



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

Report on Solid Waste Management Capacity Building in Coastal Communes in Kep and Preah Sihanouk Provinces



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PHNOM PENH, CAMBODIA

BRIEF SUMMARY

Under Component 1, the project focused on strengthening community capacity to manage solid waste and wastewater in eight target communes, aiming to sustain protective infrastructure. Key actions included community training, a 50% female participation target, school-level awareness campaigns, and linking waste practices to climate change adaptation.

KEY ACHIEVEMENTS

The project successfully mobilised local actors and delivered structured training to build foundational knowledge on climate-linked waste management. A consultant was contracted to design and lead training activities based on needs assessments and consultations with sub-national authorities and community representatives. Three priority target groups were identified: (a) residents living in areas highly vulnerable to waste accumulation and flooding; (b) sub-national government officials responsible for planning and service delivery; and (c) private sector actors engaged in collection and transport of waste.

Two key training sessions were implemented:

First Training (1–8 December 2022):

This session engaged 321 participants, of whom 183 were women (57 per cent). The training included classroom-based instruction and a student clean-up activity at National Road No. 4. Evaluation results showed marked improvement in climate-waste knowledge.

Refresher Training (21–25 August 2023):

Building on feedback from the first session, the refresher course reached 325 participants, including 119 women (36.6 per cent). The updated curriculum incorporated new thematic modules on climate change and SWM linkages, the environmental and social risks of improper waste management, the principles of the 4R approach (Refuse, Reduce, Re-use, Recycle), and the civic responsibilities of community members in promoting sustainable waste practices.

GOOD PRACTICES

1. School-Based Engagement

The integration of classroom training with student-led clean-up activities at schools, such as Veal Rinh High School, fostered long-term environmental awareness and behavioural change. This participatory model proved effective and replicable for promoting waste management awareness across wider communities through youth engagement.

2. Tailored Training Methods

The use of visuals, role-plays, and materials adapted for different literacy levels ensured inclusive participation and improved comprehension among diverse learners. These interactive approaches created a safe and engaging learning environment, resulting in stronger knowledge retention and practical understanding.

LESSONS LEARNED

1. Female Participation Shortfall

The average female participation rate reached only 46.7 per cent, falling short of the intended 50% target. This highlights the importance of more targeted outreach strategies and logistical support, particularly for women with household or caregiving responsibilities.

2. Limited Practical Application

The absence of hands-on sessions, such as composting demonstrations or community clean-up events, limited participants' ability to apply learned concepts in real-life settings. Future training should prioritise practical exercises to reinforce knowledge and promote lasting behavioural change.

RECOMMENDATIONS

1. Improve Gender Inclusion

To enhance women's participation, training schedules should be pre-announced with explicit invitations and flexibility to accommodate childcare needs. Providing an enabling environment can help reduce barriers and support more equitable access to capacity-building programs.

2. Implement Pilot Projects

Pilot initiatives should be established to demonstrate integrated solid waste management practices that align with tourism development and local economic activities. These should be supported by robust monitoring and evaluation frameworks to enable learning, scaling, and replication in other communities.

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, in Kep Province and Prey Nob District of Preah Sihanouk Province, through targeted interventions around three interconnected components:

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.

These initiatives will enhance communities' capacity to withstand climate-related challenges by focusing on areas where ecotourism can support long-term sustainability. Through 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

Solid waste management (SWM) has emerged as a critical concern in Cambodia, where rising consumption and waste generation per capita have outstripped available waste management services. According to a study by Phekdey et al. (2022), waste collection services are confined mainly to affluent urban areas, leaving smaller and poorer communities underserved.

In Kep and Prey Nob, project assessments revealed that waste blockages were contributing to the malfunction of drainage and water management infrastructure. Waste collection was primarily limited to major roads, while informal dumping prevailed in peripheral communities.

These poor waste management practices have led to water contamination, increased health risks, and decreased income opportunities. The lack of adequate landfills and recycling facilities exacerbates these issues, contributing to soil and water contamination, as well as air pollution from uncontrolled waste burning. Therefore, building local capacity for solid waste management was identified as essential to protecting the project's infrastructure investments and promoting long-term climate resilience.

