



GREEN  
CLIMATE  
FUND



UNEP



UN-HABITAT

## Completion Report

### *“Technical and institutional capacity building interventions for the reduction of climate change induced flooding”*

Under the “Building Resilience of Urban Populations with Ecosystem-Based Solutions in Lao PDR” project

**Project Duration:** March 2022 - June 2024

**Budget:** 223,800 USD

**Execution Agency:** UN-Habitat

30 Jun 2024



## Contents

List of Abbreviations .....	i
Executive Summary:.....	iii
I. Project Background .....	1
II. Project Objectives .....	2
III. Key Stakeholders .....	3
IV. Methodology:.....	3
V. Key Deliverables and Summary of Project Activities .....	4
1. Training Needs Assessment (TNA):.....	4
2. Technical training for decision makers and technical officials in four target cities:.....	4
3. Refresher training.....	6
4. Knowledge exchange visit.....	6
5. Project closure meeting .....	7
VI. Challenges .....	7
VII. Lessons Learned.....	8
VIII. Recommendation.....	8
IX. Conclusion.....	9
Annexes:.....	10

## List of Abbreviations

DAFO	District Agricultural and Forestry Office
DCC	Department of Climate Change
DLWU	District Lao Women’s Union
DONRE	District Office for Natural Resources and Environment
EbA	Ecosystem-based Adaptations
EbS	Ecosystem-based Solutions
GCF	Green Climate Fund
MoF	Ministry of Finance
MONRE	Ministry of Natural Resources and Environment
NbS	Nature-based Solutions
PAFO	Provincial Agriculture and Forestry Office
PDPWT	Provincial Department of Public Works and Transport
PLWU	Provincial Lao Women’s Union
PONRE	Provincial Office of Natural Resources and Environment
PPI	Provincial Office of Planning and Investment
TNA	Training Needs Assessment
UNEP	United Nations Environment Programme
UN-Habitat	United Nations Human Settlements Programme
VA	Vulnerability Assessment

## **Executive Summary:**

The project aimed to enhance the resilience of urban populations in Lao PDR through the implementation of ecosystem-based solutions (EbS). Covering four provincial capitals (Vientiane, Paksan, Savannakhet, and Pakse), the project focused on shifting flood management approaches from hard infrastructure to integrated, ecosystem-based strategies. The project successfully built institutional capacity and increased climate change awareness through various approaches, starting with designing appropriate training workshops and materials, providing technical and refresher training, and facilitating knowledge exchange visits to learn from successful EbA projects.

## I. Project Background

The project “Building Resilience of Urban Populations with Ecosystem-based Solutions in Lao PDR” was approved by the Green Climate Fund Board in November 2019 with a GCF grant of US\$ 10 million. The project will be implemented across five years, covering four provincial capitals in Lao PDR, including Vientiane Capital, Paksan, Savannakhet, and Pakse. The project is executed by the Ministry of Finance (MoF) and the Ministry of Natural Resources and Environment (MONRE) with the oversight of the United Nations Environment Programme (UNEP).

Overall, the project interventions aim to shift the paradigm of urban flood management in Laos from a limited, hard infrastructure approach towards an integrated approach that enhances climate resilience. This will be achieved by mainstreaming integrated flood management strategies into planning frameworks and implementing urban ecosystem-based solutions (EbS) to decrease climate-induced flooding. The project is implemented in four cities that have been shown to be the most vulnerable to climate change through climate risk modeling and consultations with relevant planning institutions in Laos. Project interventions directly benefit 74,600 people and restore 1,500 ha of urban wetland and stream ecosystems.

Climate change-induced floods is a significant threat to urban development in Laos. Enhancing flood resilience through EbS in Laos requires a comprehensive, integrated approach to flood management that includes effective urban planning and inter-sectorial coordination. However, cities are not currently adopting the aforementioned approach due to capacity barriers, such as the limited knowledge and awareness of urban EbS among the government, private sector, and communities.

In this context, UNEP has requested UN-Habitat to provide support to overcome the issues arising from limited technical capacity and knowledge and help reduce the flood vulnerability of urban communities. Based on its extensive climate change-related capacity-building experience, UN-Habitat is engaging in the execution of Activity 1.1.1 to build the capacity of national and local representatives for using urban EbA to manage climate change-induced flooding. This task will contribute to addressing the barriers by building the capacity of relevant government departments, creating and sharing knowledge of urban EbS in Laos, and engaging with communities and the private sector. Thus, the intervention is key for the achievement of Output 1.1: Strengthening of institutional capacity for integrated flood risk management and implementation of urban ecosystems-based adaptation and males and females with increased awareness of climate threats. Under this project, UN-Habitat has already completed all planned activities. As per the project's work plan and agreement, UN-Habitat is required to submit the completion of this project to the project management unit.



