (5–10 years)</b>
Activity 3.2.1		Establish community-managed fish and frog farms, integrating wetland conservation with sustainable aquaculture practices.		Year 6–7
Activity 3.2.2		Introduce sustainable feeding, breeding, and spawning techniques tailored for fish and frog species.		Year 7–9
Activity 3.2.3		Monitor the health of fish and frogs, and promote disease management using eco-friendly solutions.		Year 9–10
<b>Work package 3.3</b>		<b>Promote eco-friendly fish and frog processing, value addition, and market development.</b>	<b>PAFO, DAFO, POICE, DOICE, Provincial Health Department &amp; District Health Office, PRONRE, DONRE, LWU Provincial &amp; District Level.</b>	<b>Year 5-10</b>
Activity 3.3.1		Train communities in eco-friendly processing methods, such as drying, fermenting, and pickling, for fish and frog products.		Year 5-7
Activity 3.3.2		Develop value-added products, such as fish fillets, frog meat snacks, and dried or smoked products, for local and export markets.		Year 7-8
Activity 3.3.3		Create market access pathways by connecting farmers with buyers and promoting sustainable fish and frog products in trade fairs.		Year 8-10

<b>Work Package 3.4</b>		<b>Enhance environmental awareness and community participation in sustainable aquaculture, including all associated documents and legislatives</b>	<b>PAFO, DAFO, and Villagers</b>	<b>Year 5-10</b>
Activity 3.4.1		Organize educational campaigns to promote the ecological benefits of fish and frog farming integrated with wetland conservation.		Year 5-10
Activity 3.4.2		Develop educational materials, such as booklets and videos, explaining the role of aquaculture in ecosystem preservation.		Year 5-10
Activity 3.4.3		Host community workshops and aquaculture fairs to share best practices and foster collaboration.		Year 5-10
<b>Action plan 4</b>	<b>Fish &amp; Frog Processing, and other aquatic species</b>	<b>Description</b>	<b>Responsible Entities</b>	<b>Time frame (year)</b>
<b>Outcome 4</b>	<b>Fish &amp; Frog Processing, and other aquatic species</b>	<b>Increase Value-Added and Value Chains for Fish and Frog Products – Enhance community skills, improve product quality, and establish market access to maximize the economic benefits of fish and frog processing</b>	<b>PAFO, DAFO, POICE, DOICE, Dept. of Health, PONRE, DONRE, LWU Provincial and District Level</b>	<b>5</b>
<b>Work package 4.1</b>		<b>Develop fish and frog processing skills to improve community livelihoods and promote eco-friendly methods.</b>		<b>Year 1-2</b>
Activity 4.1.1		Train local communities on drying, smoking, fermenting, and pickling techniques for fish and frogs to increase shelf life and quality		Year 1-4
Activity 4.1.2		Introduce hygienic and eco-friendly processing methods to minimize contamination and environmental impact.		Year 3-5
Activity 4.1.3		Establish small-scale cooperative facilities for fish and frog processing to share resources and expertise.		Year 5
<b>Work package 4.2</b>		<b>Improve product quality and safety standards for processed fish and frog products.</b>	<b>PAFO, DAFO, POICE, DOICE, Dept. of Health, PONRE, DONRE, LWU Provincial and District Level</b>	<b>Year 1-5</b>
Activity 4.2.1		Conduct training on food safety, hygiene, and quality control for fish and frog processing units.		Year 1–2
Activity 4.2.2		Certify value-added fish and frog products with quality labels to build consumer trust and improve marketability.		Year 2–3
Activity 4.2.3		Develop eco-friendly packaging and attractive branding for fish and frog products to appeal to local and international markets.		Year 4–5
<b>Work package 4.3</b>		<b>Market development for value-added fish and frog products to enhance economic opportunities.</b>	<b>PAFO, DAFO, POICE, DOICE, Dept. of Health, PONRE, DONRE, LWU Provincial and District Level</b>	<b>Year 1-5</b>
Activity 4.3.1		Facilitate market linkages by connecting fish and frog processors with buyers and retailers.		Year 1–2
Activity 4.3.2		Organize trade fairs and exhibitions to showcase innovative fish and frog products and build market networks.		Year 2–4
Activity 4.3.3		Explore export opportunities by meeting international standards and promoting fish and frog products in regional markets.		Year 4–5
<b>Work Package 4.4</b>		<b>Raise environmental awareness about sustainable fish and frog processing practices, including dissemination of all associated legislatives.</b>	<b>PAFO, DAFO, POICE, DOICE, Dept. of Health, PONRE, DONRE, LWU Provincial and District Level</b>	<b>Year 1–5</b>
Activity 4.4.1		Conduct community workshops on minimizing waste and using eco-friendly practices in fish and frog processing.		Year 1–2
Activity 4.4.2		Develop educational materials in local languages to promote sustainable practices in processing activities.		Year 2–4

