

In Nepal

70%

of springs show a declining flow trend

Gulmi Darbar, Gulmi

“RENEWABLE ENERGY TECHNOLOGY INTERVENTION IN WATER-ENERGY-FOOD NEXUS TO SUPPORT CLIMATE-RESILIENT LIVELIHOOD” PROJECT

Climate leadership should move beyond acknowledging issues and routine calls for action. It's crucial to understand why these calls go unanswered and to actively implement effective solutions.

The Centre for Rural Technology, Nepal (CRT/N), through its strategic “partnership for climate action” approach, has successfully implemented the 'Renewable Energy Technology Intervention in Water-Energy-Food Nexus to Support Climate-Resilient Livelihood' project in Balithum Village, Gulmi District. This project stands out as a unique example of an effective climate partnership, bringing together diverse stakeholders under a shared vision for community resilience with financial support from Lumbini Provincial Government (NPR 15,00,000/-), Gulmi Durbar Rural Municipality (NPR 23,00,000/-), Alternative Energy Promotion Center (AEPC) (NPR 55,33,953/-), UNDP/GEF-SGP (NPR 67,02,026/-) and Wine to Water (WTW) (NPR 52,51,000/-). It showcases that collaborative climate action can deliver high-impact results even in challenging rural settings. This integrated approach of solar water-lifting system for a Multi-Use System (MUS), climate smart agriculture along with spring source conservation, offers a replicable model for addressing intertwined issues of water, energy, and food security in other climate vulnerable regions of Nepal.

Co-funding Agencies



Lumbini Provincial Government
Alternative Energy Promotion Center



Gulmidarbar Rural Municipality



GEF-SGP/UNDP



Wine to Water

Roles of CRT/N



Water-Energy-Food Nexus for Climate Resilience

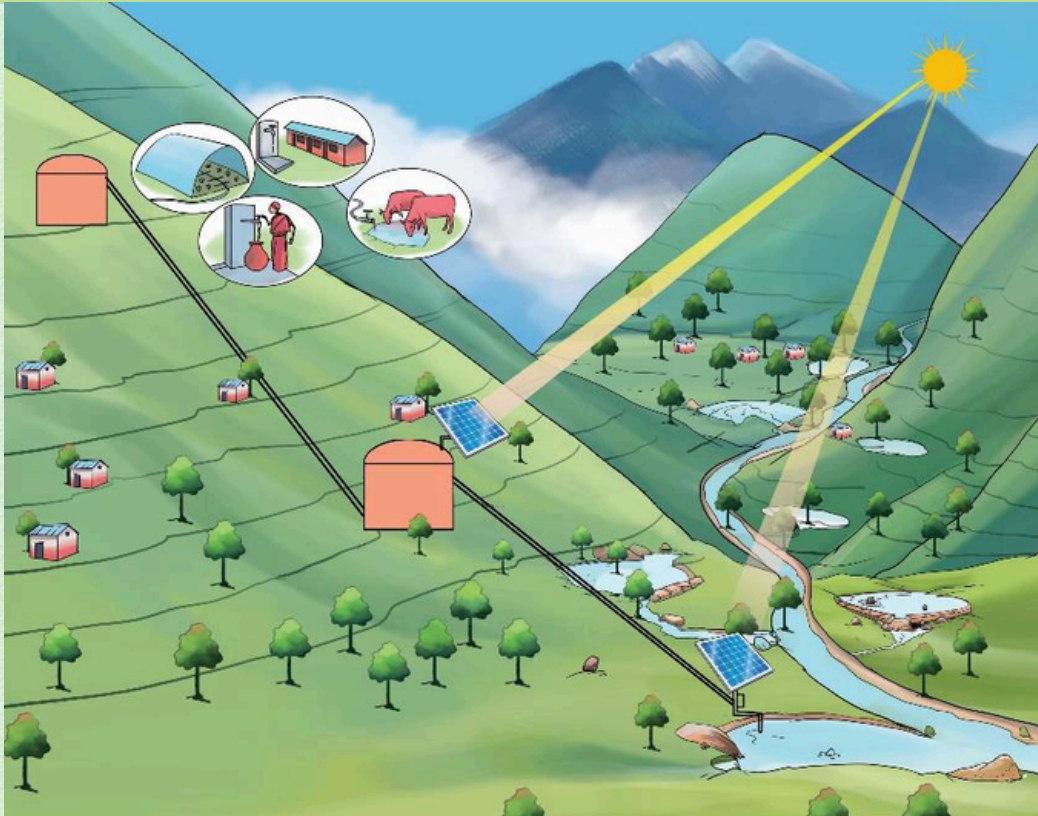
3. Good health and well-being



6. Clean Water and Sanitation



7. Affordable and Clean Energy



10. Reduced Inequalities



13. Climate Action



17. Partnerships for the Goals



1. Solar Lift Water Supply System



System Components and Co-funding at a Glance

Component	Support/Contributor	Contributed amount
100 m ³ Distribution Tank	Gulmi Darbar Rural Municipality	22,00,000/-
75 m ³ Intake Tank	CRT/N with UNDP/GEF-SGP funding	24,23,273/-
50 m ³ Intermediate Tank	Lumbini Provincial Government	15,00,000/-
Transmission Pipeline 2 km (4")	Wine to Water	52,51,000/-
Solar PV System & Pumps (BOS)	AEPC	55,33,953/-
Local material and unskilled labor	Kind-contribution from community	24,00,000/-
Total Solar Lifting System Cost		1,93,08,226/-

