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| **Title:** | Design Of an Off-Grid Solar-Wind-Bio Hybrid Power Generation For Remote Areas Of Chapainawabgonj District In Bangladesh Using Homer | | |
| **Author(s) Name:** | MD. Khaled Saifullah; Ratul Halder; Shawon Afroz; Abu Hena Shatil; Kazi Firoz Ahmed | | |
| **Contact Email(s):** | k.firoz@aiub.edu | | |
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| **Abstract:** |  |
| Bangladesh is a highly populated nation in the globe where 76% people live in the remote regions and 24% in metropolitan areas. Peoples living in distant places are encountering problems having no access to energy. In addition, electricity sector of Bangladesh relies on the fossil fuel like natural gas, coal, oil that are limited in supply. Huge potentiality of renewable resources like solar, biogas/biomass, wind, hydro might be an excellent solution for minimizing electricity crises. In this study, hybrid renewable energy like solar, wind and biogas resources are assessed in terms of availability and energy recovery potential. A field study has been done to gather the information regarding population, load demand, biogas and solar resources of the chosen rural regions of Chapai-nawabgonj district. Then a solar PV-wind-biogas based 100 kW hybrid power generating system is constructed utilizing HOMER (Hybrid Optimization Model for Electric Renewable). In comparison to all other combinations, the modeling results demonstrate that the combined Solar-PV-Wind-Diesel system has the lowest COE (cost of electricity) and NPC (net present cost). In Bangladesh's Chapai-Nawabgonj district, electricity produced by the planned hybrid power generating system may be used in some of the area's most distant locations. This technology lowers energy costs per kWh and CO2 emissions, which contributes to the creation of a sustainable environment. | |