Activity 4.4.3		Organize environmental awareness campaigns, emphasizing the link between eco-friendly processing and healthy ecosystems.		Year 4–5
<b>Action plan 5</b>	<b>Agroforestry</b>	<b>Description</b>	<b>Responsible Entities</b>	<b>Time frame (year)</b>
<b>Outcome 5</b>	<b>Agroforestry</b>	<b>Promote Agroforestry for Income and Land Restoration – Enhance community livelihoods through integrated agroforestry systems while restoring degraded lands and improving ecosystem health.</b>		<b>1–10 years</b>
<b>Work package 5.1</b>		<b>Implement tree planting and agroforestry programs to support land restoration and diversified incomes.</b>	<b>PAFO &amp; DAFO</b>	<b>Short-Term (1–5 years)</b>
Activity 5.1.1		Train farmers in intercropping methods, combining trees with crops to optimize land use and improve productivity.		Year 1–2
Activity 5.1.2		Distribute high-value seedlings, such as fruit, timber, and nitrogen-fixing species, tailored to local conditions.		Year 2–3
<b>Work package 5.2</b>		<b>Develop agroforestry groups to encourage community collaboration and shared resources.</b>	<b>PAFO, DAFO, Villagers and Schools</b>	<b>Medium-Term (5–10 years)</b>
Activity 5.2.1		Create community agroforestry plans, identifying suitable areas and prioritizing degraded lands for restoration.		Year 6–8
Activity 5.2.2		Organize groups within communities to share agroforestry resources, such as tools, seedlings, and labor.		Year 6–8
Activity 5.2.3		Provide financial and technical support to agroforestry groups to ensure successful implementation and sustainability.		Year 7–10
<b>Work package 5.3</b>		<b>Promote sustainable agroforestry value chains to enhance income opportunities, including dissemination of all associated legislatives.</b>	<b>PAFO, DAFO, POICE, DOICE, LWU Provincial and District Level &amp; Villagers</b>	<b>Medium-Term (5–10 years)</b>
Activity 5.3.1		Train farmers (villagers) in post-harvest management for agroforestry products, such as drying, storage, and processing.		Year 6–8
Activity 5.3.2		Develop market linkages for agroforestry products, including fruits, nuts, timber, and medicinal plants.		Year 6–8
Activity 5.3.3		Facilitate the registration and certification of agroforestry products to access premium markets.		Year 7–10
<b>Work Package 5.4</b>		<b>Raise environmental awareness to promote agroforestry as a sustainable solution for income and ecosystem restoration.</b>	<b>PAFO, DAFO, PONRE, DONRE, LWU Provincial and District Level &amp; Villagers</b>	<b>Medium-Term (5–10 years)</b>
Activity 5.4.1		Conduct community workshops on the environmental benefits of agroforestry, including carbon sequestration and biodiversity restoration.		Year 6–8
Activity 5.4.2		Develop educational materials in local languages to highlight agroforestry's role in improving livelihoods and ecosystems.		Year 6–8

