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Electricity where the sun shines

Solar School Systems as a community effort

An investment proposal

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The developmental reasons for electricity in schools are obvious and need not be explained further. Lighting and the operation of electronic media and communications are important for making sure that the young generation in remote rural areas is not left behind and can contribute to the development of the country.

Solar School Systems are systems that supply reliable electricity for lighting, electronic media, laptops and other educational purposes. These systems allow to conduct adult educational programs in the evenings. They must be funded through public mechanisms of the community.

Sunlabob has several years of experience in installing solar community systems. Over the years we have found that financial arrangements have just as much influence on the sustained impact a community system can have as the technical aspects. A longterm perspective is required in order to exploit the full life-expectancy of the equipment. Solar panels last at least 20 years, but this longevity is wasted when after 3 years of lacking servicing and failed manipulations of the systems the batteries fail and need to be replaced. Too often solar systems are installed, and they operate for about 3 years. Later, when expensive replacement investments for a component come up, too often the systems then lay idle although the panels still work. This shortsightedness is the most frequent mistake made by development agencies.

Good servicing can greatly improve the life-expectancy of solar systems and therefore reduce the costs of electricity for the community. Sunlabob has therefore explored and

tested procedures for ensuring sustained electricity from solar systems. The key components for this are:

- a) A regular and reliable servicing system that can react on short notice
- b) The possibility for villages to rent equipment as opposed to owning it. This allows them to only pay when it works, and relieves them from worrying about high follow-up investments after a few years for replacements.

Through its network of trained and franchised service providers and the newly established rental service Sunlabob is in a position to ensure such backup over the years also in remote areas.

Based on these experiences and considerations Sunlabob at present offers the following arrangements for Solar School Systems.

SALE

Sunlabob installs the system, and is paid the full cost-covering price for the equipment and installation. Through a service contract Sunlabob will maintain the system and replace components as needed. The community has to pay for each servicing and for the replacements of the components.

- Ownership of the system: Is with the community.
- Funding: Ideally the community pays Sunlabob. But usually some donor agency or program pays Sunlabob and thereby donates the system to the community. The follow-up funding is usually not considered and left to the village to organize.
- Contractual arrangements: Installation contract, service contract.
- Role of a Donor: Donated grant to the community, which then buys the system from Sunlabob
- Advantages: Standard procedure that Sunlabob has often been engaged in. Service contract ensures proper maintenance and longevity of the equipment.
- Disadvantages: Follow-up costs are rare, but large. For several years the system is experienced to be “free”, when actually major expenditures are looming after the batteries break down. Suddenly then the community has to organize funds in an emergency. Given the lack of an efficient financial sector in rural areas, savings for such events are not really possible. Very often the Solar School Systems then lay idle, even though the panels are perfectly in order. Today we are often called to find a solution for such cases, which are always very expensive.

RENT

Sunlabob installs the Solar School System and rents it to the community at a fixed monthly rent that covers all costs: Capital costs, amortization, replacements, servicing, training, etc...

- Ownership of the system: Remains with the Rental Fund (see below).

- Funding: Through the Rental Fund. The money in the fund comes from various investors, as either credit or equity. The rents flow back into the rental fund.
- Contractual arrangements: Rental contract
- Role of a Donor: Investor in the Rental Fund, which allows to sustain the service. In case equity is invested in the fund, the service can grow: Surplus cashflow from returning rents is reinvested into new Solar School Systems for new villages.

- Advantages:
 - No large initial costs for the community. Regular monthly fee, that is planable for the community. Electricity is available already after the first rental payment. When the system does not operate, the community does not pay the rent. Sunlabob therefore has a vested interest in keeping the system operational at top reliability.
 - This rental arrangement also allows Sunlabob to install more reliable and expensive equipment because this leads to lower monthly rents.
 - The community can easily opt out by simply stopping the rental agreement. This can be the case for instance when the grid arrives in the village, or other options become possible. The community can also easily change the size of the system they want to rent.
 - Totally sustainable financial flows.

- Disadvantages: The monthly rental payments have to cover all longterm costs.

Based on our experiences so far, Sunlabob strongly suggests this rental option. We have discovered, that villagers tend to put a high emphasis on operational and financial flexibility when making their decisions, while giving less importance to issues of ownership.

MANAGEMENT

A mix between the two above options in order to combine advantages and avoid disadvantages: Sunlabob installs the system and is paid the full cost-covering price for the equipment and installation. The community then owns the system. In a management contract the community then hands the system to Sunlabob to maintain in good order. For this Sunlabob charges a fixed fee per month that covers replacement costs and servicing. This means that with this fee Sunlabob will do the repairs and replacements of components once their life-cycle is over, thereby keeping the system reliable and operating for an indeterminate time. This management fee of course is lower than the above rent, because the equipment and installation have already been paid for.

- Ownership: Is with the community. A management-contract hands over management to Sunlabob. This arrangement can be terminated, with refund of non-used amortizations back to the community.
- Funding: Ideally the community pays Sunlabob for the initial equipment and installation. But usually some donor agency or program will donate the funds to the community for paying Sunlabob. The regular fees after installation flow into the Rental Fund and will be managed through it.

- Contractual arrangements: Installation contract, management-contract
- Role of a Donor: Donation to the community, that results in lower operational costs because capital costs do not have to be covered, only the amortizations and servicing.
- Advantages: The follow-up for reliable and sustained operation of the system is ensured. All advantages of a rent, but at a lower fee. The tradeoff is lower flexibility for the village:
- Disadvantages: Lower flexibility for the community. When the community wants to change arrangements (upgrade or downgrade, or the grid arrives), it is left with a system in its ownership for which it must first find a buyer, etc...

THE RENTAL FUND

Sunlabob has launched a Rental Fund for managing the capital flows required for operating the rental system. This fund is managed by an independent banking agency in Britain which specializes on social investments. The main operators behind it are GEXSI, the Global Exchange for Social Investments (www.gexsi.org).

The Fund operates four main investment packages:

1. Solar Home Systems: For lighting and electronic media in single households
2. Community Systems: For public benefit at village level, such as health posts and schools, temples, etc....
3. Productive Use Systems: For mills, pumps, coolers, driers, etc... which allow to generate an income that would otherwise not be possible
4. Village Grids: For combining various sources of renewable energy in a village to feed a common grid, thereby allowing 220 Volts for productive use and general electrification. In this concept public agencies (donors) pay for the fixed assets owned by the village such as the grid and civil works, while private investors pay for the movable assets that generate the power and feed into the village owned grid

Further packages under consideration for grants to be managed by the Fund are:

5. Trainings: For training and coaching rural entrepreneurs to be competent to provide the required services on the spot.
6. R&D: For financing the exploration and testing of new technologies and operational procedures that will benefit remote villages.

Please take up contact with Sunlabob to understand the newest available solutions or to discuss with us your plans and ideas.

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