



Solar irrigation for Agriculture Resilience (SoLAR)

CONTEXT

Farmers increasingly rely on irrigation to counter rising temperature and rainfall variability, leading to growth in energy demand and depletion of groundwater resources. With 20.4 million pumps, the irrigation economy in Bangladesh, India, Nepal and Pakistan in South Asia is overwhelmingly dependent on groundwater. The intensity of groundwater extraction is influenced by access to subsidized electricity. Groundwater irrigation in the region accounts for up to 1/5th of total carbon emissions from agriculture.

The project rationale is to promote shift to solar irrigation pumps to reduce the carbon footprint of irrigation, coupled with incentives and policies for the sustainable management of groundwater and climate resilient agriculture in South Asia. The project while promoting solar irrigation, will focus on enhancing understanding of the impacts of the technology on groundwater, agriculture and equity in order to help the country partners identify the most appropriate approaches to promote Solar Irrigation Pumps while avoiding the negative outcomes.

Besides country efforts, the project will collaborate with the International Solar Alliance (ISA) which has identified solar water pumps as one of its priority technologies. Swiss innovation in groundwater monitoring through electricity use, efficient solar pumps and smart micro grids will be tested in the partner countries.

OBJECTIVES

The main goal of the project is to contribute to climate resilient, gender and socially inclusive agrarian livelihoods in Bangladesh, India, Nepal and Pakistan by supporting Government efforts to promote solar irrigation.

The specific objectives are:

- Improved empirical evidence supports development of climate resilient, gender and socially inclusive and groundwater responsive solar irrigation policies.
- Innovative actions and approaches for gender and socially inclusive and groundwater aware solar irrigation are validated.
- Increased national /global knowledge and capacity for gender and socially inclusive and groundwater responsive solar irrigation policies and practices.



Clean Energy & Energy Efficiency

PROJECT AT A GLANCE

Area: Adaptation and Mitigation

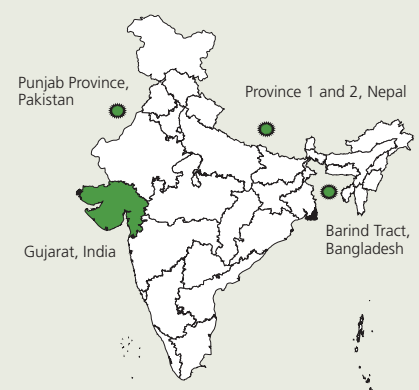
Duration: December 2019 - June 2024

Budget: CHF 5'300'000

Implementation Partners:

- International Water Management Institute (IWMI)
- Infrastructure Development Company Limited (IDCOL) in Bangladesh; Gujarat Urja Vikas Nigam Limited (GUVNL) and Gujarat Energy Research and Management Institute (GERMI) in India; Alternate Energy Promotion Centre (AEPC) and Nepal Electricity Authority (NEA) in Nepal and Federal Water Management Cell (FWMC) and Pakistan Agricultural Research Council (PARC) in Pakistan and International Solar Alliance (ISA)

Geographic Focus:



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
and Cooperation SDC

KEY ACHIEVEMENTS & ONGOING WORK

- In Bangladesh, the Country Project Management Committee has evolved into the only platform bringing all public sector agencies working with solar irrigation pumps (SIPs) together.
- Project research results have led to Nepal revising its SIP subsidy delivery policy to better target women and smallholder farmers.
- The project research results are being used by Nepal and Bangladesh for mapping emission reductions due to SIPs in order to mobilize climate finance.
- 2700 technicians were provided trainings on SIP operation and maintenance, benefits of grid integration, and water management with a view to enhance operational efficiencies and financial viability of public investments in SIP.
- The adoption of SIPs is leading to an increase of 10%-20% in farmer incomes due to switch to higher value crops, reduction in the cost of irrigation services, and receipt of payment for injection of surplus energy into grid.



EXPECTED RESULTS

- Documentation of the impact of solar pump adoption on livelihood, groundwater sustainability and climate resilience.
- Demonstration of gender responsive, pro-poor and groundwater aware solar irrigation models.
- Demonstration of technical and institutional modalities for grid connection of solar irrigation pumps in South Asian region.
- Multi-stakeholder forums support global and regional exchange of knowledge on best practices in gender and socially responsive and groundwater aware solar irrigation practices and policies.



IN NUMBERS



There are close to 11.8 million electric and 8.6 million diesel pumps in operation in Bangladesh, India, Nepal and Pakistan.



South Asia is the world's largest user of groundwater for agriculture, withdrawing 262 km³ of groundwater annually (50% of the global abstraction).



South Asia's agriculture a key source of greenhouse gases and short lived climate pollutants (SLCPs).



Bolstered by steep decline in panel prices solar irrigation pumps are increasingly becoming an important part of the renewable energy strategies and agriculture support programs of the Governments.



Despite availability of high subsidies in most countries, less than 10% of the solar irrigation pumps are owned by small and marginal farmers. In case of women farmers, this number is only 5%.



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ABOUT SDC IN INDIA

The Swiss Agency for Development and Cooperation (SDC) has been a partner of India for more than 60 years. Since 2011, SDC's engagement focuses specifically on climate change adaptation and mitigation, and other environmental challenges. The office in India is part of SDC's strategic engagement on Climate, Disaster Risk Reduction and Environment. As part of its regional and global initiatives, SDC also has ongoing activities related to food systems, water and health in India.

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