### **III. Key Stakeholders**

The training intervention targets decision makers and technical officers from following government agencies:

- Ministry of Natural Resources and Environment (MONRE)
- Ministry of Planning and Investment (MPI)
- Ministry of Public Works and Transport (MPWT)
- Ministry of Agriculture and Forestry (MoAF)
- Provincial and district governments and other relevant agencies engaged in integrated climate resilient flood management at the cities of Vientiane, Paksane (Borikhamxay), Kaysone (Savannakhet) and Pakse (Champasack)
- Other relevant stakeholders - National University of Laos (NUOL)

### **IV. Methodology:**

The capacity-building project utilized a multifaceted approach to enhance the skills, knowledge, and institutional capabilities of technical and decision-making personnel in Lao PDR. The methodology included a series of structured training sessions, workshops, and knowledge exchange visits. Initial training modules were conducted in the four most flood-vulnerable cities—Vientiane, Paksan, Kaysone Phomvihane, and Pakse—to disseminate foundational knowledge on ecosystem-based adaptation (EbA) and integrated flood management. Crucially, the training materials were meticulously designed based on a Training Needs Assessment (TNA) report conducted in these cities prior to the training. These sessions were complemented by refresher trainings that delved deeper into specific topics, such as climate vulnerability assessment and practical implementation of EbA strategies. The project also incorporated hands-on fieldwork and data collection exercises in flood-prone villages, enabling participants to apply theoretical knowledge in real-world settings. Additionally, a knowledge exchange visit to Iloilo Province, Philippines, provided Lao officials with valuable insights into successful EbA projects, fostering cross-country learning and collaboration. This comprehensive methodology ensured a robust and continuous learning process, effectively building the capacity of local and national representatives to manage climate-induced flooding through sustainable and integrated approaches.



## V. Key Deliverables and Summary of Project Activities

### 1. Training Needs Assessment (TNA):

The Training Needs Assessment (TNA) for the project “Building resilience of urban populations with ecosystem-based solutions in Lao PDR” aimed to identify knowledge gaps and training requirements among key stakeholders involved in climate change adaptation and ecosystem-based adaptation (EbA) in four major cities: Vientiane, Paksane, Savannakhet, and Pakse. The TNA was conducted through in-person consultations in June and July 2022, engaging 117 participants from various government agencies, including technical staff and decision-makers, with a focus on building institutional capacities for integrated flood management.

The TNA sought to assess existing knowledge on climate change and EbA, identify training needs, and establish a baseline for capacity-building activities. It utilized quantitative and qualitative questionnaires covering seven sections: climate change awareness, EbA solutions and flood management, access to EbA manuals, planning and financing capacity, monitoring and evaluation systems, urban planning and land use, and preferred training methods. Data was collected using the Kobo toolbox and analyzed to tailor training programs to the specific needs of the participants. Detail of the Training Needs Assessment (TNA) is attached in the Annex 1 of this document.

### 2. Technical training for decision makers and technical officials in four target cities:

The training aimed to enhance participants' understanding of climate change impacts, the benefits of EbS, and integrated flood management strategies. The methodology included lectures, group discussions, practical exercises, and a field visit. Nine training modules covered topics such as EbA for cities and flood management, Vulnerability Assessment, vulnerability and risk assessments, Spatial Planning, Urban planning as an iterative and multisectoral process, District-level planning systems and linkage provincial planning systems, City-level Project Steering Committees, Existing legal frameworks, Plan, design, implementation and maintenance of urban EbA and Participatory Land Use Planning for better urban wetland management.

#### ○ *Training for Vientiane*

The training on ecosystem-based solutions (EbS) for urban flood management was conducted from March 15 to 17, 2023, at the Provincial Office for Natural Resources and Environment (PONRE) in Vientiane. The training was attended by 38 participants from 14 different departments and organizations, with a gender balance of 47% female participants. The sessions for decision-makers were held on March 15 and 16,

while the technical experts training was from 15 to 17 of March. A field visit to a target local wetland ecosystem provided practical insights into ecosystem services and flood risk reduction measures. There were 9 participants at the decision-maker level and 29 participants at the technical level. The detail report is attached in the Annex 3 of this document.

- *Training for Paksane*

From March 21 to 23, 2023, the training in Paksan focused on similar topics as Vientiane's training, aiming to build the capacity of local officials and technical staff. It was attended by 38 participants from various provincial departments, with 55% female participation. The training methodology included lectures, group discussions, and practical exercises, with additional focus on the integration of EbS into urban planning and the importance of district-level planning. The participants engaged in exercises on vulnerability assessments, spatial planning, and designing EbS interventions. The training also included a field visit to a flood-prone area to observe and discuss potential EbS solutions. The detail report is attached in the Annex 4 of this document.

