Project Narrative

Long Project Title – Jatropha biodiesel based water pumping for irrigation in poor Terai communities

Suggested Short Project Title – Nepal Innovation Biodiesel Project

Acronym (if any) – NIBP

Background/Why we're there –
Inadequate irrigation facilities have resulted in low agricultural productivity in Nepal. While 80% people rely on agriculture for living, only 44% of total land is irrigated and contribution to GDP is mere 36%. Decentralized and affordable irrigation is a must to improve this situation. Pumping water from decentralized sources is a potential solution. Most farmers use diesel and electric pumps for this purpose. Diesel is becoming increasingly unaffordable and unavailable. Subsidized electricity is cheaper but extending electricity lines to the farmers' lands requires high upfront costs. This entails the need to identify yet another alternate source of energy for affordable pump irrigation.

Jatropha is an indigenous plant in the Terai areas of the country. However, oilseeds of these plants have not been used as alternate source of energy till today. Poor communities in Terai seriously require cheaper source of energy to operate irrigation water pumps. Oil from Jatropha seeds can be used to produce biodiesel locally using simple small scale biodiesel plant. These communities can cultivate their own Jatropha plants in the community waste lands or as hedges in their private land. Every year, the farmers will collect these seeds and take it to the community biodiesel plant to produce biodiesel. The biodiesel will be used to operate irrigation pumps and the oil cake will be used as organic fertilizer replacing the currently used chemical fertilizer.

Objectives
Works on biofuels are limited to studies and workshops at the moment in Nepal. There is urgent need for on-the-ground demonstrations to get the government and the donors interested. By implementing this project Winrock will have demonstrated an approach in providing the poorest Terai communities with affordable and sustainable irrigation facilities. The specific objectives are:-

- Establishment of ten community owned water pumping facilities
- Establishment of one small scale biodiesel plant through a local entrepreneur
- Operation and maintenance training
- Establishment of pro-poor seed collection and distribution mechanism
- Inventory of available Jatropha seeds and waste lands in 9 more poor communities
- Awareness program (including exposure visits) in ten poor communities

Activities/Components
A village in Siraha District (Eastern Terai district) with around 200 households is the site for the pilot project. Around 100 poor households in this village cannot afford to use diesel operated irrigation pumps. 10 community groups of 10 HHs each had been formed. Initial stage, financing mechanism has been planed to develop in collaboration of a local financial institution to provide loan to each group to purchase irrigation pump which they will share among themselves. These groups will pay back the loan on a monthly basis. One entrepreneur in the village will be provided

loan through a local financial institution to install a small-scale biodiesel plant. That time around 2,000 kg of Jatropha seeds available in the village from Jatropha plants growing in the community lands and as hedges in the private lands. These seeds will be collected and used for biodiesel production for demonstration. With the help of a local NGO and the community groups, agreements will be made with the VDC to use seeds from Jatropha plants on community lands by the poorest households at modest costs. Preparations will be made for new plantations in the community waste lands.

Inventory of available Jatropha seeds and wastelands appropriate for new Jatropha cultivations will be developed for 9 other poor Terai communities. Awareness campaigns will be carried out in all these communities including the demonstration site. Trainings will be provided on operating biodiesel plant to the entrepreneur and also on proper operation of irrigation pumps. Exposure visit to the demonstration site will be made for 9 other Terai community representatives. Possibilities of promoting other biodiesel based applications (like cook stoves, electricity generation, agro-processing, etc.) will also be explored in the selected communities.

Accomplishments/Results

Through this project, Winrock worked to enhance the use of locally available jatropha seeds as an alternative source of energy to operate irrigation pumps in the Terai region of Nepal. The project has succeeded in establishing a small scale expelling plant (bio diesel plant) in Siraha district. This project has supported establishment of ten community-owned water pumping facilities, jatropha seed inventory, awareness programs in nine other communities, as well as capacity building activities.

Identification of nine more communities, awareness raising programs and inventory of existing seed in nine districts have been completed. A pro-poor jatropha collection mechanism has been established at the community level. Establishment of an expeller plant at the community level was delayed due to frequent disturbances in Siraha district. The incorporation of the Poverty Alleviation Fund (PAF) as a project partner is a welcome outcome; PAF procedures to verify grassroots involvement in order to qualify for community support, however, were lengthy and contributed to the delay. The establishment of the expeller plant was behind schedule. This affected timely establishment of jatropha oil based water pumping system. Similarly, subsequent planned activities such as capacity building remain pending at the time of project closure at the end of December 2008.

