

## Microfinance and Access to Energy: Major Opportunities for Sustainable Development

**Energy is the engine of all human activity, but by the end of 2008, nearly 1.6 billion people lack access to modern energy, the majority of them living in rural areas.**



*SHS In Oehela, NTT, Indonesia*

Rural electrification in developing countries is greatly needed in order to enable those who are excluded to gain access to the modern technologies that, can help them change their lives. In the face of such a challenge, promoting the uptake of renewable energies contributes not only to the fight against poverty but can also mitigate global warming.

As oil prices rose over the past several years, the search for alternative energies became a growing necessity for the rural poor. Promoters of renewable and sustainable energies recognize the need to meet the energy needs of the poor at a cost they should afford. RENDEV's solution of creating a market-based way to replace kerosene with solar lighting came at just the right time.

During 2008, the RENDEV team organized a series of workshops in Bangladesh and Indonesia, bringing together renewable energy providers, microfinance institutions, lecturers, experts and policy makers. The discussions were very animated and productive: innovative ideas prompted policy makers to implement market driven for low income people.

### **2009.... The year of dissemination and communication for RENDEV project!**

At the grassroots level, through 80 training sessions in each country the project will train 5,000 households on how to install, use and maintain their solar home system. They will be further sensitized to the need to practice good environmental activities in their daily life and to the health risks they are exposed to through traditional energy sources.

At the global level, RENDEV will disseminate the project's results and lessons learned in order to reinforce the role of microfinance in supporting the uptake of green technologies for the poor.

The project culminates in an International Conference, planned for late 2009 in Dhaka, Bangladesh, in which success stories and lessons learned will be highlighted and the way forward will be mapped.

**Pascale Geslain, Head of RENDEV project**

RENDEV is a project sponsored by the European Commission - EACI : Executive Agency for Competitiveness and Innovation formerly known as Intelligent Energy Europa Agency and Toyota Tsusho Corporation. RENDEV aims to create the conditions of large access to Renewable Energies (REN) for rural population such as : awareness of population on possibility and affordability of REN technologies, capacities among stakeholders and private providers, accurate financial schemes. RENDEV will especially focus on possibilities of MicroFinance in those fields.

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- Conditions of success of a solar home system program

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## Training the people on the field in Indonesia:

### *Nusa Tenggara Timur and Eastern Indonesia*

The province of Nusa Tenggara Timur (NTT) consists of about 550 islands scattered around the three main islands of Flores, Sumba, and West Timor, the western half of the island of Timor. This far eastern part of the Indonesian archipelago is far from the economic development that originates in Jakarta. The people living in NTT suffer from scarce economic opportunities, very low education and poor access to basic services. Among the basic services they lack is access to electricity. While electrification

rates average around 56% for households in Indonesia, only 20% of the inhabitants of NTT have access to any source of electricity. At best, people rely on diesel-run gensets that provide power for only a few hours per night at a very high cost.

In order to address this problem, PlaNet Finance and its Indonesian partner YBUL have decided to run their RENDEV field training sessions and awareness events in this province of Indonesia.

The RENDEV team was proud to launch the training sessions with the special participation of its new partner Toyota Tsusho proudly represented by Mr. Yuusuke CHINO and Mr. Tomoaki NISHIKAWA. Toyota Tsusho joined the RENDEV project in September 2008, demonstrating its commitment to the development of environmentally friendly solutions to the problem of energy access.



*RENDEV workshop in Oehela, NTT, Indonesia*

The team from Toyota Tsusho was joined by Pascale Geslain, the head of the RENDEV project for PlaNet Finance, Ron Bevacqua, PlaNet Finance Asia Regional Coordinator and YBUL's trainers Pak Suroso Sastroswiro and Novrida Ida. The inaugural session took place in Oehela Village, Soe District, on the island of West Timor in East Nusa Tenggara Province, Indonesia on December 4th and 5th.

### **Proceedings of the Workshop**

After the traditional welcoming addresses, the workshop was articulated in three sessions:

#### **1. Introduction to solar energy**

***Pak Suroso introduces the fundamentals of rural electrification in Indonesia. The participants were amazed to learn that 47% of the Indonesian households do not have access to electricity.***

They realized that a lot of their fellow countrymen experience the same situation they do and expressed their desire to get access to modern energy, especially electricity.

The attendants were very attentive and receptive to the presentation of renewable energies (RE) by Pak Suroso. Relying on their environment for their survival, they felt very concerned and totally looking forward implementing RE solutions in their village.

