

India Jatropha electrification initiative of Winrock International India (WII)

The remote village electrification initiative by Winrock International India (WII) aims to promote bio-fuels for improving access to clean and affordable energy to the rural population in Ranidehra, Chattisgarh. It is designed to be a replicable model and a real example of how Jatropha oil can empower rural isolated communities to be energy independent and self-sustaining by using straight run no-edible vegetable oil. It is not only the first in India but in the world. It had an overall budget of near \$89 thousand USD with a generating capacity of 3*3.5 KVA to serve 107 households, 553 people. with 3 hours of electricity for the households and 3.5 hours of streetlights using 1 ton of Jatropha seeds per month.

Against a background of addressing energy security, poverty reduction, environmental concerns, livelihood issues and the overall quality of life, all major issues for India, the initiative assumes great significance for distant villages like Ranidhera that are remote and underdeveloped with very limited access to education and healthcare. Bio-diesel's big advantages are in its local uses, oil from plants provides new opportunities of relative prosperity because it makes it possible to run tractors, pump sets and generators. The mainly tribal village has relied on natural sunlight for studying, cooking and house chores were carried out under dimly lit lights from kerosene. With the support of WII, the villagers planted Jatropha curcas saplings on the periphery of their agricultural lands in July 2005 and have had electricity since April 2007, without even one day of downtime.



This is an evolving project with heavy emphasis on community participation and alternative livelihood opportunities. It aims to improve weak elements as they are identified. Some key issues of the project include:

- 28 streetlights located at key areas, collection of drinking water from the public hand pumps has been easy and possible during the evenings.
- Rice dehusking machine installed through the project within the village helps to save both time and money.
- Formation of women self-help-group (SHG) has strengthened the financial power of the women as they can have access to economic resources during emergency.
- Children are having computer training within the project area. The trainer is a young woman from the village itself and has been employed through the project.
- Street lights have made it safer for women
- After the commissioning of the power plant- people from the village itself were trained to operate and maintain the equipment.
- It is a self sustaining closed system with minimum dependence on external support,
- Bank accounts for the village were opened in the nearby bank.
- Electricity from Jatropha is costlier than that from the power grid but is cheaper than kerosene,
- More information on: http://www.winrockindia.org/act_proj_ene_prom_bio_1.htm

**India Jatropha electrification initiative of Winrock International India (WII)
Good Practice Assessment for Bioenergy Projects**

General data

1. Name of Assessor: Kaysara Khatun & Rocio A Diaz-Chavez
2. Institution: University of Bristol and CEP Imperial College London
3. Date of Assessment October 20 2009
4. Name of Project: India Jatropha electrification initiative of Winrock International India (WII)
5. Contact name at project: Sobhanbabu Patragadda and Mr. Nilanjan Ghose from
6. Place of Project: Ranidehra, Chattisgarh, India
7. Characteristics of Project

Tick if project is an initiative from:

Private community government NGO other

8. State how do you know the project

information from investor/
promoter field trip a) and b) other

specify other _____

9. After reading the characteristics of the project (in Annex) please assess the following principles according to the scale:

- 1 The project does not consider this principle (0%)
- 2 The project covers this principle partially <30%
- 3 The project covers partially this principle in 30-70%
- 4 The project covers partially this principle in <70%
- 5 The project fully covers the principle (100%)

Principle	Name	Score
1. Good agro-ecological and forestry practices (biodiversity, soil		4

Comments

- Intercropping

- Improving water supply and quality
- Press cake may be used for manure in the near future and thus completes the nutrient cycle- this is still under scientific study as toxicity needs to be ruled out

2. Not affecting water supply and quality

5

Comments

- WII undertook a study to assess the water resources in the area, based on which a water management plan has been developed to meet competing water resource needs in the future
- The soil and moisture conservation works helped to reduce the surface water flow and increased the periodicity of the available water for agricultural use

3 No land use change that detrimentally affects food security

5

Comments

- The village had unused barren land where Jatropha saplings could be planted.
- Villagers grew Jatropha around their fields in the boundaries, in addition to their normal crops. This activity was undertaken to ensure no conflict between food and fuel.

4 Community participation (from planning)

5

Comments

- Community mobilization is a very crucial aspect using a bottom up participatory approach, for management of facilities, including the tariff setting, bill collection. The initiative has resulted in improved awareness for the processes undertaken
- Various stakeholders are being engaged for designing intervention, which would ensure ownership of the initiative by the local community and ensure sustenance of efforts beyond the period of project intervention.
- A village energy committee manages the demand for extra fittings; it has equal representation from the two main communities in the village, the Gond and the Baiga
- All planting activities were carried out by the villagers themselves. They managed to plant more than 25,000 saplings over a number of months through voluntary labour.

