

Case Study: Solar PV Home Systems, Uva Province, Sri Lanka

Background

The Uva Solar Photovoltaic (PV) Project was initiated to provide alternative energy supply to unelectrified households in the districts of Badulla and Moneragala, located in the south-east area of Sri Lanka, in the Uva province.

Number of Households in Uva province	252,427
Electrified Households in Uva province	98,407 or 39%
Electrified Households in Badulla District	47.7%
Electrified Households in Moneragala District	21%
Average cost of Draw CEB grid to a house in Badulla	Rs.45,000
Average cost of Draw CEB grid to a house in Moneragala	Rs.65,000
Estimated time required to extend CEB grid to all households in Uva	40 years

(Rs = Sri Lankan Rupees)

Electrification was identified as a priority for the province for a number of reasons. These included social inequality resulting from the variable levels of access to electricity, and negative health and education aspects of using kerosene for lighting.



Photovoltaic panel on roof of a private home

Despite this need for electrification, extension of the grid to these districts was considered to be economically unfeasible and the Ceylon Electricity Board was unable to justify extension of the grid for social reasons alone. After a review of the alternative options, the Provincial Council decided on a solution of diverting their budget for grid extension to the provision of subsidies for the purchase of household solar PV systems. At a rate of Rs10,000 per unit, they would be able to part-finance 45,000 units in five years.

Financing

After the Rs10,000 subsidies, the remaining costs of the systems were financed either through micro-finance (SEEDS) or bank credit (Bank of Ceylon). Typically, a user would pay a 25% down payment, paying the balance over a period of 3-5 years at interest rates between 16 and 22% (depending on customer risk, or the distance from a SEEDS office or a bank). Overall, 6,012 systems have been installed in this project so far, with a further 4,000 requests for systems.

Public-Private Partnerships

There has been strong cooperation between the public and private sector in this project, playing the following key roles:

Private

Solar PV dealers and equipment suppliers are responsible for the marketing and sales of systems, as well as installation, training and after sales services.

Micro Finance Institutions (MFIs) and private banks have been involved in providing loans to households who have purchased systems.

Public

In addition to subsidies, the **Council** has played a key role in monitoring the project, to ensure that high levels of service to households are maintained.

Access to Electricity

Livelihood benefits – Direct Consumers

End user perspectives indicate that the service to households with solar systems provided under this project has been very good, and this is believed to be a result of the monitoring that is being carried out by the Provincial Council. This is in contrast to users of older systems who said that poor service delivery had tainted the view of solar PV systems amongst the local community. Households with PV systems are mainly benefiting from the health and education improvements that are associated with electric lighting, as well as the benefits of TV and radio access.

Examples of benefits: Before the installation of solar PV system, most female household members cooked their dinner during daytime in order to avoid the inconvenience of cooking using a bottle lamp. With electricity from Solar PV system being available, these females are now able to do their cooking at night, thereby saving more time during the day for other useful work.

Commercial use

Two village shops in the district are now benefiting from solar home systems, meaning that they can extend their opening hours, providing the opportunity to increase their income.



A PV system installed in the local shop

In addition to users of the solar home systems, this project has contributed to the local economy in the sense that new companies are being established locally, and skills are being brought to the community. 394 technicians have now been trained to support the project.

Livelihood benefits – Indirect Consumers

In this particular case, PV systems have only been provided to households that meet the following criteria for receipt of the subsidy:

- Grid would not reach in 5 years at least.
- Own the house.
- Be a resident of Uva.
- Be able to afford system and pay back loan to MFI (SEEDS).
- Be more than 1.8km from the nearest grid.
- Have school-age children.
- Have transport difficulties.
- MFI (SEEDS) could lend to the household.

However, following the successful establishment of the scheme, the Provincial Council has made a commitment to work more closely with the *grama niladaris* (government representatives at the village level) to ensure that systems become available to the poor, as well as those that can afford to repay the loans. There are also plans to extend the project to the homes of workers in the tea estates.

Conclusions

- Uva Province took a substantial risk in diverting traditional grid extension funds to invest in a relatively new technology such as solar PV, and had to work hard to convince the relevant ministries to re-allocate funds accordingly.
- Electrification is often highly political, since the promise of it is used to attract votes. This makes it more difficult to obtain support for decentralised solar PV from politicians.
- The participation of the Provincial Council in this project appears to be the main success factor. It has played a key role in:
 1. Establishing the criteria for selecting clients, so that a uniform system could be followed.
 2. Monitoring the project and providing end users with an avenue for airing their grievances, thus improving the quality of service by the vendors.
- Though a successful scheme, many users believe that the electricity needs of the community are not adequately met by solar home systems. However, until extension of the grid becomes a realistic option, they see this as the only way that they will obtain an electricity supply.