



Climate Change Adaptation through Small-Scale
and Protective Infrastructure Interventions in
Coastal Settlements of Cambodia (CCA4CS)

Community Capacity-Building for Infrastructure Management, Monitoring and Maintenance



JULY 2025
PHNOM PENH, CAMBODIA

BRIEF SUMMARY

Under Output 1.3, the project activities focused on enhancing community capacity for the sustainable management, monitoring, and maintenance of small-scale green and grey infrastructure in coastal areas.

KEY ACHIEVEMENTS

Two-Phase Implementation for Long-Term Impact

The project was executed in two strategic phases to ensure sustainable ecological and community resilience. Phase 1 focused on foundational assessments, while Phase 2 delivered targeted capacity-building activities.

Phase 1: Capacity Needs Assessment

A consultant was hired to identify trainees and assess training needs by October 2024. These findings guided the development of customised training materials tailored to the needs of local communities and the nature of rehabilitated infrastructure.

Phase 2: Training Rollout and Methodology

Two-day training sessions were held in Prey Nob (12–13 May 2025, 48 participants) and Kep (22–23 May 2025, 53 participants), with women comprising 15% and 28% of participants, respectively. Training blended classroom instruction with field demonstrations, supported by case studies, posters, and live interaction with infrastructure.

Training Content and Structure

Modules covered five key topics: introduction to small-scale infrastructure, maintenance and repair, monitoring, community roles, and communication. Sessions were adapted to various infrastructure types, including water gates, canals, eco-treatment systems, and drainage systems.

Practical Field-Based Learning

On-site learning involved hands-on exercises like gate operations, debris removal, identifying erosion, and clearing blockages. These field visits allowed participants to connect theoretical concepts to real operations.

Monitoring Training Effectiveness

Pre- and post-training evaluations were conducted to measure knowledge gain and assess the impact of learning. This ensured that the training outcomes could be tracked and improved if necessary.

GOOD PRACTICES

Decentralised Roles and Responsibilities

The project promoted sustainability by assigning clear, decentralised roles for infrastructure management. Community members served as the primary implementers, with technical support provided by local authorities and engineers. This structure fostered ownership and ensured that actions addressed real community needs.

LESSONS LEARNED

1. Allow Time for Post-Training Monitoring

Monitoring community focal points after training was limited due to the late timing of both training and construction. Without sufficient follow-up, the ability to reinforce skills and assess performance was constrained. Future efforts should allocate 6–12 months post-handover for support by local authorities, UN-Habitat, and NCSD.

2. Ensure Timely Training Delivery

Training should occur before the infrastructure becomes operational. In this case, key structures were completed before the rainy season, but training came too late for communities to learn by doing. Earlier sessions would have allowed real-time problem-solving and hands-on experience.

RECOMMENDATIONS

1. Integrate On-Site Training into Capacity-Building Programs

Training should include practical, site-based components that simulate real-life scenarios. This enhances learning by allowing participants to interact directly with the infrastructure and reinforce knowledge visually and physically. Such experiential methods improve retention and readiness.

2. Establish Ongoing Mentorship and Technical Support

Sustainability depends on continuous guidance after training. Local governments and ministries should provide mentorship to communities during the early operational phase. Structured mentorship ensures knowledge transfer, builds confidence, and supports long-term resilience.

PROJECT OVERVIEW

Since August 2021, the United Nations Human Settlements Programme (UN-Habitat) and the National Council for Sustainable Development (NCSD) have been implementing the Climate Change Adaptation through Protective Small-Scale Infrastructure Interventions in Coastal Settlements of Cambodia Project (CCA4CS), with financial support from the Adaptation Fund.

The project aims to strengthen climate resilience and adaptation in Cambodia's most vulnerable coastal settlements through targeted, on-the-ground interventions. By focusing on areas where ecotourism can support long-term sustainability, the initiative enhances communities' capacity to withstand climate-related challenges. The project is structured around three interconnected components to accomplish this in the highly vulnerable settlements in Kep Province and Prey Nob District of Preah Sihanouk Province:

Component 1: Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments.

Component 2: Government planning and technical capacity enhanced and knowledge captured and disseminated to sustain and enhance the project's adaptation benefits.

Component 3: Resilience built through investment in small-scale protective and basic service infrastructure and natural assets.

By integrating these components, the project addresses immediate climate risks and lays the foundation for long-term sustainability and resilience in Cambodia's coastal communities.

RATIONALE FOR THE INTERVENTION

Active engagement and strong ownership by local communities are essential to ensure the effectiveness and sustainability of climate-resilient infrastructure. Without this involvement, there is a heightened risk of infrastructure malfunction, physical damage, and unintended environmental and social impacts, particularly in the face of climate hazards such as flooding and strong winds. Therefore, community representatives must understand the infrastructure's structure, as well as the proper methods for its management, monitoring, and maintenance.