- *Training for Kaysone Phomvihane (Savannakhet)*

The first round of training focused on climate change vulnerability assessment for decision makers was conducted on 21 December 2022. With a total number of 14 decision maker trainees from provincial and city levels.

The second round of Savannakhet training was conducted from March 29 to 31, 2023, at the Provincial Office for Natural Resources and Environment (PONRE) in Kaysone Phomvihane city. The training saw participation from 30 individuals across 12 departments, with a gender balance of 40% women. There were 15 attendees for the decision-maker training and 15 participants for the technical-level training. A key highlight was the field visit to a riverine ecosystem, where participants identified ecosystem services, assessed flood risks, and proposed EbS interventions. The interactive exercises and group discussions were well-received, and the training successfully increased participants' knowledge and skills in flood management and urban planning. The detail report is attached in the Annex 2 and 5 of this report.

- *Training for Pakse*

The first round of training in Pakse focused on climate change vulnerability assessment for decision makers was conducted on 22 December 2022. With a total number of 15 decision maker trainees from provincial and city levels.

Held from March 27 to 29, 2023, the Pakse training followed the same structured approach, focusing on enhancing the capacity of local government officials and

technical experts in ecosystem-based urban flood management. The training was attended by 35 participants from various departments, with a 51% female participation rate. There were 16 participants for the decision-maker training and 19 attendees at the technical level. Key training modules included climate change fundamentals, vulnerability and risk assessments, and integrated flood management strategies. Participants engaged in practical exercises on spatial planning and EbS implementation, and a field visit to a nearby wetland provided hands-on learning experiences. The training emphasized the importance of intersectoral coordination and community engagement in flood management. The detail report is attached in the Annex 2 and 6 of this report.

### **3. Refresher training**

The training was designed for both technical staff and decision-makers from these cities, focusing on revisiting and deepening their understanding of ecosystem-based adaptations (EbA) and vulnerability assessments. It was conducted from December 11 to 15, 2023, in Villayvong Hotel, Vangvieng District, including field data collection in two flood-affected villages, Khanmak and Nadao.

Participants included 39 individuals from diverse governmental departments with a gender balance of 41% female participation. There were 21 participants at the decision-maker level and 19 participants at the technical level. The training content included modules on climate vulnerability assessments, planning for climate change, data collection techniques, and the application of ecosystem-based solutions for flood management.

Key activities during the training involved hands-on data collection in the field, discussions on integrating climate resilience into urban planning, and interactive sessions on mapping and vulnerability assessments. The training concluded with an evaluation showing significant improvement in participants' understanding of the covered topics, emphasizing the effectiveness of the practical, interactive training approach used.

This refresher training played a crucial role in reinforcing the capacity of local decision-makers and technical experts, preparing them to better manage urban development challenges related to EbA. The detail report is attached in the Annex 7 of this report.

### **4. Knowledge exchange visit**

UN-Habitat facilitated 7 Lao officials (3 females or 43%), including government officials from the four target cities and the Ministry of Natural Resources and Environment, explored various successful EbS projects implemented in Iloilo from 13

May to 17 May 2024. These projects demonstrate effective water management and urban planning strategies that cater to both environmental sustainability and community resilience against climate change impacts.

Key activities included a courtesy meeting with the governor of Iloilo, who outlined the province's initiatives in sustainable urban development and ecosystem-based adaptation. The delegation also visited several project sites, such as the Maasin Watershed, Iloilo Esplanade, Bucari Pine Forest, Nagpana Indigenous Community Tourism, and Katunggan Ecopark. These visits offered practical insights into how Iloilo integrates natural based solutions to enhance urban and rural landscapes for climate resilience. The detail report of this knowledge exchange trip is attached in the Annex 8 of this document.

## **5. Project closure meeting**

The closure meeting for the UN-Habitat component of the project was conducted on 14 June 2024. There are 11 attendees from the ministry and four target cities. This meeting served multiple essential purposes. Firstly, it marked the official completion of UN-Habitat's activities within the project, signifying a significant milestone. Secondly, the meeting provided a valuable platform for stakeholders from the Ministry of Natural Resources and Environment and representatives from the four cities involved—Vientiane, Paksan, Kaysone Phomvihane, and Pakse—to provide feedback on the project's implementation. This feedback is crucial for assessing the project's impact and areas for improvement. Lastly, the gathering offered an excellent opportunity for discussing potential improvements and future collaborations, ensuring that the momentum gained through this project could be effectively utilized in ongoing and future initiatives. The detail report of this project closure meeting is attached in the Annex 9.

## **VI. Challenges**

Despite the project's success, UN-Habitat faced several challenges during this capacity-building period.

