

Utilization of Renewables in Bangladesh: Case Studies

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Case Study I: Solar market electrification

LGED has successfully completed Solar Market Electrification in Gangutia growth center under Sailkupa Thana in Jhenaidha district. This activity has been taken under sustainable rural energy (SRE) Project. The objectives of this project are to install a demonstrative plant of a centralized solar photovoltaic system for electrification of a rural market in the off-grid area and to assess its technical and economic viability in the context of rural Bangladesh. Gangutia growth center has been selected for solar electrification because of its remote location particularly when the nearest grid extension is around 7 kilometers apart. The market was previously served by a private entrepreneur using small size diesel generator of 5 KW. This is the first centralized solar PV system in Bangladesh where DC power from solar PV has been converted to AC in order to match grid power quality. The system has the capacity to produce 1.8 KW power with daily consumption of 2000 watt-hour providing electricity to 45 shops, 3 food processing small industries, one health center and one bazaar mosque.

The responsibility of operation and maintenance has been entrusted with a local NGO, Shubashati. The private entrepreneur, Mr Azam Ali who was providing electricity to the market earlier from a diesel generator, is acting as the technical person for operation and maintenance of the system. Each consumer is paying Tk.4.00 per day (60 Tk \approx US\$1) which is adequate to support major maintenance requirements like replacement of CFL lamp and battery at regular intervals. The total cost of market electrification is around 1.1 million Taka (\sim US\$18000).



Solar market electrification

Case Study II: Wind-solar hybrid system in Kuakata Sea Beach

Recently LGED has electrified its Rest House cum Cyclone Shelter at Kuakata through PV-Wind Hybrid Power Plant. The hybrid plant is showing satisfactory output and can be replicated in other Cyclone Shelters in the coastal region.



PV- wind hybrid system

Salient features

Location of the scheme: LGED Guest house cum cyclone shelter, Kuakata Sea-beach, Kalapara, Patuakhali.

Start up wind speed: 7 mph (3.0 m/s)

Battery: 100Ah _ 3 Deep Cycle Batteries

Rated power: 400 watts at 28 mph (12.5 m/s)

Case Study III: Micro hydro power plant of Aung Thuwi Khoi

Aung Thuwi Khoi Marma of Mongjaipara village in upazila of Bandarban has installed the first micro hydropower plant in Bangladesh through indigenous technology (wooden water wheel which is driving locally procured generator). The electricity from his 10 kW power plant was first supplied to a local Buddhist temple. At present he is trying to provide electricity to 140 families of his village from the micro hydro power plant at his own cost. Thuwi is basically a owner of a rice mill who repairs his mill himself. He had dream of supplying hydroelectricity with his own technology to electrify his co-villagers. To make his dream true, he has constructed a weir on a hilly canal at his village and soon started producing hydroelectricity. Thuwi, in his mid 40s, procured machinery from Bandarban town and Chittagong and installed those on the weir constructed over Hara canal. He has spent Tk 70,000 only for 10 kW power plant. Local inhabitants said they have never seen any development activities at their village, except a building for a

primary school in 2001, as it is located in a remote area. Thuwi used various machinery of his rice mill in the project. He has installed timber pillars in the canal instead of RCC ones, and has made a wooden water wheel turbine by local carpenters for generating power. Construction of a permanent weir over the canal is urgently needed to steer the project towards its total success. LGED has come forward to help Thuwi and already signed an agreement with him to conduct feasibility survey for replicating his project in other prospective sites in the Chittagong Hill Tracts region.

