

BENEFITS OF SOLAR PROGRAMME

Education

The quality of education at electrified schools improves significantly as the authorities are able to introduce technical and science subjects such as computer studies. Electrified schools are able to retain and attract qualified staff, thereby enhancing the pass rates.

Health

The level of health care at electrified health centres improves significantly as the institutions are able to introduce equipment such as X-rays, refrigerators for vaccines and sterilizers. Electrified rural health centers are able to conduct deliveries at night thereby significantly reducing infant mortality rate in rural areas. The institutions are able to retain and attract nurses and other health workers in remote areas.

Environment and Safety

Solar technology is environmentally friendly and relatively safe to use in households. Solar technology does not produce fumes and carbon dioxide (Co₂), which pollute the atmosphere and damage the ozone layer, as the case with candles and paraffin lamps. However, physical contact with electrically active output terminals of a solar system or bare conductors can result in burns, sparks or electric shock, which may result in injury or death. Acid in the batteries must be handled with care as it can be harmful if it comes into contact with skin.



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RURAL ELECTRIFICATION FUND



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SOLAR ENERGY IN ZIMBABWE



General Information

Sunlight can be harnessed to provide sustainable energy to meet part of the energy requirement for the growing population of Zimbabwe, the majority of which live in the rural areas and may not have access to conventional grid electricity in the foreseeable future. There is abundant sunlight in Zimbabwe with an average radiation level of 2100kw/m2/year as compared to an average of 1400kw/m2/year in most parts of Europe.

Solar Photovoltaic (PV) Basics

A solar photovoltaic (PV) system produces environmentally friendly energy from the sun. Solar panels convert sunlight into electricity.

Solar Applications

Solar energy can be used for the following applications:

- ✓ Lighting
- ✓ Entertainment (TV and Radio)
- ✓ Refrigeration
- ✓ Water pumping
- ✓ Telecommunications
- ✓ ICT
- ✓ Traffic Lights (robots)



BASIC DESIGNS

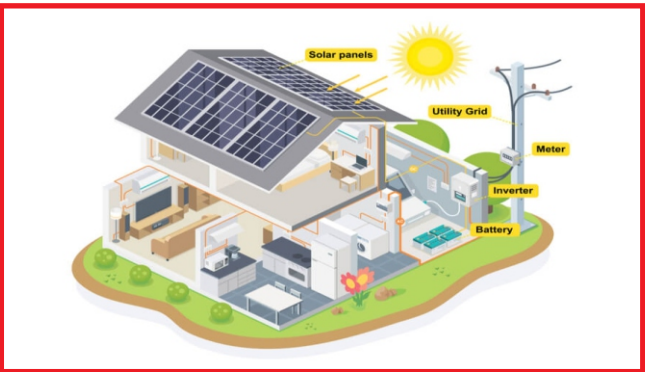
Micro Grid Solar Systems

The micro grid solar system comprises a solar array (group of solar modules), battery bank (group of battery cells), charge controller, inverter and power distribution lines. They can be used to power a school, clinic or homestead(s).



Solar Home Systems (SHS)

A stand alone SHS comprises solar module, charge controller, battery, and in some cases inverter. They are suitable for use by individual households with relatively low power demands mainly for lighting and entertainment purposes.



ADVANTAGES OF SOLAR TECHNOLOGY

Low installation and operation costs

Solar systems can be relatively cheaper to install in remote areas. A solar system has minimum operation and maintenance cost. It does not require a supply of fuel, such as the case with fuel powered generators. Solar technology is thus cost effective and suitable for all remote areas which are faraway from the existing electricity grid network. Solar energy is environmental friendly.

High reliability and durability

If properly designed and installed, solar systems are very reliable and durable. They need minimum maintenance and attention to operate. Solar systems can operate for more than 20 years without any need to replace major components such as solar panels. However, batteries may need to be replaced sooner, in most cases after every five years.

SOLAR PROGRAMME IN ZIMBABWE

The Rural Electrification Fund (REF) embarked on a solar program under which close to five hundred remote rural schools and clinics were equipped with micro grid solar systems for the provision of power for cooking, lighting, entertainment, and refrigeration. The programme targets remote institutions that are far away from an existing electricity grid network.