BRIEF DESCRIPTION OF THE INTERVENTION

Under Component 1, the project committed to building the capacity of communities to manage solid waste and wastewater, ensuring the long-term functionality of protective infrastructure investments. Key elements of the intervention included conducting at least two training sessions per commune in eight target communes, providing at least 50 per cent female participation, promoting awareness of the link between solid waste management, climate hazards, and climate change, and improving school-level waste management practices to foster broader community behavioral change.

This report summarises the experiences related to capacity building across the eight communes, covering achievements, good practices, lessons learned, and recommendations.



KEY ACHIEVEMENTS

Several activities were successfully implemented to achieve the intervention goals. A consultant was recruited to design and deliver solid waste management training through field visits and consultations with local authorities and community leaders. Three main target groups were identified for the training: residents in waste-vulnerable communities, sub-national government officials (provincial, district, municipal, and commune levels), and private sector stakeholders such as waste collection and transport operators.

Two training activities were conducted. The first training session, which took place from 1 to 8 December 2022, engaged 321 participants, including 183 women (57 per cent). This training led to significant knowledge improvements, as the proportion of participants with a poor understanding of the linkage between climate change and waste management decreased from 62 per cent to 6 per cent. In comparison, those with good understanding rose from 3 per cent to 4 per cent. The session also included a clean-up activity involving students at National Road No. 4.

A refresher training session was organised from 21 to 25 August 2023, engaging 325 participants, including 119 women (36.6 per cent). Based on feedback from the initial training, the refresher training incorporated new modules covering topics such as the overview of climate change and SWM, the impacts of improper waste

management, the principles of the 4R approach (Refuse, Reduce, Reuse, Recycle), and the role of citizens in improving waste management practices.

GOOD PRACTICES

1. School-Based Engagement to Foster Waste Management Awareness

The project successfully integrated training activities with participatory clean-up events involving high school students at Veal Rinh High School. This approach fostered long-term behaviour change, evidenced by the increased number of garbage bins installed at the school, and demonstrated a replicable model for school-based awareness-raising initiatives.

2. Tailored, Interactive Training Techniques for Diverse Audiences

Another good practice was the use of interactive and visually rich training methods. Training materials were specifically tailored to different literacy levels using visuals and videos. Interactive teaching techniques created a psychologically safe learning environment, enhancing participant engagement and improving knowledge retention and application.

LESSONS LEARNED

1. Slightly Unmet Female Participation Target

One of the challenges encountered was the slightly unmet female participation target. The project achieved a 46.7 percent female participation rate, falling short of the 50 percent target. Future initiatives should consider targeted outreach strategies, flexible scheduling, and partnerships with women's organisations to enhance female participation.

2. Limited Hands-On Practice to Reinforce Learning

Another key lesson was the need for more practical, hands-on activities. While the training sessions effectively enhanced conceptual understanding, the absence of practical exercises—such as composting demonstrations or community clean-up projects—may limit the application of knowledge in daily practices. Future projects should integrate practical exercises from the outset to reinforce behavioural change.

RECOMMENDATIONS

1. Advance Planning and Gender-Sensitive Outreach

To enhance the inclusivity of future training sessions, it is recommended that training schedules be proactively pre-announced and explicitly invite female participation, including accommodations for women who may need to bring infants or small children due to childcare constraints.

2. Pilot Projects for Demonstrating Integrated Waste Management Practices

Additionally, pilot projects should be implemented to facilitate the transfer of knowledge into practice. Such projects should demonstrate best practices in waste management, integrate SWM efforts with tourism development and local livelihoods, and promote collaboration between local authorities, residents, and tourism operators. Establishing monitoring and evaluation frameworks will be critical to assess pilot outcomes and support the scaling and replication of successful initiatives.

DOCUMENTATION

Name	Type	Produced Date	Location
Training Needs Assessment Report	Report	September 2022	Link
First Training Report	Report	December 2022	Link
Refresher Training Report	Report	September 2023	Link

PHOTOS





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