Activity 5.4.3		Organize agroforestry festivals to celebrate successful projects and share best practices among communities.		Year 7–10
<b>Action plan 6</b>	<b>Afforestation</b>	<b>Description</b>	<b>Responsible Entities</b>	<b>Time frame (year)</b>
<b>Outcome 6</b>	<b>Afforestation</b>	<b>Enhance Forest Cover through Tree Planting and Land Restoration – Strengthen Forest ecosystems by increasing tree cover, restoring degraded lands, and promoting sustainable forestry to mitigate climate change and support livelihoods.</b>	<b>PAFO, DAFO, Communities and Women’s Group</b>	<b>Year 1-10</b>
<b>Work package 6.1</b>		<b>Plant and nurture trees to increase green cover and improve ecosystem services in degraded and underutilized areas.</b>	<b>PAFO, DAFO, Communities and Women’s Group</b>	<b>year 1-5</b>
Activity 6.1.1		Identify suitable sites for afforestation, prioritizing degraded lands and areas with high potential for ecosystem restoration.	Forestry Office, Agriculture Extension Services	year 1-5
Activity 6.1.2		Procure and distribute native tree saplings, including timber and non-timber species, to maximize ecological and economic benefits.	Agriculture Department, Forestry Office, NGOs	year 1-5
Activity 6.1.3		Train local communities and women's groups in effective tree planting, care, and monitoring techniques.	Forestry Office, Women's Groups	year 1-5
<b>Work package 6.2</b>		<b>Rehabilitate degraded areas to restore biodiversity and rebalance forest ecosystems.</b>	<b>PAFO, DAFO, Communities and Women’s Group</b>	<b>year 5-10</b>
Activity 6.2.1		Assess forest degradation levels and develop tailored restoration plans for affected areas.		year 5-10
Activity 6.2.2		Establish community-based forest monitoring systems to ensure sustainability and prevent further degradation.		year 5-10
Activity 6.2.3		Implement sustainable forestry practices, including selective harvesting and forest conservation agreements with local stakeholders.		year 5-10
<b>Work Package 6.3</b>		<b>Promote environmental awareness to support afforestation and sustainable forestry practices, including dissemination of all associated legislatives.</b>	<b>PAFO, DAFO, PONRE, DONRE, LWU Provincial and District Level &amp; Villagers</b>	<b>year 5-10</b>
Activity 6.3.1		Organize educational campaigns highlighting the importance of forests in climate mitigation, water conservation, and livelihoods.		year 5-10
Activity 6.3.2		Create community events, such as tree-planting drives and forest conservation festivals, to engage local participation.		year 5-10
Activity 6.3.3		Develop materials in local languages, such as brochures and posters, emphasizing the long-term benefits of afforestation.		year 5-10

Activity 6.3.4		Provide training for village authorities to become well-versed in environmental and ecosystem conservation, gender issues, and legal knowledge. These trainees will be respected figures in the village, such as the head of village women's union, village chief, deputy village chief, or youth and village old age authority. They will play a crucial role in disseminating knowledge about the environment and ecosystem conservation. Each village will have at least two trained individuals, one male and one female, to ensure balanced representation		year 5-10
<b>Action plan 7</b>	<b>Eco-Tourism</b>	<b>Description</b>	<b>Responsible Entities</b>	<b>Time frame (year)</b>
<b>Outcome 7</b>	<b>Eco-Tourism</b>	<b>Develop Eco-Tourism for Sustainable Livelihoods – Promote eco-tourism by leveraging the district's natural and cultural assets to create economic opportunities while preserving the environment and strengthening community participation.</b>	<b>Public Work &amp; Transportation; Information, Culture &amp; Tourism; Natural Resources &amp; Environment, Agriculture &amp; Forestry Provincial and District Level.</b>	<b>10 years</b>
<b>Work package 7.1</b>		<b>Develop eco-tourism infrastructure to support environmentally friendly tourism activities.</b>	<b>Public Work &amp; Transportation; Information, Culture &amp; Tourism; PAFO, DAFO, PONRE, DONRE.</b>	<b>year 1-5</b>
Activity 7.1.1		Identify and map potential eco-tourism sites, including wetlands, forests, and culturally significant areas.		year 1-5
Activity 7.1.2		Build eco-friendly infrastructure, such as walking trails, observation decks, visitor centers, and waste management facilities, using sustainable materials.		year 1-5
Activity 7.1.3		Install informative signage, guideposts, and educational materials to promote conservation awareness and cultural heritage at eco-tourism sites.		year 1-5
<b>Work package 7.2</b>		<b>Build capacity for eco-tourism operators to deliver high-quality and sustainable tourism experiences.</b>	<b>Public Work &amp; Transportation; Information, Culture &amp; Tourism; Natural Resources &amp; Environment, Agriculture &amp; Forestry Provincial and District Levels; and Local Tourism Operators</b>	<b>Year 5-10</b>
Activity 7.2.1		Train tour operators and guides on conservation principles, eco-tourism standards, and interpreting natural and cultural assets.		year 5-10
Activity 7.2.2		Provide workshops for local operators on community engagement, customer service, and environmental awareness to ensure sustainable tourism practices.		year 5-10
Activity 7.2.3		Certify eco-tourism operators to meet national and international standards, enhancing credibility and quality.		year 5-10
Activity 7.2.4		Conduct ongoing environmental awareness programs for eco-tourism stakeholders, including operators, communities, and visitors.		Year 1-10
Activity 7.2.5		Create interactive sessions and guided tours for tourists to educate them on conservation efforts, biodiversity, and the ecological significance of visited areas.		
<b>Work package 7.3</b>		<b>Promote eco-tourism marketing to attract both local and international tourists and boost economic impact.</b>	<b>Information, Culture &amp; Tourism; Natural Resources &amp; Environment, Agriculture &amp; Forestry Provincial and District Levels; and Local Tourism Operators.</b>	<b>year 5-10</b>
Activity 7.3.1		Launch innovative marketing campaigns, leveraging digital platforms, brochures, and local media to highlight Khong District's unique eco-tourism attractions.		Year 5-10
Activity 7.3.2		Facilitate partnerships with travel agencies, tourism operators, hotels, and homestays to create integrated tourism packages.		year 5-10
Activity 7.3.3		Establish local eco-tourism groups to coordinate efforts, promote sites, and enhance community involvement in tourism activities.		year 5-10