The project prioritised small-scale green and grey infrastructure, selected based on its manageability by local communities without overreliance on national or subnational authorities. Community-led daily management of such infrastructure not only supports resilience but also empowers communities in strategic planning and investment for their development agendas.

BRIEF DESCRIPTION OF THE INTERVENTION

Under **Component 1**, the project aimed to strengthen the capacity of local communities to manage, monitor, and sustainably maintain small-scale infrastructure.

The intervention was implemented through eight training clusters, ensuring a minimum of 50 percent female participation. The primary objective was to equip community representatives with the knowledge and skills needed for community-led infrastructure stewardship — particularly in maintaining and managing the hard infrastructure developed under the project — thereby ensuring its long-term operation and benefits.

This report documents the key experiences, achievements, good practices, lessons learned, and actionable recommendations of the intervention.

KEY ACHIEVEMENTS

The project team implemented the initiative in two phases to ensure long-term ecological and community resilience.

Phase 1

To achieve the intervention's objectives, the project undertook several strategic activities. A consultant was engaged to identify potential trainees and conduct a capacity needs assessment by October 2024. The findings informed the design of tailored training materials and approaches.

Phase 2

Training Overview

Each two-day training session combined theoretical classroom instruction with practical, on-site demonstrations. The theoretical portion included nine modules aligned with the types of infrastructure rehabilitated or developed under the project.

The capacity-building trainings targeting communities were conducted as follows:

- Prey Nob Training (12–13 May 2025): 50 participants, including 7 women (15 percent)
- Kep Training (19–20 May 2025): 53 participants, including 15 women (28 percent)

Participants included community leaders, village chiefs, Commune/Sangkat Council members, and construction workers. Classroom sessions utilised PowerPoint presentations, localised case studies, and interactive Q&A sessions. On-site sessions were supported by visualised posters and live demonstrations using actual infrastructure.

Training Content

Each training was customised to the specific infrastructure type and included the following components:

- Introduction to small-scale infrastructure
- Maintenance and repair techniques
- Monitoring and reporting mechanisms
- Community roles in infrastructure management
- Communication and reporting procedures

On-site learning involved field visits to various project infrastructures, including water gates, canals, eco-treatment systems, and drainage facilities. Activities included:

- Operating water gates
- Removing debris
- Identifying erosion signs
- Clearing drainage blockages

Training effectiveness was measured using pre- and post-evaluations to assess knowledge gain.

GOOD PRACTICES

Decentralized Roles and Responsibilities

To ensure long-term sustainability, the project established transparent and decentralised roles for infrastructure management. Community representatives were designated as primary actors, supported by technical guidance from sub-national authorities and engineers at the provincial, municipal, and district levels. This collaborative structure strengthened local ownership and ensured that responses aligned with community needs.

LESSONS LEARNED

1. Allow Time for Post-Training Monitoring

One key insight was the need for sufficient time to monitor the operational capacity of community focal points following training. As infrastructure construction and training occurred in the later stages of the project, only limited time was available for post-training follow-up. It is recommended that sub-national authorities, UN-Habitat, and NCSD extend monitoring and support for six to twelve months post-handover to ensure sustained outcomes and effective implementation.

2. Ensure Timely Training Delivery

Timely delivery of capacity-building activities is essential. For example, a water gate (Output 3.3) and a drainage system (Output 3.7) were completed before the 2024 rainy season. If training had been conducted beforehand, communities could have gained valuable hands-on experience during active operations. Early training also provided opportunities to consult technical experts about any uncertainties in real-time.

RECOMMENDATIONS

1. Integrate On-Site Training into Capacity-Building Programs

Future training initiatives should incorporate hands-on components that utilise real or comparable infrastructure to enhance practical learning. On-site, scenario-based training enables participants to gain a deeper understanding of infrastructure operations and retain procedures through visual and hands-on engagement. This experiential learning approach enhances overall competence and confidence in infrastructure management.

2. Establish Ongoing Mentorship and Technical Support

To ensure sustainability, continuous mentorship and post-training technical assistance are essential. Sub-national authorities, NCSD/MoE, and line ministries should guide and monitor communities, particularly during the early operational phase. A structured mentorship program can facilitate knowledge transfer, enhance problem-solving capabilities, and foster long-term community ownership and resilience.

DOCUMENTATION

Name	Type	Produced Date	Location
Inception Report	Report	August 2024	Link
Define Trainee Groups	Report	September 2024	Link
Need Assessment Report	Report	March 2025	Link
Training Materials	Power Point	April 2025	Link
Training Report	Report	July 2025	Link

PHOTOS





This publication is part of the knowledge-sharing outputs under Component 1 (Output 1.3) of the Climate Change Adaptation project in Cambodia, supported by the Adaptation Fund and implemented by the United Nations Human Settlements Programme (UN-Habitat) as the Implementing Entity and the National Council for Sustainable Development (NCSD) as the Executing Entity.



ADAPTATION FUND

Climate Change Adaptation through Small-Scale and
Protective Infrastructure Interventions in
Coastal Settlements of Cambodia (CCA4CS)