Baseline Assessment for the Smooth Operation of Solar Mini Grid Facility in Umon Island and Bagana Community in Southern Nigeria

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Abstract

Umon Island and neighboring Bagana Community are located in southern Nigeria and both have a population of about 5000 people. The two communities are both surrounded by water and are not connected to the national electricity grid. The Nigeria Energy Support Programme (NESP) of the GIZ and the European Union, in collaboration with the Community Research and Development Centre (CREDC) is supporting the implementation of 50 kW Solar Mini Grid Facility to serve the two communities. To ensure the smooth operation of the Facility, the CREDC embarked on a survey to determine the average electricity needs of end-users and assess community's willingness and ability to pay for electricity. Method of data collection include interview with key informants, questionnaire administration, review of existing literature and direct observation. There is a total of 253 houses in both communities and 181 potential customers. The inhabitants of both communities were already familiar with electricity as 80% of the houses generate their electricity using privately-owned generators. The average peak load was calculated to be 0.887kW per households while 48.8% of the total electricity demand is used for lighting due to the dominant use of incandescent light bulbs; a total of 96% of respondents use incandescent light bulbs. The electricity used for lighting could be reduced to 8% if all end-users replace their incandescent lamps with LEDs. A total of 94% of end-users have expressed their willingness to connect to the Facility, while 93% have express their willingness to pay for electricity from the Facility. Over 76% of households already pay as much as N15,000 ($50) and above monthly to generate electricity from privately-owned generators. As elicited from the study, the current paper enumerates the strategies that will employed by the Operator to ensure the smooth operation of the Facility.

Key words: Umon Island; Nigeria; Facility; Mini grid; Solar

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