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*Electricity where the sun shines*

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## **Income generation with solar energy.**

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### **Setting**

Solar energy in remote areas, particularly photovoltaics, have been mainly used for lighting, for cooling of strategic goods (such as vaccines, etc), for media (TVs, CD-players, etc) and for powering communication-equipment (radio links, cell-phone antenna, etc).

These applications at first sight do not directly earn money in remote areas. However, Sunlabob has made observations that suggest income generating activities could very much be developed with solar energy. This concept note makes a short presentation of the case, with suggestions for further exploring the options.

### **Challenges**

Solar energy is of course more expensive than energy from the grid (there are exceptions, particularly in thinly populated areas). Income generating activities based on solar energy would therefore have to compete with grid-powered production. So one must be careful to avoid direct competition between grid-powered production and solar-powered production. This is fairly easy if one concentrates on production that is specific to rural areas, or even remote rural areas. One challenge therefore is to find suitable ventures where solar energy can leverage the advantages of rural production.

A further challenge obviously is sustainable financing of solar equipment. This is mainly a question of ownership of the systems. Unfortunately most solar programs so far have not sufficiently taken the long-term sustainability and ownership concerns into consideration, resulting in loss of equipment due to poor servicing. Sunlabob is developing commercially viable rental operations, because we have found that the possibility to rent systems (as opposed to purchasing them) has a number of important advantages for the end-users. We therefore strongly suggest, that for sustainability reasons long-term ownership and servicing needs must be considered. Rental systems we find are so far the best option to deal with this challenge.

### **Strategies for solar-powered production**

There are a whole range of potential income generating activities in rural areas that can be powered by solar energy. We suggest the various applications of solar energy must be assessed based on the **leverage** they have on generating income, not necessarily on direct earning itself. For instance our observations and experience shows that lighting in the evenings frees up time in the afternoons for productive activities out in the fields or with the livestock, because household-chores can then be done in the evenings, whereas before they still had to be done in daylight. There are many such pointers to systemic indirect effects on the income generating activities of rural households. However, in this concept note we shall concentrate on more immediate leverage.

Which are possible various leverages? For income generation we suggest to prioritize them in increasing order (d most important):

a) Direct income.

This of course would be the case when solar equipment is sold and serviced. The small entrepreneurs who hold a franchise agreement with Sunlabob are for instance people who directly earn money from solar applications. This is a sound business. However the numbers will be very limited.

b) Operations for earning local money

This means that solar equipment is used for earning money from the remote areas themselves (local economy). For instance lighting a shop, powering a TV, powering a playstation or a Karaoke-bar, a restaurant, cooling drinks, making ice, etc. All these businesses can directly earn money from local clients because they can use solar electricity. These applications do not compete with grid-electricity, since the grid does not reach these localities.

c) Operations for earning money on the market

This means that solar energy is used to produce for a market outside the locality. There is a broad range of options here: Handicrafts, solar pumps for growing vegetables, lighting tourist lodges, food processing and packaging, etc. etc. It is here that one has to be careful not to compete with production that can rely on cheap grid-electricity. However, since rural expenses are lower too, the higher solar energy prices may be offset by lower costs for labour.

d) Operations that leverage further businesses

This means that the use of the solar energy allows other businesses to become possible.

Three interesting cases:

1. Communicational services

The operation and sale of communicational services can trigger a wide range of further businesses, that would otherwise not be possible. For instance market information can reach the producers so that they can better place their products, or even finalize a deal before leaving with their products. For reliable communication the returns on expenses can be enormous for villagers. Villagers know this, which is one of the reasons they invariably invest heavily in communicational equipment whenever they have a chance and it comes within their financial reach (for instance driving a cow for half a day to market, only to have to drive it back up the mountain again because there were no suitable buyers is a tremendous waste of time and resources!). A further example are tourist operations. Much more income can be made if through fast and reliable communications tour-bookings can be made, etc. Reliable communications of course also help in a wide range of development activities, many of which have direct or indirect effects on income generation in the villages.

2. Extension services

Rural extension services are important conduits for business development. Many development programs have the support of rural private entrepreneurs on their agenda. Solar energy that allows to conduct the extension activities in a more effective way has high leverage on the resulting income earning capacities in the remote areas (production, processing, marketing, service provision, etc). For instance the extensionists can run computers and communications, operate media equipment for trainings, use electronic media for fast and regular dissemination of relevant information (for instance CD-players, etc) and for conducting learning-processes. All these applications can tremendously enhance the impact of existing business development and income generating activities in rural areas.

### 3. Food processing

Solar drying, and more importantly cooling operations for storing and off-season marketing may turn out to be important assets for income generation. For instance when solar energy can be used in conjunction with other technology to store citrus over three to four months, this can have remarkable effects on tapping sources of income that are presently out of reach for remote rural areas. However, considerable technological adaptations would still need to be made in this sphere...

#### **Explorations**

Sunlabob intends to explore ways how the use of solar energy can generate income. We are searching for development agencies who are also interested, and with whom we can partner to explore the potentials. We suggest to concentrate on high-leverage options, ie. d) and c) above. The other options b) and a) will follow almost automatically.

We also suggest to explore the most useful long-term settings for sustained operation of the systems. Our efforts in developing rental operations may come to bear here too. There may be alternatives to renting, such as local public bodies owning the systems, and selling the electricity at commercially sustainable rates that would also pay for sustained servicing and replacements.

We intend to explore these ideas in a few pilot villages in Lao PDR. Since we lack the funds to invest in big systems we are looking for interested parties who are willing to explore this venture together with us.

Please take up contact.