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# Solar Villages for Sustainable Development

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## Abstract

"Solar Village" project has been designed to use clean energy technologies to empower rural communities to accelerate their social development and poverty reduction. This project started with a Higher Education (HE) - Link programme funded by the DFID (Department For International Development - UK), managed by the British Council and co-ordinated by the main author. The HE-Link continued in the 1990s and the solar village was piloted in September 2008 in Sri Lanka, and monitored for four years and now moving to the replication phase. This poster presents the concepts behind the project, activities taking place in the pilot village, its impacts and advantages for the whole society and current replication plans. This project can be modified to suit any community according to their social requirements, geography and the climate.

## 1.0 Introduction



"Solar Village" is a cluster of remote villages where no modern facilities are available and solar power is used to supply power and clean water to uplift their standard of living. Solar Village is a project we have designed over a long period of time while co-ordinating an HE-Link programme with Sri Lankan universities in the 1990s. It empowers needy communities to rapidly develop themselves and escape from poverty traps.

### Aims & objectives:

- To empower rural communities by introducing clean energy technologies, and guide them to escape from poverty traps
- To improve water & food security in deprived communities, while up-lifting their living standards
- To find solutions to climate change, improve environment and reduce the burning of fossil fuel
- To take new technologies from laboratory to the society for sustainable development.

## 2.0 Solar Village Concept

- The "Solar Village" concept builds on the theme "Use of clean energy technologies for social development and reduction of poverty"
- The needs to identify a method to create wealth using an indigenous energy source to help the community. This wealth should be managed by the community members in order to empower them
- Established schools or universities should be involved in directing and guiding the community for their rapid economic development. Teachers, university lecturers, political, community & religious leaders should take the lead to initiate these projects in addition to their routine jobs
- Seed funding should be raised within a specific country itself in order to establish these projects, and should come from local governments, banks and industry
- By applying solar village concepts, the communities will rapidly develop with their own initiatives.



"Seed" of a solar village, consists of solar panels, a DC pump and a storage tank. Once the seed is planted, the community could expand activities around it developing themselves.

## 3.0 Activities in the Pilot Solar Village



- The pilot solar village consists of 3 villages with 130 families in the dry zone of Sri Lanka
- Main livelihood is farming and modern facilities are not readily available. Installation of solar powered water pumping system provides clean water for drinking and other activities
- Consumers pay their water bills to a common account and village committee manages these funds and use in various development projects



University students taking part in village-projects, learning social responsibilities in addition to their degrees.

- Annual revenue from this system is ~Rs.300,000 (~£1500) and at least half of this amount was spent for purchasing imported diesel. The use of solar power enables the community to use all this revenue for development projects within the village cluster



- With the guidance from project initiators, village community involve in various projects such as tree planting, organic farming, bee keeping, improvement of the village school, temple, nursery and the library
- The villagers are becoming self-help minded due to the empowering nature of the project.



Voluntarily taking part in adding a second building to the primary school of the village cluster

## 4.0 Benefits & Impacts of the Solar Village

- Provision of clean water supply to the community throughout the year. These areas suffer from lack of drinking water during the peak of the dry season
- Complete reduction of the noise and air pollution from diesel engines reducing CO<sub>2</sub> emission
- School and the temple receiving free water supply from the system
- Solar powered water pumping converts sunlight into real wealth reducing country's fossil fuel import bill
- Saved funds are managed by the empowered community with improved transparency (i.e. with reduced corruption)
- Funding various development projects within the community such as contributing to school building, and expansion of the solar panel system by adding more panels (i.e. sustainable development)
- Teachers not wanting to leave this severely difficult school, and working with encouragement & enthusiasm generated by this new project
- The school ear-marked for closure few years ago, becoming 4<sup>th</sup> out of 455 primary schools in the region
- Empowered community coming together to help themselves, through sramadana (voluntary work) and creating scholarships for children within the community
- The environment becoming more green and pleasant due to tree planting projects; country becoming a "green carpet"
- Reduced alcoholism and crime, due to the involvement in development projects reducing idle time
- This project fulfils 4 Millennium Development Goals; providing primary education, empowering rural communities, establishing environmental sustainability and reduction of poverty.

## 5.0 Conclusions

- A "Solar Village" project has been successfully designed, piloted and monitored for 4 years. The project is now entering the replication phase within Sri Lanka and outside
- The project can be customised by modifying according to the requirements of the community, geography and the climate
- The potential to add more aspects (excess agriculture products packaging, starting of cottage industry like bricks making, built in eco-tourism etc.)
- Solar village is a "Social Science Laboratory" for each Faculty in a university, and hence extremely useful in training graduates with social responsibilities
- Replication is currently planned with public awareness of the project in different countries (Maldives, Bangladesh, India, Jamaica & Nigeria)



Public lectures in schools and activities with higher authorities for replication of solar village and other clean energy projects

## 6.0 References

1. Solar Villages for Social Development and Reduction of Poverty, I M Dharmadasa and K Deheragoda. <http://www.apsl.org.uk/dharmes%20blog.html>
2. Solar Villages for Social Development and Poverty Reduction, I M Dharmadasa and Lalith Gunaratne, Proc. of "Solar-Asia 2011" conference, 28-30 July 2011, Kandy, Sri Lanka. <http://www.apsl.org.uk/dharmes%20blog.html>