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Abstract:

The incorporation of renewable energy and the transportation system can be significantly beneficial for the economy and environment of Bangladesh. The main energy source for vehicles in Bangladesh are the country's natural gas and fuel. However, due to the rapid depletion of the gas reserve, soaring gas prices and global warming, alongside the environmental pollution caused by burning fuel, this raises concerns about these energy sources. Renewable energy offers a plausible solution to these problems. This paper's objective is to focus on the maximum usages of a solar photovoltaic (PV) system in electrical vehicles and to minimize the environmental impact in terms of CO₂ emission. This system may be partially used to power up the electric vehicle with a charging facility and contribute excess power to the national grid. The modeling, with its optimal analysis of the green transportation system, is simulated using the Hybrid Optimization of Multiple Energy Renewables (HOMER) software. The energy produced by the PV system can provide up to 13,792 kWh/year. Approximately 21% of the total production can be used in the charging station for charging the electrical vehicles and the rest of the energy can contribute to the national grid. Moreover, using the proposed concept of green transport will ultimately reduce greenhouse gas emissions by 52,944 kg/year. © 2018 MDPI AG. All rights reserved.