
Gram Oorja Solutions Private Limited



September 2014

Executive Summary



- Problem – Millions of rural households, farmers, institutions and businesses in India suffer from little / poor quality / no access to reliable modern sources of energy
 - This problem can be mitigated using local renewable energy sources with long term sustainability
 - Earlier attempts have mainly addressed lighting, the rural aspirations go far beyond
 - The Government has allocated funding, policy issues are still being resolved
 - CSR initiatives will help in pointing the way and in creating examples
 - Gram Oorja Solutions Private Limited, estd. 2008, acts as a catalyst in commercializing on-the-ground viable Renewable Energy solutions with focus on the rural sector
 - Gram Oorja specialises in micro-grids for Remote Village Electrification, project implementation in solar and biogas, Electricity as a Service (ESCO) and consulting for rural energy projects.
 - Gram Oorja works with well established NGOs in areas of their operation to facilitate the above
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Problem Statement



Electricity in parts of rural India has the following characteristics:

- Village electrified but very poor supply
Many villages have only 5-6 hrs of electricity supply per day
- Village electrified but very few households connected
As per Census 2011, rural household electrification level stands at a dismal 54%
About 75 M rural households do not have access to electricity
- Village un-electrified
Many villages are located in remote / inaccessible areas, which increases the cost of installing a grid or are not permitted to be connected to the grid by law
Population in these villages have little or no access to modern sources of energy

Gram Oorja implements projects to mitigate the above problems

About Gram Oorja



- We are Gram Oorja Solutions Private Limited, established in April 2008.
 - We act as a catalyst in commercializing on-the-ground viable Renewable Energy solutions with focus on the rural sector.
 - We specialise in micro-grids for Remote Village Electrification, project implementation in solar and biogas, Electricity as a Service (ESCO) and consulting for rural energy projects.
 - Gram Oorja is well recognised and consulted by several government and non-government organisations in India and abroad including the Ministry of New and Renewable Energy, Centre for Science and Environment, Observer Research Foundation, Prayas Energy Group, Shakti Sustainable Energy Foundation, GIZ – a German initiative for international cooperation, UCL-Berkeley and Princeton University.
 - We work closely with communities and well-established NGOs like Pragati Pratishthan and Sanjivani Seva Trust.
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The Team



- **Sameer Nair**, Director, is an IIMB graduate with 18 years combined experience in rural electrification, banking, software and investment banking
 - **Anshuman Lath**, Director, is an IIMB and IIT graduate with 17 years experience working in rural electrification, SMEs, tribal education organisations and investment banking
 - **Prasad Kulkarni**, Technical head, is a M. Tech in Energy Systems and has 9 years experience in energy conservation and in rural electrification
 - **Sudhindra Nath Chatterjee**, is an engineer with 31 years in the software industry. Has headed the CSR activities of a large multinational
 - In addition, 6 member team comprising of project engineers. Team well versed in surveys, project design and on ground execution in remote rural locations
 - Part time members include **Ganesh Shenoy** and **Ashutosh**, field experts with over 25 years each in the social sector
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The Work



- **Micro-grids for remote village electrification** – Darewadi in Maharashtra and Viral in North Karnataka.
 - **Project Implementation in solar and biogas** – solar pumps installed in 17 villages in Thane district, solar solutions installed in rural schools and other institutions, biogas plants implemented for ashrams (Tamil Nadu), dairies (Rajasthan) and restaurants (Maharashtra).
 - **Electricity as a Service** – Project implemented in rural Uttar Pradesh where we sell electricity from our power plant to a rural BPO.
 - **Consulting** – Demand assessment and policy inputs for rural energy solutions, surveys to determine status of established projects. Surveyed more than 150 villages across 7 states.
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Energy is the enabler



