

Rehabilitation, Operation, and Maintenance of Small- to Mid-Scale Irrigation Systems in Banteay Meanchey

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1. Introduction

Partners: Banteay Meanchey Sub-National Administration (SNA), Improved Service Delivery for Citizens in Cambodia (ISD) project by GIZ.
Focus: Resource mobilization for the rehabilitation, operation, and maintenance of small- and mid-scale irrigation systems in partnership with SNA.
Duration: MoU signed in December 2024, and valid through 2025 and 2026.

Nurture Project Overview

The Nurturing Climate Resilience in Cambodia (Nurture) is a four-year collaborative initiative among HEKS/EPER, Caritas Switzerland, the Ministry of Water Resources and Meteorology (MOWRAM), and the General Directorate of Agriculture (GDA). Co-financed by the Swiss Agency for Development and Cooperation (SDC), the project strengthens the climate resilience of smallholder farmers (SHFs).

2. Background and Context



Ang Trapeang Thmor, a historical reservoir constructed during the Khmer Rouge regime, located in Phnom Srok District, Banteay Meanchey Province, Cambodia, 2024 ©Nurture Project



This canal in Tean Kam Commune, Preah Netr Preah District, plays a vital role by channeling water from the Ang Trapeang Thmor to community rice fields, 2024 ©Nurture Project

Agriculture continues to play a central role in Cambodia's economy despite diversification into the garment, construction, and tourism sectors. Although its share of GDP has declined from around 30% in the early 2000s to about 16.4% in 2023 (The World Bank, 2024), it remains the foundation of rural livelihoods and food security, with access to reliable irrigation serving as a decisive factor for productivity and resilience.

Cambodia's irrigation systems largely trace back to the Khmer Rouge era (1975–1979), when approximately 7,000 kilometers of canals and 350 reservoirs were constructed (Tyner, Munro-Stasiuk, Coakley, & Kimsroy, 2018), but much of this infrastructure has since deteriorated or become non-functional. According to an ADB report, the majority of roughly 2,480 irrigation systems in place operate only partially or not at all, and only about 22% of arable land is irrigated (Asian Development Bank, 2021).

The Challenge

In Banteay Meanchey, the key constraint for irrigation is the lack of resources to construct and sustain durable systems. Provincial Departments of Water Resources and Meteorology (PDWRAMs) are tasked with oversight but face chronic budget and capacity gaps, leaving many schemes without clear accountability, cost recovery, or regular maintenance. Priority is instead directed toward infrastructure such as roads, education, and healthcare. At the same time, charity-driven or ad hoc construction has created a patchwork of non-standardised systems, many of which fail to meet MOWRAM specifications and fall quickly into disrepair.



Construction of the Ou Prasat Water Gate, funded by the Ou Prasat Commune budget, Banteay Meanchey, 2026 ©Nurture Project



Construction of the Ou Prasat Water Gate is now complete and fully operational, Banteay Meanchey, 2026 ©Nurture Project

The central challenge is therefore mobilizing sufficient investments for both infrastructure and governance. Strengthening Farmers' Water User Communities (FWUCs), as implemented by the Nurture Project, is critical but cannot succeed without parallel investment in rehabilitating and maintaining irrigation infrastructure. Recognizing this, Nurture approached ISD/GIZ as a strategic partner to combine governance capacity building with infrastructure rehabilitation, demonstrating a more sustainable approach to resource mobilization for local water governance.