Action plan 8	Establish FCZs and Management	Description	Responsible Entities	Time frame (year)
Outcome 8	Establish FCZs and Management	Enhancing capacity on management and conservation of fish and aquatic animal species and awareness of environmental and ecosystem protection		year 1-10
<b>Work package 8.1</b>		<b>Conduct training and workshops for fish and aquatic species conservation and ecosystem knowledge.</b>	<b>PAFO, DAFO, PONRE, DONRE, Information, Culture &amp; Tourism; Local Tourism Operators</b>	<b>year 1-10</b>
Activity 8.1.1		Organize training programs for local authorities on fish species conservation and fishery law.		year 1-5
Activity 8.1.2		Host community workshops, launch social media campaigns on ecosystem protection and the benefits of FCZs and promoting the importance of ecosystem protection: Design and distribute posters and brochures on ecosystem and biodiversity conservation.		year 1-5
Activity 8.1.3		Conduct community-based awareness-raising campaigns, including participatory activities. Develop and distribute educational materials on conservation practices.		year 5-10
Activity 8.1.4		Hold stakeholder dialogues and forums to discuss environmental protection strategies. Produce radio and TV programs on the importance of aquatic conservation.		Year 1-10
<b>Work package 8.2</b>		<b>Develop educational in school targeting the young generation to environmental Awareness Raising for Ecosystem and Biodiversity Protection</b>	<b>Information, Culture &amp; Tourism; LWU Provincial and District Levels; Local Tourism Operators</b>	<b>Year 1-10</b>
Activity 8.2.1		Launch social media in school to promoting the importance of ecosystem protection: Design and distribute posters and brochures on ecosystem and biodiversity conservation.		year 5-10
Activity 8.2.2		Collaborate with schools to include conservation topics in the school activity.		year 5-10
Activity 8.2.3		Organize school events and exhibitions showcasing sustainable practices.		year 5-10
Activity 8.2.4		Engage local youth groups in conservation advocacy activities.		Year 1-10
<b>Work package 8.3</b>		<b>Establish, manage and monitor Fish Conservation Zones (FCZs)</b>	<b>PAFO, DAFO, PONRE, DONRE</b>	<b>year 5-10</b>
Activity 8.3.1		Identify potential sites for establishing FCZs in consultation with local stakeholders.		Year 5-10
Activity 8.3.2		Develop a management regulation for selected FCZs, including monitoring protocols.		year 5-10
Activity 8.3.3		Conduct periodic monitoring and evaluations of pilot FCZ projects and provide recommendation for improvement and document lessons learned (this include new and old FCZs)		year 5-10

## 5. INDICATOR FRAMEWORK: COMPREHENSIVE ACTION PLAN FOR MULTI-SECTORAL ADAPTATION IN SIPHANDONE WETLAND, KHONG DISTRICT

Indicator Framework	Component	Description	Indicator for PEOPLE	Indicator for NATURE	Indicator for CLIMATE	How to measure
Outcome 1	Agriculture					