Then, Pak Octas Tallo, officer of the Ministry of Energy and Mineral Resources, displayed the different components of a Solar Home System (PV module, battery charging unit, battery, switch box, lamps and explained their function and mode of operation.



*Delivrance of the certificate*  
*Credits : Planet Finance*

## 2. Demonstration

*Especially developed for non-literate populations, the RENDEV training sessions emphasise field demonstration and learning by doing.*

The first training session demonstrated how to install properly a solar home system (SHS).

1) Installation of the solar module: Participants were taught how to orient the solar module according to the sun's path, what should be the proper inclination for capturing the maximum of the sun's energy, how to ensure that no tree or other obstacle creates any shadow, and how to ensure that the installation is solid enough to stay in place during tropical storms.

2) Installation of the Battery: Participants were taught how to ensure that the battery easily accessible for maintenance, and particularly how to check the water level.

3) Electric installation: Participants were taught a checklist for the connectivity and how to connect the different components.

The second session focused on the operation of the SHS:

A solar home system can store only a limited amount of energy for the usage of the family. Proper use of the device ensures the stored energy is used efficiently and is thus the best way to meet the needs of the whole family.

The session on operating the SHS explained the best uses of the stored energy, how to check the remaining load, and how to switch the lamps?

The third session focused on the maintenance of the system: how to check that the charge controller is working properly, how to check the water level in the battery, how to add water, how to change a lamp or other device, and what type of lamp is required for a SHS.

At the end of the trainings, the participants visited installed systems in the village and had the opportunity to ask questions to the owners of the system. Each participant participated actively and had the opportunity to try the device for themselves. Their enthusiasm was communicated and, according to all, the sessions were a success.

### Lessons learned

*The conclusion of the workshop was clear: rural populations are waiting for renewable energy solutions to be implemented in their villages.*

Without access to the electricity grid and with limited resources and finances, renewable energies fit the needs of rural populations and can enhance their lives immeasurably. The impact is qualitative as much as it is quantitative. Gaining access to modern energy helps make isolated populations feel part of the world, a feeling to which they pay great attention as has been demonstrated by the amazing spread of mobile phone and telecommunication technologies all over the world.



*Presentation of the components of the SHS*  
Credits : YBUL



*Installation of the inverter on the lamp*  
Credits : YBUL



*Checking installation in participant's house*  
Credits : YBUL

## Conditions of success of a solar home system program

Many people think of solar home systems (SHS) only as a technology, and thus think that success is measured by the number of units installed. In fact, providing energy is really a service – a service of primary importance to the users. Success thus means making energy continuously and reliably available to the users.

*Based on the lessons learned from the RENDEV project, program developers should emphasize the following:*

- **Establishing ownership by the user**

SHS are individual systems and they are installed in the house of the user. Thus their performance depends highly on the good operation and care by the user. Experience shows that users who own their systems and having contributed to paying for it are more likely to take better care of their SHS. Donated systems, which the user receives for free, fall out of use much more quickly and frequently.

- **Training the user**

In addition to contributing financially, users have to know how to run and maintain their system. They must become familiar with it to the point that they appropriate the technology for themselves. Trainings and field demonstrations, like those provided by RENDEV, are successfully achieving this goal. Furthermore, the project should involve the communities by training them to take the new positions necessary for the project.

- **Ensure a continuously available service**

In order for power to be made available continuously and reliably, maintenance of the entire system, including not only the SHS but also the DC devices that run on them, is crucial. Success requires maintenance to be carried out via regular visits by a technical team as well as ensuring some people in the village have basic repair skills. Finally, great care must be taken to ensure the availability of spare parts and devices at the local level so that people can buy them easily.

- **Operate under a sustainable pattern**

Most unelectrified areas are such remote, making ensuring a continuous service (maintenance, mentoring, collection of fees) extremely costly. Finding an economic balance is challenging. On the one hand, the maintenance fee needs to be low enough so that people are able to pay it. On the other hand, costs for providing the service must be covered. In order to be able to provide good service at a low cost, economies of scale must be pursued by providing a wide range of products and services that meet the needs of the local population. Spreading the cost to the user over 2 to 5 years through a microfinance scheme may also help. In addition, complementation and leveraging of resources should be sought. For instance, to reduce maintenance costs, entrepreneurship can be promoted in order to establish a network of microentrepreneurs able to maintain the SHS at the local level while offering additional services related to electricity such as repairing TVs, radios and cell phones. Another possibility is to collect the fees through existing institutions. Many more opportunities should be explored given the local context.



[RENDEV workshop in Oehela, NTT, Indonesia](#) : Credits : Planet Finance