5 Women's participation (from planning)

4

Comments

- With domestic electricity in place, women can complete their household chores more easily after sunset. The project has installed 63 improved cooking stoves and 2 biogas plants through the project. This initiative has reduced the duration for cooking and has also improved the indoor air quality within the households
- Women spend much more time in the agricultural field as they are assured of domestic electricity for a stipulated period of time during the evening. The increased time in the agricultural field is yielding to marginal improvement in their income

- With 28 streetlights located at key areas, collection of drinking water from the public hand pumps has been easy and possible during the evenings
- Rice dehusking machine installed through the project within the village helps to save both time and money. Women generally bring paddy in smaller quantity at regular intervals rather than carrying large quantities to the nearby town located approx 12 km away from the project location
- Formation of women self-help-group (SHG) has strengthened the financial power of the women as they can have access to economic resources during emergency. The members of the SHG are now providing loans to women beyond the group for addressing their emergencies
- Children are having computer training within the project area. The trainer is a young woman from the village itself and has been employed through the project. There is now an increasing demand for this training within the village
- Street lights have made it safer for women

6. Skills transfer (management, business, agriculture)

5

Comments

- A power house was designed to be built at a suitable spot on the village. The village electricity committee owns the system. WII trained the committee members in the proper administration requirements
- After the commissioning of the power plant, people from the village itself were trained to operate and maintain the equipment. A series of training and capacity building exercise were carried out to train local technicians who will carry out minor repairs of the machinery. They are also capable of maintaining the distribution network, the oil expeller and the filter press
- The villagers will also have the skills to manage the supply of Jatropha seeds and ensure that they are available in adequate quantities to keep the system running

7. Community inclusion in business or economic model (Contract with investor or NGO).

4

Comments

- WII has conducted mass awareness campaigns and regular visits to the site and has established a good rapport with the village community. WII has an agreement to utilize the seed obtained from these tree-borne oil plants for electrification of village
- Different models by which local communities and not just entrepreneurs can earn money from trees are being explored
- A Village Energy Committee has been set up, which oversees the operation and management of the power plant

8. Added value in the community (individual, money, assets, land, co-products)

4

Comments

- It is a self sustaining closed system with minimum dependence on external support, a rarity in rural electrification projects. It has eased the burden on household tasks, study times have increased, shops stay open later and street lights make it safer and utilize activities in the evenings

- Installation of rice dehusking machine which is being used by people within and beyond the project village
- Operational computer class within the village
- Increase awareness of electricity generation activities to ensure proper care of the existing resources (Jatropha saplings within the village)

9. Improvement in services and infrastructure (energy supply, health) reinvestment of revenue within the community

5

Comments

- The power plant provides the village with 3 hours of electricity for the 110 households and 3.5 hours of streetlights using 1 tonne of Jatropha seeds per month
- The village has cfl (compact fluorescent lamps). WII provided free wiring and gave each household one cfl, distributing more lamps as per demand and affordability
- Distribution lines to feed power to all households and house wiring work have been completed. The villages have been paying for the electricity voluntarily every month making the project financially viable
- Movies shows for villagers within the power plant

10. Compliance with National policies and/or guidelines for bioenergy projects in place

4

Comments

- The success of the project would go a long way in addressing the issue of energy security and influencing the Government of India's policy for improving rural India's access to clean and affordable energy. WII has established linkages with MNRE, Government of India, the Chattisgarh State Government, Chattisgarh Renewable Energy Development Agency (CREDA), Chattisgarh State Planning Commission, local Government departments - forestry, land and water resources

11. Compliance with Local programmes, regulations and/or plans in place

4

Comments

- One prime responsibility of WII was to design and set up the plant along with associated facilities. Benefits of the intervention were quantified in terms of indicators on energy security, livelihood opportunities, environmental benefits, and other social evolution.

12. Respect Land rights and avoid displacement

5

Comments

- As land ceiling laws have failed to bring about any significant redistribution of privately owned ceiling-surplus land, many states have sought to redistribute some public land referred to as 'wasteland' to landless households, usually in very small patches. However, as the term implies, much of the land redistributed is of low quality and generates low and uncertain crop yields

Overall assessment

48

Out of 60

Additional comments on the project:

Large amounts of forest and non-forest land belong to the government. Only around 58 percent of India's total land areas for which records are available are private, cultivable land. All other land is considered forest land (22%), uncultivated revenue land (7%) or common land or wasteland (20 %)

Agricultural marketing is only slowly being liberalised. Regulations has not increased farmer's incomes and in many cases have effectively limited much needed private investment in agriculture, due to this realization, in 2003 the Ministry of Agriculture formulated a Model Act that allows farmers to sell their produce directly to traders and processors and to enter into contract farming relationships. Most states (although partially) have amended their agricultural marketing acts on the lines of the Model Act (Government of India, 2008).