Sudan photovoltaic systems

Which type of solar PV system is best for Sudan?
HOMER simulation results demonstrated that the optimal type of PV for Sudan is the Studer VarioTrack VT-65with Generic PV. The utilization of a solar PV system will avoid the production of approximately 27 million kg/year of pollutants and will reduce the cost of energy to USD$0.08746/kWh.

Where can solar energy be used in Sudan?
The optimal locations found in Sudan for utilizing solar energy were Wawa,followed by Kutum,Wadi Halfa,Dongola and Al-Goled due to their low costs of electricity,high clearness index and high levels of solar radiation.

Does Sudan have a solar energy potential?
These studies highlighted the excellent solar PV energy potentialthe country has due to its high solar irradiation rates and long hours of sunshine. ... ... Several research papers have looked at the potential of solar PV in Sudan .

Can Sudan adopt solar power?
On the other hand,there is a promising potentialin adopting solar power in the country. Germany,the leading country in solar energy,averages less than 140 hours of sunlight per month in its sunniest city Stuttgart. Sudan's location allows it to receive up to 11 hours of direct sunlight daily,equivalent to 436-639 W/m2 of solar energy density.

What is solar photovoltaic (PV)?
Amongst the existing solar harvesting technologies,solar photovoltaic (PV) stands out distinctively as one of the most rapid growing renewable energy technologiesand the most viable solution to mitigate the previously mentioned global challenges (Al Garni and Awasthi,2017).

What is the current energy situation in Sudan?
Ranked 166 out of 187 countries in the human development index,Sudan's current energy situation is extremely alarming. Biomass resources constitute 62%,electricity 4% and conventional fuels 34% of the total energy supply in Sudan (Saeed et al. 2019). About 70% of Sudan's population estimated not to have access to electricity.

DOI: 10.1109/RESEM57584.2023.10236145 Corpus ID: 261543653; Solar Photovoltaic and Battery Storage Systems for Grid-Connected in Urban: A Case study of Juba, South Sudan @article{Paskwali2023SolarPA, title={Solar Photovoltaic and Battery Storage Systems for Grid-Connected in Urban: A Case study of Juba, South Sudan}, author={Talib Paskwali and Beshir ...

In this work, simulations of a solar photovoltaic (PV) system located in Sudan are carried out using PVsyst7.0.

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By comparing the power production, performance ratio and price, the ideal area for setting up a 1-GW ...

Introduction. Solar photovoltaic (PV) systems remain largely underutilized in Africa compared with other world regions [].However, many African countries, such as Sudan, are now obliged to increase their renewable-energy capacity to comply with the United Nations Framework Convention on Climate Change and Nationally Determined Contributions (NDC).

The deployment of large-scale photovoltaic (PV) systems has gained global attention due to technological advancements and cost reductions. Floating PV (FPV) is becoming a preferred alternative ...

Sudan"s loss of its oil-rich south in 2011 made it realize the significance of renewable energy. Present huge energy demands particularly from the residential and agricultural sectors are causing m ...

The potential and validity of grid-connected wind and PV systems in Sudan"s Red Sea state were investigated. To calculate the solar and wind energy potential at the selected state, solar radiation, wind speed, and air temperature data were provided by NASA POWER datasets during the period of 1982-2019. For wind energy potential, 37 ...

The "Solar PV Powered Pumping Systems Project" is funded by the African Development Fund for the spread of PVWPSs for irrigation in Sudan [113]. The project aims to reduce farmers" dependency on fossils fuels, improve crop productivities, and promote better living conditions through the implementation of solar irrigation systems for 1170 ...

Fig. 4. Cost of energy (COE) of the examined PVs. 1 Ingeteam (1164kVA) with Generic PV. 2 Schneider ConextCoreXC 680 kW with Generic PV. 3 Studer VarioString VS-120 with Generic PV. 4 Studer VarioTrack VT-65 with Generic PV. 5 Studer VarioTrack VT-80 with Generic PV. 6 Schneider ConextCoreXC 630 kW with Generic PV. 7 Schneider ...

A computer-aided sizing program for stand-alone photovoltaic systems was then developed The effects of maximum cell temperature and different load profiles in the system size are investigated INTRODUCTION A stand-alone photovoltaic system (SAPVS) is a power source dedicated to a load and it is the only source from which the load may draw power.

Abstract. This study comprehensively analyzes the operational performance and economic feasibility of a 5MW grid-connected photovoltaic in Sudan over a two-year monitoring period.

In addition, the electric power consumption per capita in Sudan is 269 kWh/yr, so the proposed solar power plant with 1 979 259 MWh/yr can provide energy to 7.4 million people per year annually ...

DOI: 10.1016/j.solener.2020.08.041 Corpus ID: 221217583; Determination of the optimal solar photovoltaic (PV) system for Sudan @article{Fadlallah2020DeterminationOT, title={Determination of the optimal solar

photovoltaic (PV) system for Sudan}, author={Sulaiman O. Fadlallah and Djamal Eddine Benhadji Serradj}, journal={Solar Energy (Phoenix, Ariz.)}, year={2020}, ...

Distributed solar photovoltaic (DSPV) is a practical and reliable solution in the case of Sudan, considering the vast and remote off-grid rural areas and the insufficient electricity generation in ...

the PV system are lower than the diesel system. The HOMER results, in Sudan show that levelized cost of energy (LCOE) for solar and Diesel systems are 0.249 and 0.364 $/kWh respectively. Keywords: Photovoltaic system; irrigation; pumping system; economic analysis.

solar PV systems involve the use of toxic materials, e.g. the production of poly-silicon, and therefore require diligence in following environmental and safety guidelines. Careful decommissioning and recycling of PV system is especially important for cadmium telluride based thin-film solar cells as non-encapsulated

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