- Education
 - Electrification of rural schools enables computer usage and science laboratories
 - Health
 - Electrification of health centres allows them to use modern equipment and cold storage
 - Filtered drinking water plants to mitigate water borne diseases
 - Reduction in smoke related diseases due to firewood based cooking
 - Entertainment and Communication
 - TVs and mobiles allow people to be connected
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Energy is the enabler



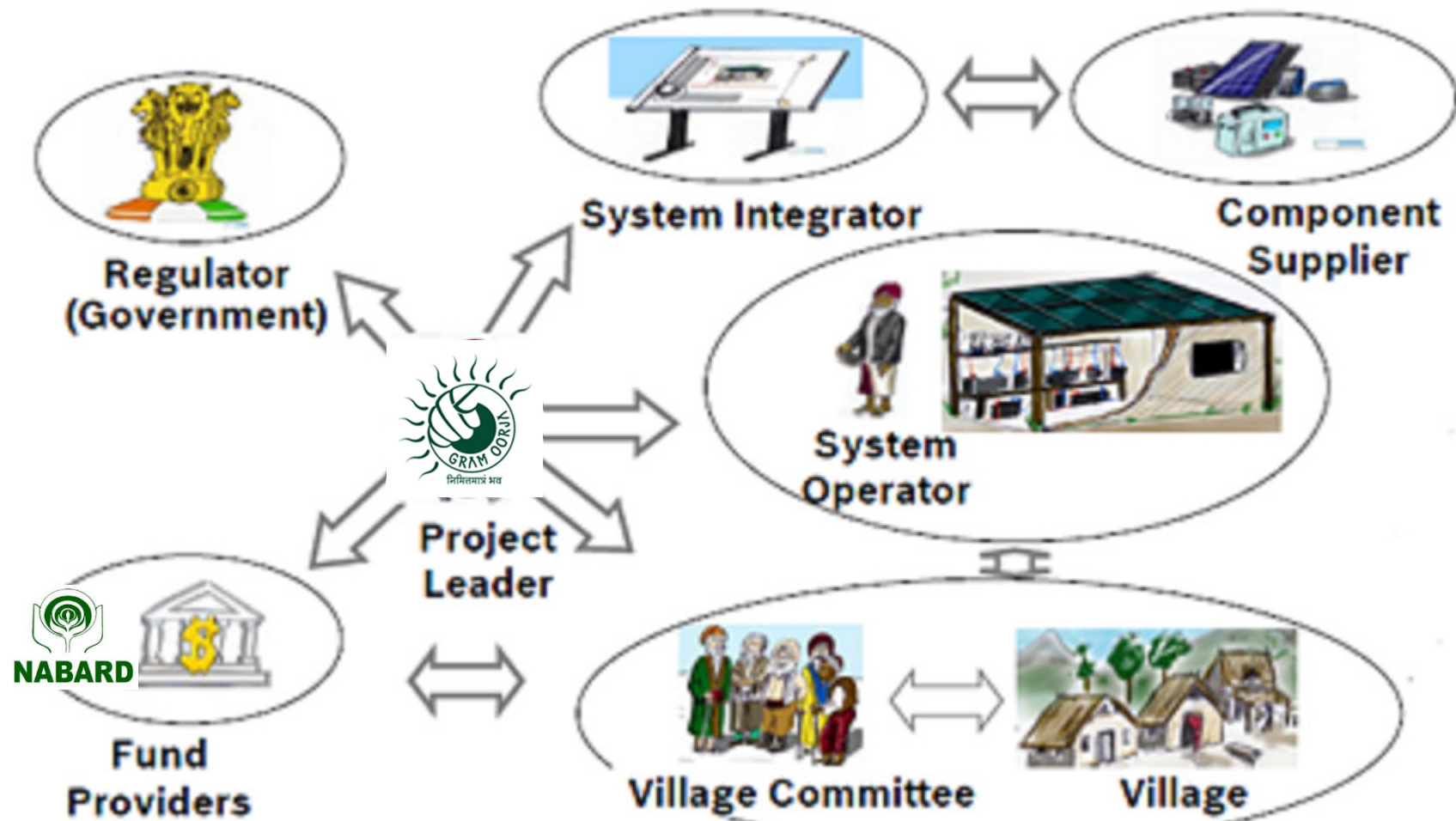
- Women empowerment
 - Cleaner and less cumbersome cooking systems with biogas
 - Saves time and energy for getting firewood and kerosene
 - Increases time for family and for productive cottage industries
 - Livelihood generation
 - Irrigation for a second crop in many tribal areas
 - Milk chillers and other conversion of raw material into more remunerative products
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Energy – Impact on rural lives



