



MSSRF's Sustainable Green Library to Achieve SDG 7

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Why Green Library

The eco-friendly library or sustainable library is a new idea and it is acquiring well liked among the librarians. This concept manifest the conditions of environment, their effects on society and impact of leading organizations towards a green earth, eco-friendly India.

The M S Swaminathan research Foundation Library has been trying to make a successful green library with the support of **Tata Trusts**, India. The Innovation of using solar panel to generate energy to run the library in an eco friendly way. This model can fulfil the SDG goal no- 7 under the United Nation that ensure affordable, reliable, sustainable and modern energy for all.

Objectives

- To contribute little efforts to make a green earth.
- To proper use of solar technology to minimize library power expenses.
- To make library as tech savvy and provide ecofriendly services to users
- To save energy by making library eco friendly.
- To create an environmental awareness among library users.
- To promote green library movement

Energy Scenario - India

Energy demand is growing rapidly in India

- Increase in the next 3 years will be - Bihar - 78% | UP - 59% | TN, Maharashtra, Gujarat, Karnataka - 30%
- Addition of 88 GW is needed by in the next three years
- Very challenging infrastructure issue
- Substantial mitigation possible through Renewable sources coupled with the new technology

Why SDG 7?

Goal 7 of the SDGs aims to correct this enormous imbalance by ensuring everyone has access to affordable, reliable, and modern energy services by the year 2030. To expand energy access, it is crucial to enhance energy efficiency and to invest in renewable energy. Asia has been the driver of progress in this area, expanding access at the twice the rate of demographic growth

MSSRF Library intervention to achieve SDG 7

MSSRF library plan to create a solar based energy system for library alone. Using solar panel for generating energy and providing to library. The Step by step method can obtained and creates the successful green library as a model with the financial support of **Tata Trusts**.

New Solution

- Combines for the first time in the world - Distributed Generation,
- Smart Micro Grid,
- Super Efficient DC Appliances



Smart Grid

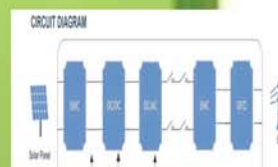
The system has inbuilt smart grid controller that can be used to operate DC Appliances like Air Conditioners, Refrigerators, Ceiling Fan and a range of LED Lights. The system and solutions address both the demand and supply side of energy needs.

Appliance	Present BEE 5 Star	New Basil Super Efficient
1.5 Ton AC	1.2 kWh/Hour	0.333 kWh/Hour

Smart Grid Controller

The smart solar power grid will evolve into a very complex adaptive system under distributed control. It will be spatially and temporally complex, non-convex, non-linear and non-stationary, with lots of variability and uncertainties beyond what the traditional power system experiences.

- Power and load monitoring
- Automatic enabling use of power from PV panels,
- AC and DC circuitry in both grid tie inverter
- The system uses the proposed 380 V DC



MSSRF Library works with green energy

MSSRF Library consist air conditioning devices are working with solar energy as far as possible. In case the solar power is not sufficient due to bad light, it will use the available power and the balance is taken from the AC mains and in case of total absence of solar power, the appliances will run automatically from AC mains.

MSSRF Energy Generation



Energy efficiency of April 2019

Since June 2018, MSSRF solar panel has been generated 45 units of DC on every day. Its approximately produced 5000 units of DC in the last six months. The solar power plants have an environmental footprint on a lifecycle basis. For instance, Concentrated Solar Power has a footprint of 20 grams of carbon dioxide (CO₂) per kWh of electricity produced, in addition to consuming vast amounts of water.

The SDG 7 aims to close the energy access gap and "ensure access to affordable, reliable, sustainable and modern energy for all". A green library design is less expensive because of reduced upfront costs energy and increased efficiency. Green library concept is a new idea in India, let us hope a green future in India.

Acknowledgement

The work was done under a project funded by **Tata Trusts** under their Media, Art and Culture department to M.S. Swaminathan Research Foundation (MSSRF), Chennai, India. My sincere thanks to Prof. M S Swaminathan, and the Executive Director Dr. N. Anil Kumar, for initiating this work at MSSRF library and active supervision. I thank Ms. Deepika Sorabjee and Mr. Aramb from **Tata Trusts** to coordination of this project.