For enhancing the system's sustainability, the following measures have been implemented:

- ✓ The users committee has been engaged with all vendors involved in the system installation/construction,
- ✓ Along with system warranty extended for the next 5 years, spare pumps and controllers have been provided,
- ✓ 5 community members have been trained on operations and maintenance of the system,
- ✓ Water tariff collection mechanism has been established

Project Timeline



June-2025

- System testing and commissioning
- plantation of vetiver grass for landslide-prone area protection
- Operation & Maintenance (O&M) training
- Inauguration



May-2025

- Agro-cooperative training



Dec 2024-March 2025

- Construction of civil structures
- Installation of electromechanical components



Dec-2024

- Groundbreaking ceremony for solar water lifting system



Sept-2024

- Climate-smart agriculture training



July-2024

- Plantation of water regenerative plants



June-2024

- Partnership for Climate Action established
- Detailed Feasibility Study (DFS) by AEPC



May-2024

- Location identification and construction of recharge pond



April-2024

- Training for water resource conservation and biochar making



March-2024

- Local level inception meeting



Nov-2023

- Contract signing, site verification, and pre-survey

2. Water Source Conservation

A. Training Community for Spring Monitoring



- A group of 40 community members, including the Water User Committee, were trained at Padhare Khola on spring flow measurement and identifying recharge zones for spring conservation.

B. Locate & Construction of Recharge Pits



- To enhance water recharge and sustainability, 24 recharge pits are constructed in the watershed catchment area with active community participation to store rainwater and improve soil moisture.

C. Community Forest Management



- Under the community forest management initiative, 750 water regenerative plant species are planted in the spring catchment area to support water recharge and biodiversity conservation.
- 1,000 vetiver grass are planted in the mudslide-prone areas to stabilize soil and protect the water supply infrastructure.

3. KAP-Approach on Climate-Smart Agriculture

A. Biochar

Using the Knowledge, Attitude, and Practice (KAP) approach, a hands-on biochar training was conducted on Ram Bahadur Pun's upland farm in Balithum, engaging 27 participants to address soil acidity and fire risks through climate-smart carbon sequestration.



B. Commercial Vegetable Farming

A total of 41 farmers were trained in Climate-Smart Vegetable Farming using reclaimed gray water, 15 farmers participated in Mushroom Farming training,



C. Agro-cooperative

30 villagers received capacity-building support to strengthen agro-cooperative market linkages and vegetable collection systems.



Long-term Benefits



- ✓ Enhanced Water Security
- ✓ Reduced drudgery for women
- ✓ Improved Quality of life
- ✓ Improved Health, Hygiene & Sanitation
- ✓ Enforced Gender Inclusive in Climate Action
- ✓ Behavioral Change toward environmental responsibility
- ✓ Realized benefits of Climate-smart Agriculture
- ✓ GHG Emission Reduction
Avoided 18 ton of CO2 annually
- ✓ Improved Economic Empowerment

Impact on Gender

Like any other typical households, in Balithum village, women are the primary managers of household water and are responsible for most domestic chores. Since water is essential for cooking, cleaning, and caring for the livestock, its availability is directly tied to women's daily lives and well-being.



Life Before the Project

- ✓ Long hours spent fetching water during dry Season
- ✓ Unsafe water leading to health issues and poor sanitation
- ✓ Limited time for education, income generation, or leisure
- ✓ Few opportunities for personal growth and community engagement



Life After the Project

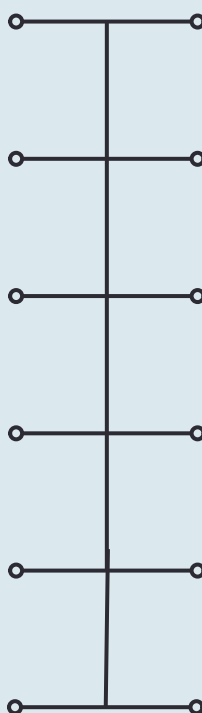
- ✓ Improved personal health and hygiene
- ✓ More time for education, income-generating activities, and family care
- ✓ Enhanced women empowerment and participation in community decisions

Pre-Project Situation

- 1 Insufficient water reservoir tank- 62 m³
- 2 Distressed with unsafe and limited water supply-25 lpd per person
- 3 Depleting and Unprotected spring (water source)
- 4 No commercial vegetable farming
- 5
 - A handful livestock
 - Traditional rainfed subsistence agriculture
- 6 Limited Access to Market System

Immediate Outcomes

- I Reliable water access to 330 HH with 162 m³ distribution tank and 125 m³ reservoir tank
- II Safe water supply with capacity of 65 liters per person per day
- III Revived springshed
- IV Reclaimed water in kitchen garden in every households
- V 56 households practicing climate smart agriculture
- VI 30 vegetable farmers linked to market through agro-cooperative



ग्रामीण प्रविधि केन्द्र
Centre for Rural Technology, Nepal (CRT/N)

Towards Action for Development ... Since 1989

G.P.O. Box: 3628, Kathmandu | Man Bhavan, Lalitpur
Phone No.: 977 01 5447627/5430071/5444758
Email: info@crtnepal.org | Website: www.crtnepal.org
Facebook: [@crtnepalorg](https://www.facebook.com/crtnepalorg)