

assessed the Grid/PV/Wind hybrid energy system viability to provide electricity in 25 sites of Chad . designed a solar/wind/diesel/batteries for three climatic zones of Chad . investigated the feasibility of solar/wind/diesel/batteries for the supply of energy needs of Amjarass (a town in Chad).

In this study, the hybrid energy systems are proposed for all the regions that are not yet electrified in Chad. The National Electricity Company (NEC) of Chad produces and distributes the electricity only in 7 of the 23 regions of Chad; meaning that 16 are un-electrified.

Access to reliable energy is fundamental for the development of any community. The electricity is produced in Chad solely from thermal plants that use fossil fuels, which are not environmentally friendly. In addition, the electrification rate of Chad is less than 11%.

The renewable energy implementation with hybrid system design can significantly reduce greenhouse gas emissions and increase electricity access rate in Chad. The National Electricity Company generates electricity using only the diesel generators.

For the Chadian government to solve the energy crisis, it can attract investors by exploring such type of feasibility study of options to electrify the isolated areas. The renewable energy implementation with hybrid system design can significantly reduce greenhouse gas emissions and increase electricity access rate in Chad.

It was observed that, the COE of these proposed configurations were between 0.367 and 0.529 US\$/kWh, indicating that for some sites, it was less than the production cost of electricity in Chad (0.400 US\$/kWh) and therefore profitable.

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