



Sunlabob Rural Energy Systems Co.,Ltd
P.O. Box 9077
Vientiane / Lao PDR
Tel: +856 21 313-874
Fax: +856 21 314-045
contact@sunlabob.com
www.sunlabob.com

Electricity where the sun shines

Biofuel for electricity in remote Lao villages

A venture of Sunlabob with the Organic Farmers Association of Laos.
January 2006

JATROPHA

Jatropha curcas L. is a perennial plant that grows all over the tropics. It is easily propagated by cuttings and not eaten by any livestock. It is therefore mainly used by farmers to make hedges around fields. The fruits bear seeds which have a very high oil content. This oil can be extracted with simple presses operated in the villages. Traditionally it has been used for lamps and for making soap. The oil is comparable to diesel, and after simple cleaning can be used in diesel motors as "biofuel". For more information about the plant, and how to use the oil look at the very informative website <http://www.jatropha.de>

With the increasing price of oil products Jatropha is increasingly being promoted as a replacement for diesel. The hope is that it will replace some imported diesel and therefore save foreign exchange. But Jatropha also has a high potential to increase incomes of villagers through selling oil or saving on their own energy expenses. It also has a high potential as an element in conservation strategies through its use as a perennial hedge.

JATROPHA IN LAOS

Jatropha grows in just about any village in Laos. The Lao Association of Organic Farmers has explored the viability of Jatropha oil in Laos. Recently the Association convincingly demonstrated that Jatropha oil pressed under Lao village conditions from local seeds can run a diesel motor. Sunlabob has entered into a cooperation with the Organic Farmers Association for developing the Jatropha potential for the country.

SUNLABOB'S OBJECTIVES

(for details of Sunlabob refer to the box below or surf to our website at <http://www.sunlabob.com>)

Sunlabob has successfully built a network of independent small entrepreneurs who can install and service solar equipment in remote villages. Sunlabob has also successfully launched a rental service for renewable energy equipment, with at present around 1000 rented systems (as per end 2005). And now Sunlabob is about to launch the operation of hybrid village grids, whereby various sources of energy operated by Sunlabob feed into village grids that belongs to the villages. A pilot village is designated and work is under way to build the system. The various sources of energy will be small hydraulic turbines, solar generators, and biofuel.

The reason for Sunlabob to engage in Jatropha activities is therefore for generating electricity for remote villages that are far away from the main electric grid. Motors operated with biofuel will allow to generate electricity for peak consumption in the village grid, thereby allowing to design the hydro and solar generators to carry the regular load. This in turn allows to make maximum use of available water and solar generators and therefore increase the coverage of a local village grid considerably. And it allows to provide peak energy for production purposes in the villages.

In order to develop the Jatropha potential, Sunlabob will input its experiences in operating a franchise network and in providing regular trainings, plus its existing network of servicing contacts with a fast growing number of villages. The Organic Farmer Association will input its expertise in the production and extraction of Jatropha oil and its uses, and also bring in its network of farmers and contacts.

ENVISAGED OPERATIONAL SYSTEM

- a) Sunlabob will train (with technical input from the Organic Farmer Association) farmers or groups of farmers to become small entrepreneurs, who will be competent to collect Jatropha seed, extract the oil in sufficiently good quality, and sell it locally or to the emerging markets. The training includes all the required equipment and coaching during the first full business cycle. Successful trainees will be invited to join the franchise network of Sunlabob and be continuously trained and coached for staying up to date with newest developments.
- b) The local operator of Sunlabob, who operates the various generating equipment in the village grid, buys oil from these entrepreneurs in order to operate a generator set during times of peak consumption in the village grid.
- c) Sunlabob sells kWh into the village grid. The village sells kWh to the end users.
- d) Sunlabob also brokers the sale of surplus oil to emerging markets throughout Laos.

FURTHER EFFECTS

- The developmental benefits of rural electrification are obvious, particularly for remote villages. Motor-generators operated with local biofuel allow to achieve levels of electricity for clearly defined times, that can be used for productive purposes such as grain mills, sawmills and carpentry, food processing and packaging, distillation of essential oils, communication equipment, etc....
- Village income will be generated. The most interesting aspect is, that poor villagers who otherwise may not be able to afford themselves electricity from the village grid, have a chance to pay with Jatropha seeds which they grow and

collect from their own hedges or from the wild. Furthermore, the processing of the seed into oil may well become an important income for many poor families. The labour for *Jatropha* collection occurs in Laos suitably after the labour peak of rice planting.

- The more remote the village is, the higher the effect of local production of biofuel for income generation. With suitable further processing the oil can also be used in Tek-Tek's (one-axle tractors) for land preparation, and for trucks and buses and boats.
- *Jatropha* will be highly beneficial for any efforts at land conservation. Hedging of fields and protected areas, horizontal strips on eroding land, planting in gullies, along streams etc. etc. will be possible, as *Jatropha* will also grow in relatively bad land. Furthermore it will not be grazed. A Taungya-type of system may also appear possible for rehabilitating degraded land: *Jatropha* as the perennial pioneer, which will then allow to grow high-value timber species from under its canopy, etc... *Jatropha* may also act as a shady fallow-crop that stays sufficiently long periods for getting rid of imperata grass.

NEXT STEPS

- a) Sunlabob wants to include a generator set operated with locally produced *Jatropha* oil in the pilot village grid that is presently being launched.
- b) This "pilot within the pilot" will allow to demonstrate the viability of electricity from locally collected *Jatropha* seeds. The operational requirements will also be tested.
- c) The demonstration will act as a good training case for the envisaged trainings. Furthermore the pilot must provide initial data for establishing the level of economic viability.
- d) A bigger project is being defined, that will include the experiences made with the demonstration pilot.
- e) At present (January 2006) Sunlabob is looking for an investor who intends to provide the funds for doing the R&D for the pilot demonstration unit.

Please take up contact with Sunlabob if you are interested in the use of *Jatropha* for energy provision in remote areas in Laos.

What is Sunlabob

Sunlabob is a Lao company with at present 30 employees and a growing network of franchised small entrepreneurs (presently 32). Sunlabob provides renewable energy solutions to individual households, villages, companies and projects. For clients with small incomes Sunlabob also offers a rental service for its equipment, which includes solar home systems, systems for village clinics and schools, and solar pumps combined with micro-irrigation. Sunlabob is known in Laos for its service network, and its consistent efforts at training small entrepreneurs, village energy committees and staff of various agencies to become competent in the delivery of reliable energy services to remote villages. For these achievements Sunlabob has been awarded in 2005 the Development Marketplace prize of the Worldbank and the solar prize of the German Association for Solar Energy.