Outcome 1.1	Rice Cultivation	Enhance rice productivity and resilience to climate impacts.	Number of farmers trained and using drought-tolerant rice.	Hectares of rice fields using eco-friendly farming methods.	Reduction in irrigation water usage per hectare of rice fields.	Farmer surveys, field visits, and irrigation records.
Outcome 1.2	Fruit tree and Vegetable Cultivation	Diversify crops and promote organic farming.	Percentage of households practicing organic farming of vegetables and fruit trees.	Reduction in chemical pesticide use, measured in cultivated lands.	Improved crop resilience to extreme weather, measured by stable yields.	Household surveys, pesticide usage reports, and yield comparisons
Outcome 1.3	Banana Cultivation	Increase banana production through sustainable practices.	Number of farmers adopting organic and climate-smart banana farming techniques.	Reduction in chemical pesticide use in banana farming.	Increase in banana yield during extreme weather seasons (e.g., count banana bunches before and after interventions)	Pesticide usage logs, yield monitoring, and farmer reports.
Outcome 1.4	Bitter Gourd Farming	Promote bitter gourd farming for resilience and markets	Number of farmers cultivating bitter gourd and selling in improved markets.	Area of land under bitter gourd farming and improvement in soil health	Increase in household income from bitter gourd sales. Reduction in crop losses due to pests or drought.	Income tracking, soil testing, and farmer focus group discussions.
Outcome 1.5	Gardening	Improve food security through home gardening.	Number of households adopting home gardening and using organic practices.	Improvement in soil quality and reduction in synthetic fertilizers used.	Increase in food harvested during dry seasons and improved food security during extreme conditions.	Soil sampling, household food production logs, and community interviews.
Outcome 2	Livestock Raising	Increase livestock resilience to climate impacts.	Number of farmers adopting resilient livestock systems, including native chicken raising.	Improvement in livestock health (e.g., fewer disease outbreak, environmental pollution from livestock waste).	Reduction in livestock mortality rates during droughts or extreme weather events and Reduction of odor pollution from livestock waster	Livestock health records, farmer surveys, and mortality tracking reports.
Outcome 3	Aquaculture (Fish and Frog Farming)	Develop sustainable fish and frog farming practices.	Number of fish and frog farmers adopting organic and water-efficient farming techniques and HHs with increased income derived from fish and frog farming.	Improved water quality in fish and frog ponds, measured by reduced chemical runoff.	Reduced water usage per fish and frog farming cycle.	Water quality testing, farmer surveys, and pond usage logs.
Outcome 4	Fish and Frog Processing	Enhance income through value-added processing.	Number of individuals trained in fish and frog processing techniques.	% of value-added products derived from sustainable or renewable sources (link to farmed fish and frog).	Increased incomes for processors, even during climate events like floods or droughts.	Training attendance logs, post-harvest loss assessments, and income tracking during climate events.

Outcome 5	Agroforestry	Promote tree planting and land restoration.	Number of households participating in agroforestry programs.	Number of trees planted and hectares restored under agroforestry.	Use satellite imagery and other remote sensing data to monitor forest cover and estimate CO2 stored). Reduction in soil erosion and nutrient loss.	Tree planting records, remote sensing for land cover changes, and soil testing for erosion rates.
Outcome 6	Afforestation	Restore degraded land through reforestation.	Number of communities engaged in afforestation and tree planting.	Area of land reforested and improvement in forest cover, measured through remote sensing.	Carbon stored (e.g., calculate carbon stored in trees). Reduction in climate-related heat and flood impacts, measured through water levels and temperature changes.	Community engagement logs, satellite imagery, carbon estimation tools, and flood/temperature data from local weather stations.
Outcome 7	Eco-Tourism	Restore degraded land through reforestation.	Number of communities engaged in afforestation and tree planting.	Area of land reforested and improvement in forest cover, measured through remote sensing.	Carbon stored (e.g., calculate carbon stored in trees). Reduction in climate-related heat and flood impacts, measured through water levels and temperature changes.	Community engagement logs, satellite imagery, carbon estimation tools, and flood/temperature data from local weather stations.
Outcome 8	Establishing FCZs and management	Enhancing capacity for sustainable fishery management and ecosystem protection through the creation of Fish Conservation Zones (FCZs) and raising awareness among communities and the younger generation	Number of local people trained on FCZ management and Level of participation in conservation activities. Number of students trained environmental protection knowledge and Biodiversity protection knowledge	Number of new or restored FCZs and Improved biodiversity in FCZ areas (e.g., species count, aquatic health).	Improved resilience of fishery resources to climate variability (e.g., fish population stability).	Conduct surveys and training records to track participation. - Monitor biodiversity using ecological surveys. - Use long-term species of fish and ecosystem monitoring data to assess climate resilience