3. Partnership and Intervention Summary

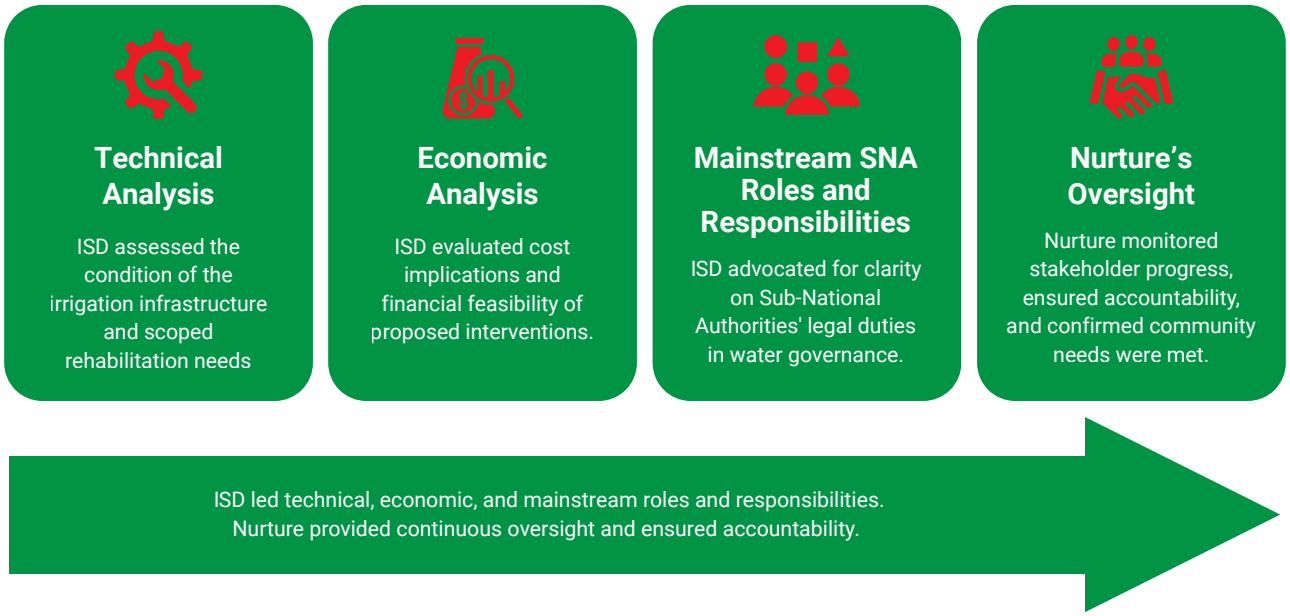
The Nurture Project and ISD/GIZ project partnered to address irrigation governance challenges in Banteay Meanchey. Both initiatives share a strong focus on water management and governance, operate in overlapping geographic areas (Battambang and Banteay Meanchey), and are supported by SDC. These commonalities created natural alignment and synergy, laying the foundation for partnership.

ISD/GIZ equips sub-national administrations with tools for climate-sensitive planning, GIS-based mapping, and technical oversight, while Nurture builds FWUC capacity and farmer participation at the community level. Together, they link technical planning with community accountability for more holistic irrigation governance.

The partnership—referred to as ISD-Nurture—was piloted in Preah Netr Preah, Mongkol Borei, and Svay Chek districts through joint planning meetings, workshops, shared appraisal tools, and FWUC data exchange. Most recently, the partnership developed a co-financing proposal with Banteay Meanchey Sub-national Administrations to rehabilitate small- and mid-scale irrigation systems. This resource mobilization effort aims to align partner support with government planning, improve poorly functioning schemes, and embed irrigation management in local governance frameworks to strengthen farmer livelihoods.

Process

The collaboration between Nurture and ISD/GIZ began when Nurture identified a gap in the intervention that required specialised technical support and resources beyond its own scope. To address this need, the Nurture team sought out potential partners and approached ISD/GIZ as a strategic partner. The two projects held a series of coordination meetings to discuss the scope of collaboration, align objectives, clarify roles and responsibilities, and agree on implementation arrangements. Through these discussions, a shared understanding of the partnership framework was established, enabling both organizations to leverage their respective strengths and resources. The following key steps were agreed upon and subsequently implemented:



4. Progress and Results

In December 2024, the ISD–Nurture initiative and Banteay Meanchey sub-national administrations signed a Memorandum of Understanding (MoU) to co-finance rehabilitation of small- to mid-scale irrigation canals. The agreement mobilised USD 220,880 across four systems, with contributions from commune authorities and FWUCs (69%), districts and municipalities (22.7%), Nurture (8.2%), and in-kind technical support from PDWRAM, ISD/GIZ, and the provincial administration. This marked a shift from donor-driven models toward shared responsibility for irrigation management.

Rehabilitation has since advanced from planning to construction. While farming benefits are not yet visible, the important institutional changes have emerged:

- **Budget priority shifts:** Commune and district councils, which historically prioritised roads, education, and healthcare, are now committing resources to irrigation. This shift was encouraged by ISD–Nurture through economic analysis showing the broader benefits of irrigation investment.
- **Active FWUCs:** FWUCs in Tean Kam, Prasat Pram, and Prolay Char have resumed fee collection after years of inactivity, using the revenues to fund small repairs and O&M, demonstrating renewed agency in irrigation management.
- **Provincial engagement:** The Deputy Governor has chaired progress meetings, endorsed irrigation investments, and monitored works, reinforcing accountability.

