



## Village Energy Security for Vavdi and Vaddithar

Patan district, Gujarat

With support from

**Ministry of New and Renewable  
Energy, Government of India**  
and

**UNDP GEF Small Grants Programme  
India**

### Introduction

The remote regions of India either face severe shortage of power or are not connected with grid system. Presently, while conventional energy sources are depleting, use of alternate energy sources is proving to be commercially successful only on massive scale. In process, providing energy security in remote villages still remains unachievable. Fortunately, many villages have abundant biomass resources, which have created opportunities to develop biomass-based energy systems. The biomass-based energy generation coupled with plantation is one of the most effective ways to increase energy security of rural habitats.

IRADe was awarded two projects on Village Energy Security under Remote Village Electrification Programme of Ministry of New and Renewable Energy Sources (MNRE), Government of India. The projects are implemented in two remote hamlets- Vavdi and Vaddithar in Patan district, in northern part of Gujarat. Prior to this project, the hamlets were not electrified by conventional electric grid system.



### Project Objectives

- Meet village energy requirements through biomass based conversion and other renewable technologies.
- Address total energy needs including for household cooking and lighting, street-lighting and commercial facilities of shops, flourmills.
- Demonstrate techno-economic parameters of village energy security plan.
- Study resource availability, energy requirement and social cohesion among local communities in context of implementing local project models involving biomass resource and conversion technologies.

### Approach and Activities

The projects involve installation of different energy production systems. Participatory process involving PRA tools and community meetings was



considered to determine the needs of villagers and increase awareness about energy systems. A Village Energy Committee (VEC), which comprises half women members, was formed in each hamlet to manage the project and aid us in carrying out project activities.

The energy systems considered in these projects are biomass gasifiers, biogas plants, oil bearing plants and improved cooking stoves (Refer table for details). A room and shed is constructed to keep biomass gasifiers. Labour for installation and commissioning of systems, and electrification was given by communities. The produced electricity is supplied to households through a mini electricity grid.

Systems/ Devices	Quantity	
	Va	Va
Biomass Gasifiers (10 kW)	2	2
Dung based biogas plants (2 CuM)	5	15
Improved Stoves (Chulhas)	80	82
Service Line for households	80	82
Street lights	8	8
Plantation (in ha)	6	8
Oil Expeller	0	1

Va- Vavdi hamlet; Va- Vaddithar hamlet

### Community Participation and Sustainability

The project demonstrates a replicable model of providing a decentralised community-based solution to meet energy needs of rural communities. Participation in this project has moved beyond mere consultation as the households were mobilised to contribute 10% to project cost in cash or kind. This has increased community owning for the project.



Ensuring long-term sustainability of our interventions is the key concern of project design. VEC members were encouraged and trained to take programme and financial responsibility of youths from each hamlet were taken to Vadodara in Gujarat for exposure visit and imparted training in operation and maintenance of gasifiers. This has reduced their external dependency.



### Energy-based Livelihoods

Different energy-based livelihood alternatives were identified in consultation with community. Addition to domestic electricity supply, efforts were made to encourage individuals or groups of men and women to take up energy based livelihood alternatives. Through external financial support we will provide them seed capital and other help to purchase their livelihood assets. Formation of women Self-Help Groups and establishment of small-scale enterprises is in process to build strong local institutions and ensure long-term livelihood benefits.

### Project Partners

**A. Self-Employed Women's Association (SEWA)** is a grassroots organisation working in Gujarat for women empowerment for three and half decades. SEWA is a trade union of urban and rural self-employed women that earn their livelihoods through own labour or small business. The team from SEWA Radhanpur office is involved in project implementation.

**B. Gujarat Energy Development Agency (GEDA)**, establish the Government of Gujarat, is the State Nodal Agency for this programme. GEDA is involved in dissemination of information on renewable energy and plays a catalytic role in promotion of renewable technologies in the state.

**C. Village Energy Committees (VECs)** of Vavdi and Vaddithar hamlets, comprising community representatives, are responsible for overall operation and management of project activities.

**D. Village Community** is the owner of this project.

### About IRADe

Integrated Research and Action for Development is a fully autonomous advanced research institute, which aims to do research and policy analysis, impart training and serve as a hub of network among various stakeholders. The institute focuses on research for effective action through multi-disciplinary and multi-stakeholder groups, and seek to identify implementable solutions leading to effective governance. The key focus areas are Energy System- Policy & Planning, Natural Resources and Environment Management, Infrastructure-industry and institutions, Rural and Urban Development, Climate Change and Clean Development Mechanism.

In a short span, IRADe has worked with government, non-government and multi-lateral agencies such as MOEF, MNRE, CSO, Stanford University, USA, SEWA, Winrock International, SANEI, UNEP-Geneva, and PETROFED as well as with private sector such as PricewaterhouseCooper, New Delhi and Reliance Industries Limited. IRADe has also done studies on integrated perspective and techno-economic assessment of biodiesel in India for petroleum federation of India (PETROFED) and Technology Information Forecasting and Assessment Council (TIFAC).

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