## 6. CORE INDICATOR

Key Component	Description	Indicator for PEOPLE	Indicator for NATURE	Indicator for CLIMATE	How to measure methodology
1. Vulnerability Assessment	Find communities and ecosystems at high risk from climate change.	Number of villages identified as flood/drought risks.	Number of critical ecosystems (wetlands/forests) mapped as vulnerable to climate hazards.	Frequency and intensity of extreme weather events tracked yearly (floods, droughts).	Community surveys, GIS mapping for high-risk zones, and climate event reports. Also, the early warning system regarding the meteorology for

					regularly checking and monitoring
2. Ecosystem Restoration	Restore degraded ecosystems to enhance resilience and services.	Increased food security: Restoration can enhance agricultural productivity, improve soil fertility, and increase access to food sources.	Area of wetlands, forests, or degraded lands restored.	Amount of CO2 absorbed by restored ecosystems (measured in tonnes). (Use tools like GPS or satellite mapping to calculate the size of the restored land).	Participation logs, field assessments, and carbon storage tools.
3. Climate-Smart Agriculture	Use better farming practices to grow more food productions with fewer resources.	Number of farmers adopting climate-smart agricultural practices or soil conservation techniques that reduce investment costs, enhance product quality, and decrease reliance on chemical fertilizers.	Farmland practicing improved soil and water management methods.	Reduction in agricultural water usage and crop losses due to climate variability.	Farmer surveys, soil quality testing, and water usage monitoring and following the schedule.
4. Water Resource Management	Ensure clean, reliable water supply despite droughts or floods.	Households with year-round access to clean water.	Watersheds showing improved health and flow indicators.	Improvement in water availability during dry months and drought periods.	Household surveys, watershed monitoring, and water flow and quality of water tracking.
5. Livelihood Diversification	Help families earn more money with eco-friendly jobs.	Households adopting new income streams aligned with ecosystem conservation.	Reduced dependency on overexploited resources like forests or rivers.	Reduction in reliance on climate-vulnerable sectors (e.g., rainfed farming).	Household income surveys, resource dependency tracking, and diversification assessments.
6. Disaster Risk Reduction	Use ecosystems like wetlands to protect people from floods and droughts.	Lives and assets protected from climate-related hazards.	Wetlands and forests acting as protective buffers against climate hazards	Reduction in flood or drought intensity and duration.	Hazard maps, ecosystem monitoring, and hydrological data from local weather services.
7. Biodiversity Conservation & FCZ	Protect animals, plants, their habitats, and the environment they live in to ensure ecological balance and sustainability.	Community groups actively monitoring and supporting FCZ and biodiversity conservation.	Increase in native species populations (including fish) in key ecosystems.	Role of biodiversity in regulating climate (e.g., carbon storage and water cycles).	Conduct biodiversity surveys and habitat quality assessments. - Maintain community monitoring logs. - Evaluate ecological changes and climate regulation metrics (e.g., carbon storage.)
8. Eco-Tourism Development	Promote eco-tourism to create jobs and protect the environment.	Tourists visiting eco-tourism sites yearly.	Eco-tourism supporting conservation of wetlands and forests.	Income generated from eco-tourism during varying climate conditions.	Tourism data, site reports, and eco-tourism income tracking, and monitoring the waste management.

9. Education and Awareness	Train people on EbA actions and encourage support for conservation.	Percentage of the population trained on EbA practices.	Communities supporting conservation programs and adopting EbA strategies.	Climate adaptation included in community plans and activities.	Training attendance, community adoption reports, and integration into local planning.
10. Policy Integration	Align local and national policies with EbA principles for sustainability.	Policies supporting EbA approaches.	Ecosystem protection goals formalized in local plans and policies.	Rules mitigating climate risks implemented (e.g., water use, land management).	Policy reviews, stakeholder consultations, and integration monitoring.
11. Economic Resilience	Build stable incomes and reduce economic losses from climate events.	Income stability for households practicing EbA-based livelihoods.	Reduced economic losses due to extreme weather events.	Stability of ecosystem-based livelihoods despite climate variability.	Income tracking, economic loss data, and surveys of households adopting EbA practices.

**Endorsed by:**

**District governor of Khong.**

ໂຄງການ ສົ່ງເສີມການຄຸ້ມຄອງບໍລິຫານຊັບພະຍາກອນສັດນໍ້າໂດຍຜ່ານ  
ການຄຸ້ມຄອງ,ການອະນຸລັກແບບມີສ່ວນຮ່ວມ ແລະ ການຊຸກຍູ້ສົ່ງເສີມ  
ການດຳລົງຊີວິດທີ່ປັບໂຕຕໍ່ສະພາບດິນຟ້າອາກາດ ໃນ ສປປ ລາວ  
(ສະເພາະແຂວງ ຈຳປາສັກ)

ໃຫ້ທຶນສະໜັບສະໜູນໂດຍ:



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the German Bundestag