



## Improving the Market Ecosystems for Solar Irrigation Pumps

Activities under the Indo-German Energy Programme (IGEN)





## The Challenge



The market for solar water pumps in India has primarily been driven by both national and state level government schemes addressing irrigation and rural drinking water needs. Although there is an estimated potential of 70 million solar pumps to be installed in India by 2020, this market has not evolved to its full potential due to a number of deterring factors. Affordability (cost of the technology in relation to existing income levels of customers), awareness (knowledge about the technology), accessibility (options to obtain the technology), and lack of technology customization (matching farmers' needs with technology solutions) are the most crucial issues affecting the adoption of solar water pumps in India.

Low demand from farmers, coupled with the absence of economically viable business models and a non-supportive market ecosystem significantly restrict the growth of the solar pumping sector in India. The market ecosystem in particular lacks robust sources of financing for companies as well as customers, which is mainly due to a lack of awareness and evidence about the financial viability of solar pumping solutions. The current regulatory environment, offering subsidized electricity for irrigation, makes the economics of solar water pumps less attractive with a short-term perspective, even though solar water pumps still tend to be more economic in the long-run.

## Key challenges for market development of solar water pumps in India

Demand	Supply	Poor market ecosystem
<ul style="list-style-type: none"> <li>• LOW AWARENESS AND KNOWLEDGE ABOUT THE TECHNOLOGY</li> <li>• HIGH UPFRONT COSTS; LOW AFFORDABILITY</li> <li>• MISMATCH BETWEEN THE NEEDS AND THE TECHNOLOGY SERVICES PROVIDED.</li> </ul>	<ul style="list-style-type: none"> <li>• LACK OF VISIBILITY OF THE TECHNOLOGY IN THE RURAL MARKET.</li> <li>• POOR SUPPLY CHAIN FOR AFTER SALES SERVICES.</li> <li>• LACK OF ECONOMICALLY VIABLE BUSINESS MODELS</li> </ul>	<ul style="list-style-type: none"> <li>• LACK OF MARKET INTELLIGENCE AND KNOWLEDGE NETWORKS</li> <li>• LACK OF COORDINATION BETWEEN DIFFERENT GOVERNMENT PROGRAMMES / SCHEMES</li> <li>• SUBSIDY ON ELECTRICITY AND DIESEL FOR IRRIGATION</li> </ul>

## The IGEN Approach

GIZ aims to create an enabling market ecosystem for increased adoption of solar water pumps for irrigation by addressing some of the mentioned key challenges. IGEN-RE will undertake activities in three major areas as depicted in the sections below.

### Facilitate demand creation

Lack of knowledge about the technology and its potentials have been one of the key reasons for limited demand for the product amongst the farmers. Limited understanding of the regional rural market and poor knowledge of the consumer preference have furthermore resulted in a lack of customization of the technology. IGEN-RE will be undertaking the following activities to increase the demand.

#### INCREASE AWARENESS OF FARMERS AND OTHER STAKEHOLDERS

IGEN-RE will design and develop a technology demonstration and awareness generation site using different solar water pump technologies in two districts of Bihar. IGEN-RE will organize "technology fairs" for farmers involving technology providers, financial institutions, local NGOs and government officials. The demonstration camps are expected to improve their understanding of the technology and increase the demand for the solar water pump.

#### IMPROVING MARKET INTELLIGENCE AND KNOWLEDGE BASE

IGEN-RE will facilitate in understanding the consumer preferences, and explore options to customize the technology. This market intelligence would help the private sector to improve their marketing strategy and to customize the technology. IGEN-RE would also develop a database on the key features of the most common technologies available in the market.

### Improving the supply chain

Accessibility (options to obtain the technology) is one of the key challenges for the widespread use of solar pumps. Furthermore, after sales services are often very weak in remote rural areas discouraging farmers from buying the product. Hence, IGEN-RE will be undertaking the following activities to strengthen supply chains.

#### DESIGN INNOVATIVE SERVICE DELIVERY MODELS

IGEN-RE will be working with private companies, financial institutions, and civil society organisations to develop and design innovative service delivery models such as pay-as-you-go models or the introduction of mobile pump sets that can be shared by groups of farmers.

#### CAPACITY BUILDING ALONG THE SUPPLY CHAIN

IGEN-RE will develop the capacity of local stakeholders such as technicians, private companies, and pump operators to improve the supply chain and to address the issues relating to operation and maintenance of the solar water pumps.

### Supporting the market ecosystem

Improving the market ecosystem for solar water pump requires coordinated institutional support not just from financial institutions but also from the government. Different government departments are currently exploring the options of utilizing solar pumps, but often in an uncoordinated manner. The private sector, on the other hand, is yet to develop a viable service delivery model. Hence, IGEN-RE will be undertaking the following activities to improve institutional support mechanisms.

#### CONVERGENCE ACROSS DIFFERENT GOVERNMENT PROGRAMME

IGEN-RE will explore opportunities to converge with different Central and State sponsored schemes to improve the market ecosystem for solar water pumps.

#### SENSITIZING BANKS TO FACILITATE ACCESS TO FINANCE

IGEN-RE will pilot innovative service delivery models to demonstrate the cash flow potential for farmers and thereby influence rural banks to customize loan products that are flexible with convenient repayment mechanism to ensure end user financing. IGEN-RE will organize 'technology demonstration fairs' and create interactive sessions with farmers and representatives from rural banks.

The services delivered by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH draw on a wealth of regional and technical expertise and tried and tested management know-how. As a federal enterprise, it supports the German Government in achieving its objectives in the field of international cooperation for sustainable development. It is also engaged in international education work around the globe. GIZ currently operates in more than 130 countries worldwide.

Germany has been cooperating with India by providing expertise through GIZ for more than 50 years. To address India's priority of sustainable and inclusive growth, GIZ's joint efforts with the partners in India currently focus on the following areas:

- Energy - renewable energy and energy efficiency
- Sustainable Urban and Industrial Development
- Natural Resource Management
- Private Sector Development
- Social Protection
- Financial Systems Development

Within the context of the Indo-German Energy Programme (IGEN), GIZ is supporting the Ministry of Power (MoP) in the promotion of Energy Efficiency. Together with the Ministry of New and Renewable Energy (MNRE), GIZ is further working on increasing the usage of Renewable Energy in the country.

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