- Improvement in the quality of life
 - Augmented income
 - Improved agricultural productivity
 - Lesser reasons to migrate to towns and cities
 - In remotest areas, feeling included in the mainstream is important
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Gram Oorja – Business role



Micro grid at Darewadi



- A small hamlet of 39 households (Population 220) located in Junnar taluka of Pune district
- Complete ownership of plant and micro grid by village energy committee (Vandev Gramodyog Nyas)
- 9.4 kWp solar micro grid in operation since July 2012
- Plant cost - Rs.30 Lakhs
- Current collection from all beneficiaries is ~ Rs.5,500/- per month and increasing with realization of latent demand
- 7 TV sets, 2 computers, 2 water pumps and 1 flour mill in operation apart from basic lighting
- Local youth trained to maintain plant, generate bills and collect payments
- See ORFs take on Darewadi - <http://www.youtube.com/watch?v=X3PApE6vY1w>



Case study - Darewadi



Impact assessment

Before the installation

- There was no electricity available
- Kerosene was used for lighting
- No TVs and other appliances were used
- Lengthy walk was involved for grinding grain
- No water pumps for irrigation and households



After the solar grid installation

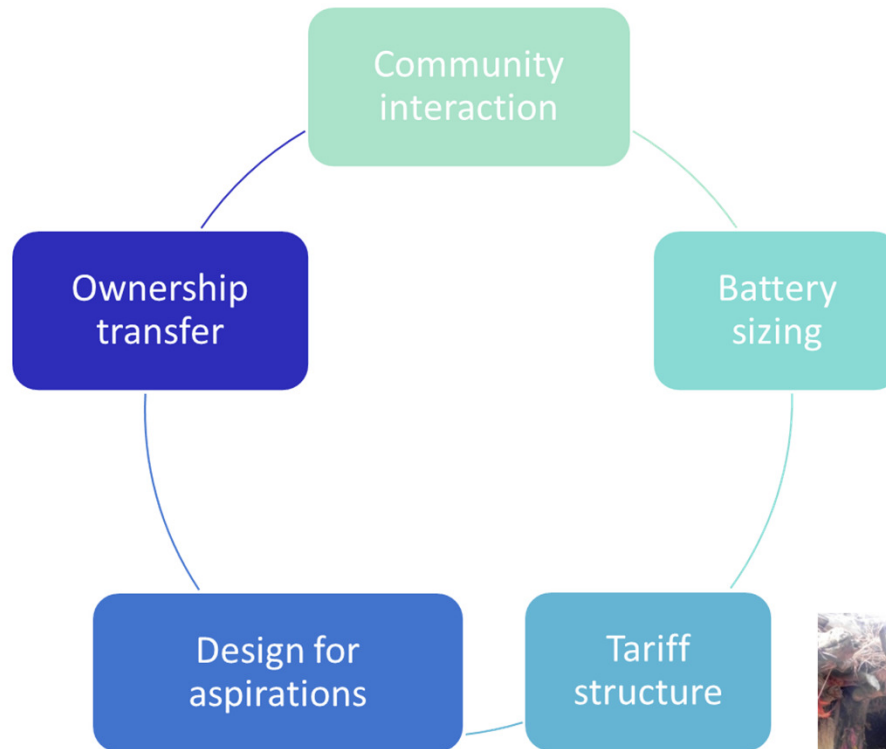
- 39 houses with metered high quality electricity - no significant outage
- Average 3 LED lights per house
- 9 TVs with satellite dish connections
- 2 computers installed
- 1 grinding mill in operation
- 2 water pumps in operation
- Local youth trained and ready for scaling up elsewhere