One major challenge was the technical capacity gaps among trainees coming from different divisions with varying backgrounds and knowledge levels on specific topics. While some participants had a strong understanding, others did not, particularly those from non-technical divisions. Addressing these knowledge gaps was a significant hurdle in the capacity-building activities.

Another challenge was the rotation of officials during trainings. Due to their busy schedules, some government officials who were trained in the first round were

unavailable to participate in the second round. This rotation hindered the full effectiveness of the capacity-building program as originally designed.

## **VII. Lessons Learned**

Adaptability and continuous learning are key to addressing the dynamic nature of climate change impacts. The project experienced several challenges, such as varying degrees of technical capacity among local staff and differing environmental conditions across the cities. Regular training sessions, refresher courses, and knowledge exchange visits (such as the one to Iloilo Province, Philippines) proved invaluable. These activities not only enhanced technical skills but also provided new perspectives and practical insights, helping teams to adapt and refine their strategies effectively.

Successful implementation of integrated flood management requires effective coordination among various sectors, including urban planning, environmental management, and disaster risk reduction. The project highlighted the need for a collaborative approach, where different government departments and stakeholders work together to develop and execute EbA strategies. This intersectoral coordination helps in aligning objectives, sharing resources, and ensuring that EbA interventions are well-integrated into existing urban management frameworks.

## **VIII. Recommendation**

To maintain and activate the reservoir of knowledge within the country, it is recommended to establish a dedicated training institution within the Ministry of Natural Resources and Environment (MONRE) or the Department of Climate Change. By creating such an institution, the capacity to manage and implement projects will be preserved within the ministry. This will enable the government to utilize existing trainers and training modules to educate district and government officials nationwide whenever similar projects are initiated.

To further enhance the success and sustainability of Ecosystem-based Adaptation (EbA) projects, it is essential to deepen community engagement through ongoing education and active involvement in project planning and implementation. Incorporating community members into the decision-making process is vital and can be achieved through regular workshops, feedback sessions, and the formation of local EbA committees. This inclusive approach ensures that local insights and needs are woven into EbA strategies, enhancing community support and the overall effectiveness of projects.

To effectively address the dynamic impacts of climate change, it is crucial to prioritize adaptability and continuous learning. Based on our project experience, we recommend implementing regular training sessions, refresher courses, and knowledge exchange visits like the one conducted in Iloilo Province, Philippines. These activities are invaluable for enhancing technical skills, gaining new perspectives, and acquiring practical insights. They enable teams to adapt swiftly and refine strategies effectively amidst varying technical capacities among local staff and diverse environmental conditions across cities.

Moreover, the UN-Habitat intervention recognizes that mere capacity building may not suffice to fully enhance government officials' understanding of EbA. Therefore, the continued provision of advice on EbA processes and methodologies during project implementation is crucial. This support will facilitate the smooth execution of EbA projects in the four target cities. UN-Habitat's ongoing involvement as an advisor will maximize the benefits and application of EbA, ensuring that the projects achieve their intended outcomes.

## **IX. Conclusion**

The capacity-building initiatives undertaken as part of this project have been important in successfully implementing integrated flood management and ecosystem-based adaptation (EbA) strategies across the major cities of Lao PDR. By focusing on technical and institutional capacity building, the project has significantly strengthened the ability of national and local representatives to plan, design, implement, and maintain sustainable urban EbA interventions.

These efforts have not only enhanced the resilience of urban populations to climate-induced flooding but also fostered a deeper awareness and understanding of climate change impacts among stakeholders at all levels. The success of these capacity-building activities underscores their critical role in ensuring the project's long-term sustainability and effectiveness.

Moreover, this initiative serves as a model for other regions facing similar challenges, demonstrating the importance of investing in human capital to achieve comprehensive and resilient urban planning. Ultimately, the project has made substantial contributions to the country's overall climate resilience, setting a strong foundation for future efforts to combat climate change and protect vulnerable communities in Lao PDR.

## **Annexes:**

Annex 1: Training Needs Assessment Report

Annex 2: Training Report for Decision Makers Training in Kaysone (Savannakhet) and Pake (Champasack) – Module 2 Climate Vulnerability Assessment

Annex 3: Technical Training Report for Decision Making and Technical Level in Vientiane

Annex 4: Technical Training Report for Decision Making and Technical Level in Paksane

Annex 5: Technical Training Report for Decision Making and Technical Level in Kaysone

Annex 6: Technical Training Report for Decision Making and Technical Level in Pakse

Annex 7: Refresher Training Reports for four cities in Vangvieng

Annex 8: Knowledge Exchange Visit Report

Annex 9: Closure Meeting Report

**UN****HABITAT**  
FOR A BETTER URBAN FUTURE