Although construction is ongoing and tangible benefits for farmers are not yet visible, these institutional shifts already represent important results. Co-financing has created incentives for communes, districts, FWUCs, and the province to take ownership of irrigation, rather than leaving it solely to donor projects.

5. Lessons and Critical Insights

What makes the process work?

i. Technical Team Expertise and Situation Analysis

The technical team plays a key role in assessing the current condition of irrigation systems managed by FWUCs. Their focus includes system functionality, operational improvements, and cost analysis. This evaluation has revealed important insights into infrastructure gaps, financial sustainability, and the benefits of targeted investments. It also identifies priority areas for immediate action, as well as medium- and long-term planning to improve irrigation efficiency.

ii. Capacity Building and Field Implementation

Capacity building activities include water management planning, GIS training and coaching, and use of the Integrity Management Toolbox. To support effective irrigation improvements, capacity-building programs have been designed to combine theoretical knowledge with practical field experience. Training sessions and hands-on demonstrations enable FWUC members and local authorities (district and municipal levels) to develop the skills needed to manage, operate, and maintain irrigation systems more effectively.

iii. Stakeholder Engagement and Legal Framework Awareness

Efforts have been made to clarify the roles and responsibilities of stakeholders based on existing legal frameworks, including sub-decrees and Prakas related to irrigation governance. A series of meetings and consultations have been held to ensure that all relevant actors—such as communes, districts, provincial administration, and PDWRAM—understand their duties in managing and maintaining irrigation systems.

iv. Economic and Climate Adaptation Considerations

The project highlights the economic benefits of improved irrigation. Through economic analysis, stakeholders are informed about the financial value of investing in small-scale irrigation and including it in their annual budgets. Although ISD's financial analysis suggested communes allocate around 3% of their budgets for irrigation, some committed up to 10%. Additionally, the project promotes climate-resilient irrigation systems that can adapt to changing environmental conditions and future uncertainties.

Where are the friction points?

i. Procurement Delays

Procurement rules are mismatched with local realities, delaying works into the rainy season when implementation is difficult. District-level procurement is more complex than commune-level, and slow budget approvals add further bottlenecks. The Deputy Governor has suggested delegating budgets to communes, but no decision has been made.

ii. FWUC Capacity Gaps

Most FWUCs handle only basic operations such as canal cleaning or gate management. They lack the skills to fully manage the handed-over irrigation system, assess investments, budget for O&M, or prepare maintenance plans—tasks currently handled by PDWRAM. Without targeted training in planning and budgeting, there is a risk that rehabilitated systems will again deteriorate.

iii. Gap in communication and coordination

Miscommunication and information sharing among national and sub-national government (MoWRAM, PDoWRAM) and local authorities. This resulted in an overlapped intervention between MoWRAM and District for the two-water gate repair in Tean Kam.

In some communes, officials who signed the MoU did not inform the unit preparing the Commune Investment Plan (CIP), resulting in irrigation contributions being omitted from the 2025 CIP. While commitments have since been reaffirmed, the gap underscores the need for better internal communication and follow-up.

Box 1: Could or Should Co-Financing Become a Development Model in Cambodia?

The ISD-Nurture collaboration in Banteay Meanchey highlights co-financing as more than resource pooling - it shifts responsibility from donors toward government institutions, fostering local ownership while reducing reliance on external aid. While Sub-Decrees 182 and 184 (2020) mandate that sub-national administrations take responsibility for water infrastructure and governance, it is unrealistic to expect them to assume these responsibilities immediately. Co-financing offers a transitional mechanism, easing authorities into their responsibilities, both financially and institutionally.

In addition to the early institutional changes mentioned above, during District Investment Workshops, officials promoted irrigation projects to attract support from other NGOs - signaling a growing willingness to mobilise resources beyond the ISD-Nurture framework. At the same time, significant gaps remain in quality assurance, monitoring, and sustainability measures.

Looking ahead, the project should treat co-financing potential as a broader development model, as a testable proposition, benchmarked against the fiscal, administrative, and political conditions that have made cost-sharing arrangements durable. A review of past cost-sharing initiatives in health, education, and infrastructure could also offer useful comparisons - assessed against a consistent framework: financing structure, legal basis, institutional ownership, and whether the initiative survived donor exit.

Replicate models in other project target provinces to test the mechanisms while mapping the legal pathways for pitching the co-financing into sub-national budgets, engaging government counterparts to gauge political will, and defining what partial institutionalization could realistically look like.



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