Solar-powered irrigation and pest management in Karnataka, India

Project duration: 15 months

Photo: TERI

In 2024, EKOenergy granted €58,384 to The Energy and Resources Institute (TERI) to provide smallhold farmers in Karnataka, India with sustainable, solar-based water pumping systems and solar-powered pest control devices. These systems now help farmers improve crop yields, reduce pesticide use, and increase their income.

Agriculture is a key element of India's economy, yet farmers in semi-arid regions such as northern and central Karnataka often face erratic power supply, water scarcity, irregular rainfall, overexploited groundwater, and over-reliance on chemical pesticides. These challenges limit productivity, harm the environment, and endanger the health of farmers and local communities.

With EKOenergy's support, TERI, together with its local partners, introduced solar-powered irrigation systems, pesticide sprayers, insect traps, and smart moisture meters across three villages in Karnataka: Kesarhatti, Mudaldinni, and Sultanpur.

Under the project, 25 farmers received three solar water pumps (8 kW each), two moisture meters, 10 solar sprayers, and 10 solar insect traps to demonstrate and promote solar irrigation and pest management. Additionally, 40 sprayers, 40 insect traps, and 10 moisture meters were provided to the local Farmer Producer Organisations for rental use, enabling wider farmer access at minimal cost.

Through hands-on demonstrations and training sessions, TERI helped farmers adopt smart, clean-energy technologies to irrigate fields, manage pests, and reduce their complete dependency on unreliable, polluting, and costly energy sources.

Each solar-powered water pumping unit delivers an uninterrupted water supply for crops, saving an estimated 10,500 kWh per year, equivalent to €705.25 in annual savings per farmer. The solar pesticide sprayers (20 W each) and insect traps (5 W each) have further transformed pest management practices. Farmers now use 50% less labour and time, and have reduced chemical pesticide usage by up to 70%. Additionally, solar-powered moisture meters allow for more efficient irrigation methods, saving 20–30% of water.

The project team focused a lot on information sharing, with local stake-holders as well as with government agencies. For example, at the end of the project, TERI organised a state-level workshop to share the project's findings.

This project demonstrates how the introduction of solar energy and access to clean and reliable energy facilitate sustainable farming solutions and help tackle many challenges at once. This project contributes directly to multiple UN Sustainable Development Goals (SDGs), including Zero Hunger (SDG 2) and Decent Work and Economic Growth (SDG 8).

Thank you to all those involved in making this project a success, and thanks to all EKOenergy sellers and users. Without you this project would not have been possible!

EKOenergy's Climate Fund

- Focus on energy poverty and multiple Sustainable Development Goals
- New projects annually in low- and middle-income countries
- Projects run and monitored by trusted NGOs
- Selected through a transparent process
- In 2024, EKOenergy approved grants for 23 new projects
- All EKOenergy users contribute 0.10 € / MWh to the Climate Fund

EKOenergy - the global ecolabel for renewable energy

EKOenergy is the global ecolabel for energy (electricity, gas, heat and cold). We are a non-profit initiative working to fight climate change, protect biodiversity and realise the Sustainable Development Goals.

Energy with the EKOenergy ecolabel fulfils additional sustainability criteria. Through our ecolabel we also raise money for our Climate Fund, which is used to finance new renewable energy projects in low- and middle-income countries.

EKOenergy's network of authorised sellers makes EKOenergy-labelled energy easily available in over 80 countries worldwide. Many consumers of EKOenergy-labelled energy choose to use our ecolabel on their website or products to demonstrate their commitment to a 100% renewable and sustainable world.

EKOenergy users include large international businesses such as Microsoft, SAP, Pampers, Mercedes-Benz, SCHOTT and the Iliad Group, as well as cities, public organisations and individual households.

Sustainability criteria: additional value for our planet

	EKOenergy	Other renewable energy	Grid mix
Recommended by environmental organisations	✓	?	-
Extra criteria to minimise the impact of energy production on nature. For example, hydropower installations with fish passes and wind turbines outside important bird areas	✓	?	-
Renewable energy tracked by EACs, such as GOs and I-RECs (In line with Greenhouse Gas Protocol Scope 2 Guidance)	✓	✓	-
Contributes to renewable energy projects in developing countries, advancing the realisation of multiple Sustainable Development Goals	✓	-	-
Available and recognised worldwide	✓	-	-
Supports the promotion of a transition to renewable energy worldwide	✓	-	-

Endorsed by global standards

EKOenergy is recommended by many international environmental standards such as CDP, the Greenhouse Gas Protocol, Greenkey for hotels and LEED-certification for buildings.

"A growing number of hotels in Europe have already switched to EKOenergy and include the EKOenergy logo in their communication with their guests. Follow their lead and go the extra mile."

Green Key

"Ecolabels are a way for companies to do more with their purchases. EKOenergy, mentioned by the GHG Protocol Scope 2 Guidance, is such an option: it is a mark of quality which comes on top of tracking certificates."

CDP

"EKOenergy represents the best available option for the sustainable and additional consumption of renewable electricity within Europe."

U.S. Green Building Council LEED USGBC

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info@ekoenergy.org | www.ekoenergy.org