Micro grids – the circle of success



Ensuring sustainability





Contact

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Thank You

Appendix

Business Model for Remote Village Electrification



Case I (Gram Oorja initiated project)

Gram Oorja will -

- Identify villages as part of a cluster
- Initiate social interaction
- Estimate demand (current and latent)
- Size the project and prepare DPR
- Identify potential fund sources
- Execute the project
- Train and maintain

Gram Oorja targets a margin of 15-20% of project cost

Case II (Village is identified by the fund provider - Govt., CSR / NGO, Tech partner)

Gram Oorja will -

- Do the community mobilisation
- Execute the project
- Maintain it as contracted

Gram Oorja targets a margin of 10-15% of project cost

Solar water pumping system



- Solar water pumping system for domestic and agriculture use
- Water delivering capacity in the range of 5,000 - 1,00,000 liters per day and max. head of 200 m
- Estimated cost: ~ Rs. 3.0 Lakh, it depends on location and water requirement, water storage and pipeline cost is not included
- Beneficiaries: Communities or hamlets lifting water for domestic use from a large distance, farmers which are using diesel pump sets for irrigation
- Geography: Anywhere across India
- Projects done: Different villages in Jawhar taluka, Agriculture Research Institute; both in Thane District, Maharashtra



Community biogas plant, piped gas network



- Community biogas plant based on cattle manure, food or agro waste (subject to availability) and piped gas distribution network
- Gas usage for cooking or process heating, gas pressure and cooking timings same as for LPG
- Biogas usage can be metered and tariff to the consumers which can take care of operations and maintenance
- Estimated cost: Rs. 12 - 15 Lakh for communities with 25 - 50 households
- Beneficiaries: Communities which are using firewood for cooking or communities facing difficulty in getting LPG cylinders may be because of remoteness, school refectory or mid-day meal in semi -urban or rural schools
- Geography: Anywhere across India
- Projects done: Piped gas network for community in Kolvan village, Pune district, Maharashtra



Solar PV systems for Educational Institutes



- Small solar PV systems (1 - 5 kWp) for running electrical load in schools, offices especially for running critical day time loads such as computers along with some lighting and fan load
- Estimated cost: Rs. 2.5 Lakh typically for 1 - 1.5 kWp system
- Beneficiaries: School computer labs, computer training centers, offices in rural areas etc.
- Geography: Anywhere across India
- Projects: Pragati Pratisthan (Jawhar, Thane), Sadhana Village (Mulshi, Pune), Ghatandevi Shikshan Prasarak Mandal (Igatpuri, Nashik), Keshav srushti (Uttan, Thane)



Solar PV systems for Health Care Centers



- Small solar PV systems (1 - 2 kWp) for running diagnostic equipment, small refrigerator for storage of medicine etc. in Primary Health centers
 - Solar PV system (3 - 10 kWp) in Blood banks or Hospitals for running medical and health care equipment along with basic lighting, fan and computers
 - Small solar PV systems (1 kWp) for running water purification unit
 - Estimated cost: Rs. 2.5 Lakh for Primary Health Centers and for water purification unit, Rs. 6 - 20 Lakh for Blood banks or Hospitals depending on the requirement
 - Beneficiaries: PHCs, Blood Banks, Hospitals in rural areas
 - Geography: Anywhere across India
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Associations



Grass-root organizations

- Pragati Pratishthan, Thane, Maharashtra
- Sanjeevani Seva Trust, Uttar Kannad, Karnataka

CSRs

- One of the largest trusts in India
 - ARAI
 - Rotary
 - Some of the leading finance, manufacturing and IT companies
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