



FRIENDSHIP

Final Report

Friendship-Summit Solar Village

(Alternative and Affordable Energy Solution for Inaccessible Community)

Background:

With the assistance of Summit Corporation Limited, Friendship under its sector of Sustainable Economic Development (SED), has developed a solar village as part of its integrated development approach at Kabilpur Char under Uria Union at Fulchari Upazilla of Gaibandha District in Bangladesh. GPS coordinates are 25°25'90"N 89°62'15"E. The 57.6-kilowatt solar micro-grid established by Friendship is currently providing continuous electricity support to 171 households, 02 local markets composed of 38 shops, 02 mosques, 02 religious schools (Madrasha) and 2 primary schools. Around 3,000 beneficiaries are being benefitted from this Friendship-Summit solar village.

Friendship-Summit Solar Village components and Major Features:

- 192 Solar panels are installed with each panel having a capacity of 300 Wp
- 202 Deep Cycle Battery are installed with each battery having capacity of 130 Ah
- 4 Pure sine wave inverters are connected to the grid with each inverter's capacity of 15 kVA
- The solar micro-grid is supporting 180 V DC voltage which is then converted to 220 V AC by the inverters for use.
- The households are using prepaid energy meters for tracking electricity consumption.
- One De-mineralized water plant is installed to provide water supply for battery maintenance to avoid issues of purchasing and transporting battery water. This water plant will also be used for consumption of safe drinking water during Floods by the community people.
- 2 irrigation pumps of 5 Hp each are installed to operate with this grid electricity for farmers to ensure appropriate irrigation for crop production. This will ensure for farmers to rent the pumps according to their need ultimately that will lead to minimize the production cost significantly.
- All the solar panels are installed minimum 5 feet above the ground to avoid water surge due to flooding. The battery bank room is also established in a raised plinth of 7 feet. The electric pole that are installed is 16 feet in total (3 feet underground, 13 feet above).
- To ensure efficient land usages, agricultural cultivation is being performed below the solar panels. The type of plants which cultured is short in height to ensure that they don't cover the panels. This agriculture cultivation is being implemented to promote "Agrivoltaics" concept.
- The Solar grid and the supporting establishments are designed in a way so that it can be dismantled within 48 hours and shifted to a new location during emergencies such as land erosion.
- Local community people are oriented, trained and utilized to build the grid, and for maintenance in the future.

Key Impacts of Friendship-Summit Solar Village:

The source to sustainable electricity solution has developed the char swiftly with visible impacts listed below:

- 02 local Solar Entrepreneurs and 10 Para-Solar Technicians have been developed from within the communities of this char. This is ensuring two benefits: (i) the project is carried out by



FRIENDSHIP

people from within the char and thus, during emergencies, people are getting instant help with no hindrance due to the inaccessibility of people from the mainland. (ii) the people hired as technicians and entrepreneurs now have new skills and income generation capacity by selling electric goods.

- Households and shops are equipped with refrigerators (total 13 no's) useful to store food from mainland, medicines, locally produced milk, fish and meat which people are selling in the market daily. People now have access to food and medicines for which they otherwise would have travelled long distances via boat, especially during emergencies.
- Electricity has enabled people in the char to extend their work and other activities even during the night, thus improving their efficiency and income generation.
- Approximately 450 children will now get better education both at schools (including religious school), and at respective residence under bright light and fan connected by solar village electricity.
- 02 Solar Irrigation pumps have replaced approximately 20 no's diesel pumps from the respective char, have reduced the use of fossil fuel and CO₂ emission to the atmosphere and thus preventing environment pollution.
- Agriculture work and research are being done to develop climate smart agriculture zone in order to help villagers to improve their agriculture cultivation and production. This includes efficient ways to use electricity to support cultivation, and maximize usage of irrigation pumps.
- On average, 130 char dwellers have accessed digital services from 02 computer shops which are supported by solar village electricity.
- Villagers have now access to clean and safe drinking water even during the flood and any natural calamities. Daily water discharge capacity of the water treatment plant is approximately 800 liters.

Conclusion:

Friendship-Summit Solar village has facilitated Kabilpur char to develop as a hub for improved and integrated development activities. The villagers are now no longer dependent on nearby towns or villages for their regular necessities as almost everything is now available to them in their market, which have been possible only for the establishment of solar village. Friendship-Summit Solar village is a very effective renewable energy model especially for the erosion prone, remote northern chars, far removed from the main electricity grid; and has received unanimous positive feedback from the local community.

This solar village is replicable in other chars where the people are deprived of infrastructure and access, mainly stemming from the impermanence of the sedimentary islands which constantly appear and disappear and unable to sustain the grid lines.



FRIENDSHIP

Annex: Pictures

Solar Micro-Grid





FRIENDSHIP

Battery Bank





FRIENDSHIP

Solar Pumps



Demineralized Water Treatment Plant





FRIENDSHIP

Electricity Connection to the Households and Shops





FRIENDSHIP





FRIENDSHIP





FRIENDSHIP





FRIENDSHIP

Community people praying at the Mosque at night





FRIENDSHIP

Students of Primary School doing classes under ceiling fan



Students studying at the Madrasa (Religious school) at night





FRIENDSHIP



Shop of a solar entrepreneur