Identification of ten community user groups

Ten community based user groups within PAF program areas were identified with the help of partner organization Center for Integrated Rural Community Development, Nepal (CIECOD - Nepal). The groups are as follows:- 1) Janaki Dalit Women Community Group, 2) Ram Janaki Women Community Group, 3) Arati Women Community Group, 4) Ma Sarashotti Women Community group, 5) Pargati Community Group, 6) Gramin Women Community Group, 7) Manakamana Community Group, 8) Suvakamana Community Group, 9) Suryodaya Community Group and 10) Guheshowori Community Group.

These community groups were already formed by the PAF program for community development and income generation activities. 10-15 poorest HHs within each group have been identified for the promotion of jatropha base irrigation system for income generation activities.

Preparation of awareness material and awareness program

Awareness material have been developed and distributed at awareness-raising programs. Pamphlets focusing on distribution and importance of jatropha have been developed. One-day awareness programs have been conducted in identified user groups through local NGOs. Awareness materials were distributed through these groups.

A community mobilization strategy to highlight Jatropha as a potential fuel for irrigation pumps has included community involvement in establishing an expelling center, obtaining a pump for irrigation, as well as for the collection and utilization of jatropha oil within the community. The community-based approach has been presented at awareness programs, as well as at field interactions. 10-15 poor households have been identified within each PAF group; in total 10 groups was identified. These groups also identified the jatropha collectors and collected seeds from the designated collectors at a fixed price of NRs 10 per kg. This is about US$ 0.13 per kg. A coordination committee will be formed with representation from ten groups for operation and maintenance of the expelling center. The irrigation pump will be managed by the individual user groups based on individual requirement.

Small scale expelling center (biodiesel plant) established

Based on the demand from the community, and the availability of jatropha seeds, a small scale expelling center has been established in Janaki Dalit Women's Group in Bastipur VDC, ward no-4, Ghale tole, Siraha district. This expelling center has been established in Janaki Dalit Women's Group specifically for the demonstration; it will be managed by a coordination community of representatives from all ten irrigation pump user groups following establishment of irrigation pumps in the other nine groups,.

PAF has contributed NRs 160,000 (US $ 2133.33) for procurement of the expeller, filter and construction of the expeller house. Winrock has contributed NRs 25000 (US $ 333.33) to construct roofing for the expeller house, and community mobilization. There has also been considerable community contribution. In-kind contribution from the communities for labor costs for construction of the expelling center amounts to NRs 187500 (US $ 2500).

Inventory of available Jatropha seeds and waste lands in 9 more communities

District level workshops, and jatropha inventory through focal group discussion and individual survey have been carried in 9 different districts (Kanchanpur, Kailali, Banke,Dang, Nawalparasi, Tanahu, Gorkha, Makwanpur and Siraha districts). The workshop was conducted at 4th, 5th 8th and 9th September, 2008 in Kailali, Kanchanpur, Banke and Dang district respectively. Similarly the workshop was conducted at 14th, 15th 16th, 24th September and 13th November, 2008 in Makwanpur, Nawalparasi Tanahu, Gorkha and Siraha district respectively. These interaction sessions have involved local stakeholders in each district, discussing the importance of Jatropha, and exchanging information on existing resources, plantation on waste land, and possibility of using Jatropha oil in rural areas. Local history of Jatropha cultivation and use, as well as other pertinent information were

collected from the workshop. 20 to 30 participants participated at each workshop. Interactions indicate that about 8-10 tons of existing seeds are available in each of these nine districts

Establishment of ten community owned water pumping facilities

Establishment of community irrigation pumps in ten community groups is in process. PAF has already released NRs 110000 (US $ 1447) to the Janaki Dalit Women's Group for procurement of an irrigation pump. After successful demonstration in Janaki Dalit Wome's Group, PAF has indicated that they are ready to contribute irrigation pumps for the other nine identified groups on a demand basis.

Operation and maintenance training

Operation and maintenance training for using the expeller and the irrigation pump was scheduled following successful establishment of the equipment.

Lessons Learned [***Summarize positive lessons learned that could be applied in other similar projects***]:

Link with jatropha oil base irrigation technology and income generation activities (vegetable farming) is crucial for successful expension ot such kind of activities in poor communitys in Nepal. Partnerships outside Winrock have been very successful. Partnerships have required for synergistic effects for promotion of biofuel activities as well as income generation activities in rural areas. The PAF network and rural support has expanded into almost all over the country. Their contribution for expeller, filter and irrigation pumps for community has eased financial burden for rural households for adoption of these activities.