Training
Operation and maintenance training of solar water pumps

7 August 2025, Thimphu Deluxe, Thimphu, Bhutan

Context
Bhutan's irrigation sector is vital for its largely agrarian population, with over 56% employed in the agriculture sector. However, irrigation development faces several challenges, including rugged terrain, limited arable land, and vulnerability to climate change. Traditional irrigation systems suffer from poor maintenance, water losses, and limited reach, especially during dry seasons. Additionally, rural-urban migration is reducing the labour force needed to manage these systems. Yet, there are significant opportunities for modernisation. Bhutan's abundant water resources offer potential for expanding and upgrading irrigation infrastructure. Integration of climate-resilient technologies, such as solar-powered pumps, can enhance water efficiency. Strengthening community-based water management initiatives can ensure sustainable, inclusive development in the sector.

Bhutan's irrigation sector lacks skilled human resource, especially women, to operate modern systems like solar-powered pumps. While women constitute 58% of the agricultural workforce, few receive technical training in modern irrigation technology. This gender gap limits the adoption and efficiency of modern systems.

Objective
Bhutan Ecological Society and the International Centre for Integrated Mountain Development (ICIMOD) are organising a one-day training on operation and maintenance training of solar water pumps. The training is targeted to women technicians and irrigation system operators.

The objective of the training is to impart knowledge on the basics of solar water pumping systems, role of operators, preventive maintenance and basic troubleshooting procedures.

Tentative agenda

Time	Topic	Duration
09:00–09:30	Welcome and overview (Trainers'/participants' introduction, objectives, and structure of the day, pre-training survey)	0.5 hr
09:30–11:00	**Basics of solar pump operation** (How solar pumps work? Key components, and safe operation practices)	1.5 hr
11:00–11:15	Tea break	—
11:15–12:45	**Preventive maintenance practices** (Cleaning panels, checking wiring, ensuring pump safety, avoiding dry runs, schedule for maintenance)	1.5 hrs

12:45–13:15	**Troubleshooting common issues** (No water, low water output, controller errors, shading problems, pump noise/vibration)	0.5 hr
13:15–14:00	Lunch	—
14:00–17:00	**Field visit to Paro, return to Thimphu** (On-site observation and walkthrough of maintenance checklist: checking panels, connectors, wiring, motor, controller display, etc.)	3 hrs