

'Solar water pumps have huge potential in India'



As the Indian farmers hugely depend on underground water for irrigation their field, Solar pumps can be very useful, as their dependence on imported diesel can reduce substantially, write *Anjali Godyal* and *Vikas Jha*



Almost about 70 percent of India's population live in rural areas. Agriculture is the bedrock of Indian economy. Irrigation system in India is usually about huge projects that incur high capital expenditure. Hence, policies at the central and the state level are mostly tilted in favour

of big projects.

With the increasing pace of globalization and growing environmental pollution, it has become imperative to develop innovative and cost-effective solutions, which help enhance yield and quality, yet address the aforementioned challenges. Renewable energies are fast establishing

themselves as ideal solutions.

Solar water pumps have huge potential in India as they provide water for irrigation to villages at the micro level. The government and many not-for-profits organisations have been trying to pilot such initiatives in different parts of the country. The pilot of solar pumps by Sehgal Foundation in some locations of Bihar has brought out interesting facts. Solar pumps can be very useful in Bihar as most farms are not electrified and the farmers depend mostly on diesel water pumps, which is why Bihar Renewable Energy Development Agency has been trying to promote the use of solar pumps through schemes and subsidies.

NABARD also has a capital subsidy scheme for promoting solar photovoltaic water pumping system for irrigation where 40 percent subsidy is provided. The process

of accessing this subsidy, however, is complex and farmers are not aware of how to go about it.

Sehgal Foundation follows a cluster development approach for making technology accessible to farmers. It has formed a solar pump group of 15 farm families whose fields are irrigated by one solar pump costing Rs 3 lakh. To buy this pump, one farmer contributes Rs 30,000.

Sehgal Foundation provides a grant of Rs 1.5 lakh to it and Rs 1.20 lakh is leveraged from the government subsidies through effective partnership with banks and government agencies. Those members of the solar pump group who have not contributed to the capital cost buy water at the rate of Rs 10 an hour whereas the market rate of water from the diesel pump is Rs 90 an hour which increases to Rs 130 during peak seasons. But the rate of the solar pump is fixed and the money collected is used for the maintenance of the system.

Of course, a lot of emphasis is placed on the capacity building of farmers who own solar pumps so that they can be encouraged to becoming good entrepreneurs. This is facilitated through a cost effective water-as-a-service approach, training on basic upkeep, maintenance of solar pumps and panels, usage of water for different crops, micro irrigation, water harvesting in local ponds and zero tillage.

Learning new techniques

Sehgal Foundation has piloted 14 solar pumps in East Champaran and Samastipur districts of Bihar. However, while providing easy access to ground water, Sehgal Foundation is conscious on promoting the efficient use of resources in farming by producing new technology.

Zero tillage and laser levelling are not known to most farmers in India. Zero tillage preserves moisture in the soil thereby reducing the irrigation cycle for crops. Laser-levelling technology has huge potential to save irrigation water. It is a precision levelling technique for agricultural fields which levels the field and reduces the slope. Water efficiency will reduce the cost of production. Improved productivity will enhance income, making agriculture more remunerative for marginal and smallholder farmers. Efficient water use in




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agriculture is also critically important for the sustainability of agriculture, particularly in water-stressed regions.

●● COST EFFECTIVE, ENVIRONMENT-FRIENDLY

The use of solar-powered pumps can decrease the input cost to 25 percent. For a small and marginal farmer, this is considerable. In addition, solar water pumps operate with zero carbon foot-print. According to a study, the use of diesel-based irrigation pumps to operate wells and tube wells across India results in the

emission of an estimated 3.29 million metric ton of carbon. This represents approximately one percent of India's total carbon emissions (Shah, 2009).

The use of solar water pumps combined with the usage of appropriate technologies such as zero tillage, laser levelling and water conservation at the local level can be very useful for water and agriculture in India. 

Credential of the authors: Anjali Godyal is the director of projects and VikasJha is the director of governance and policy advocacy at Sehgal Foundation, Gurgaon. (Views expressed by the author are personal)

