



IGEN-RE

Facilitating Access to Renewable Energy in Rural Areas

Background

As per Census 2011, almost 400 million Indians do not have access to electricity and about 600 million use polluting, health-hazardous and inefficient biomass stoves for cooking their daily meals; the majority of them reside in rural areas. Even where available, access to electricity is erratic and unreliable hampering the development of rural industries and enterprises.

Access to sustainable and clean energy in rural areas can act as means for poverty reduction by providing economic opportunities and improving the quality of life of the rural population.

Considering the existing gap between demand and supply of energy in the country and dwindling conventional sources of energy, renewable energy sources can play an important role for India's future energy supply. Rural India holds significant potential for utilizing local energy resources like biomass, water, and solar radiation; however a large amount of this potential still remains untapped.

The Renewable Energy Component of the Indo-German Energy Programme (IGEN-RE) was initiated in 2010 as a collaboration project between Ministry of New and Renewable Energy (MNRE) and GIZ to strive jointly for the promotion of renewable energy in rural areas.

IGEN-RE Approach

The objective of IGEN-RE is to improve the conditions for energy supply based on renewable energy in rural areas. In order to achieve that goal IGEN-RE is engaging in the following types of interventions:

- Implementing pilots together with the private sector to demonstrate replicable business models
- Facilitating the development and implementation of supportive policies and programmes at state and national level
- Capacity development & support for key stakeholders in the rural renewable energy sector
- Facilitating knowledge dissemination through conferences, workshops, and strengthening of practitioner networks



Rural Electrification & Mini Grids



DEVELOPING SUSTAINABLE BUSINESS MODELS FOR MINI GRIDS IN UTTAR PRADESH AND WEST BENGAL

In 2011 the Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA) started a pilot initiative to provide access to basic lighting services through solar mini-grids. IGEN-RE is providing support to strengthen this initiative and develop a sustainable programme for solar mini grids through commercially-sound business models. Under this programme, a district-level bundled approach is being adopted, which provides a certain degree of scale that is attractive for private developers.

West Bengal already has significant experience with mini grids, but the key challenge remains the lack of a suitable incentive mechanism to attract private capital. IGEN-RE is therefore providing support to the West Bengal Renewable Energy Development Agency (WBREDA) in order to develop an appropriate incentive mechanism for off-grid electrification using renewable energy sources.



SUPPORTING DECENTRALISED POWER GENERATION FROM PINE NEEDLES IN UTTARAKHAND

Uttarakhand is dominated by large pine forests; pine needles pose a significant risk, given that they are highly inflammable and therefore result in frequent forest fires. In order to address this problem, the Uttarakhand Government has permitted large scale collection of pine needles for industrial uses. IGEN-RE is providing support to UREDA in order to help establish a sustainable programme for the use of pine needles as a source of energy in Uttarakhand.

IGEN-RE is carrying out detailed studies on techno-economic viability and the social impact of the collection and use of pine needles as a source of energy. IGEN-RE has also initiated a development partnership with AVANI, an NGO in Kumaon region of Uttarakhand that is planning to pilot a 120 kW pine needle gasification plant. The partnership is to understand the potential challenges in setting up pine needle supply chains and build respective capacities and institutional structures.



Market Development for Renewable Energy Products



Image: SAMUHA (samuha.org)

PROMOTING CLEANER COOKING TECHNOLOGIES

In India, stove technologies for efficient and clean use of biomass are available; however, the number of sustainable business models for distributing cookstoves is very limited.

Together with the private sector, IGEN-RE is analysing prevalent cooking practices and user preferences of cookstoves in its focal states. It is developing the markets for improved cookstoves in the focal states by carrying out market assessment studies, developing awareness campaigns and mechanisms for end user finance. IGENRE is also supporting the design and implementation of West Bengal Renewable Energy Development Agency's (WBREDA) programme to disseminate 20,000 fixed cookstoves. It is furthermore developing a Programme of Activities (PoA) for improved cook-stove projects to enable stove entrepreneurs to tap into additional revenue streams from carbon credits.



Image: Selco (selco-india.com)

LAUNCHING THE SELCO INCUBATION CENTRE

The market potential for rural energy services is not yet tapped on a larger scale by private enterprises due to the lack of successful business models and experienced entrepreneurs. IGEN-RE is supporting the Small-Scale Sustainable Infrastructure Fund (S3IDF) to set up an incubation centre to support social enterprises that want to deliver clean energy services to the poor. The Karnataka-based solar lighting company SELCO acts as a model to be adapted and replicated in other areas of the country. The centre aims at utilising SELCO's rural solar business expertise to support new start-up companies in delivering Solar Home Systems to rural communities. The project aims at improving business capacities for 25 rural energy entrepreneurs per year, of which five enterprises will become ready for external investment. The project is operational since September 2012 and has provided incubation support for seven enterprises operating in Rajasthan, West-Bengal, Madhya Pradesh, Assam, and Meghalaya. For more information, visit:

www.selcoincubation.org



Image: Claro Energy (claroventures.com/index.php)

SUPPORTING THE SOLAR PV WATER PUMPING SECTOR IN BIHAR

The irrigation needs of the farm sector in Bihar are currently addressed predominantly through diesel pumping. In comparison to solar irrigation pumps, diesel pumps are not only expensive to operate and maintain but also cause significant local pollution. Especially in the context of the recent increases in fossil prices, distributed energy solutions such as PV pumping are viable alternatives that offer farmers a way to reduce their operating costs. IGEN-RE is providing support to the Bihar Renewable Energy Development Agency (BREDA) in order to help develop a market ecosystem for the promotion of PV pumping solutions.

As a first step, IGEN-RE undertook a study to develop an overview of the current status and potential for solar water pumping in Bihar. IGEN-RE has also entered into a public private partnership agreement with a start-up solar pumping solutions company to explore innovative business models and enable end-user financing for solar water pumping in Bihar. IGEN-RE also intends to provide capacity development support in order to assist BREDA in implementing its ongoing scheme.



UPGRADING WATERMILLS IN UTTARAKHAND

In Uttarakhand, water mills have traditionally been used primarily for grinding of food grains. However, these watermills were being gradually replaced by diesel and electric mills. Recognizing the potential benefit of energy from hydro sources in the hilly regions, there have been efforts from UREDA to revive this technology. IGEN-RE is providing support to UREDA to strengthen the existing Improved Watermills Programme in Uttarakhand with a view to increase the uptake under this scheme.

As a first step under this initiative, IGEN-RE undertook a preliminary study to assess the current status of the Improved Watermills Programme (IWMP) in Uttarakhand. Based on the findings from the study, IGEN-RE has decided to implement 3-5 pilots in select districts of Uttarakhand. For the pilots, closely located watermills will be selected to form clusters which will then be linked with existing value chains and self help groups for value addition and marketing and with rural banks for financing.



FACILITATING ACCESS TO FINANCE FOR RURAL RENEWABLE ENERGY ENTERPRISES

A lack of financing is widely perceived as the main barrier for the scaling up of small rural energy businesses. In the absence of a detailed understanding of risks and challenges associated with particular technologies as well as plant sizes and risk mitigation measures, designing interventions to attract investments to the rural renewable energy market becomes very challenging. To fill this knowledge gap, IGEN-RE has initiated a study that analyses different barriers to finance to rural renewable energy enterprises. The study will suggest solutions for these barriers of which the most promising will be implemented through pilots.

INVOLVING CORPORATES IN THE ENERGY ACCESS SECTOR

There is a critical role which larger enterprises can play as a solution provider in expanding access to energy. Large companies offer scalable delivery channels and financial resources that can complement initiatives by smaller local and social entrepreneurs that provide solutions to meet local customer needs.

IGEN-RE is, therefore, exploring potentials to integrate national and international corporates into the energy access sector.

ENSURING GENDER EQUALITY IN ENERGY ACCESS

IGEN-RE is undertaking a study to analyse the current energy situation in rural areas from a gender perspective. IGEN-RE has furthermore established gender indicators for all of the projects within its portfolio. These will ensure that gender mainstreaming is effectively embedded in the project planning, execution and monitoring of ongoing and future IGEN-RE activities.

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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