

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-65 with 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.

Can solar power be used in Sudan?

Several research papers have examined the potential of solar PV in Sudan and especially on rooftops. These studies highlighted the excellent solar PV energy potential the country has due to its high solar irradiation rates and long hours of sunshine. ...

Does reducing PV costs reduce energy costs in Sudan?

Reducing the PV costs by 25% has a significant impact; the cost of energy produced reduces in the range of USD\$ 0.06697/kWh and USD\$ 0.06808/kWh, while a reduction in PV costs of 50% further reduces the cost of energy, ranging between USD\$ 0.05273/kWh and USD\$ 0.05361/kWh in the top five locations in Sudan.

Is solar power economically feasible in Sudan?

Economic calculations show that the levelized cost of electricity (LCOE) is \$0.06/kWh, the discounted payback period is ~11 years and the net present value is \$635 291 000. As a result, the proposed grid-connected PV solar plant is considered economically, technically and environmentally feasible in Sudan. Energy is important for sustaining life.

Is a grid-connected PV solar plant feasible in Sudan?

As a result, the proposed grid-connected PV solar plant is considered economically, technically and environmentally feasible in Sudan. More details concerning the electrical layout, possible mechanical load, dimensions for the mounting structure and also protection, disconnection switches and metering are needed.

What is the average solar irradiance in Sudan?

The average daily solar irradiance in Sudan varies in between 5.8 and 7.2 kilowatt hours per square metre [2]. The solar irradiance needed to create solar power is readily available in almost all regions of Sudan. The solar irradiance is highest in northern Sudan (Fig. 1).

Electricity access in Africa is a major challenge in rural areas. Despite considerable potential for the use of solar energy, investments in renewable energy projects are minimal

In this work, simulations of a solar photovoltaic (PV) system located in Sudan are carried out using PVsyst7.0. By comparing the power production, performance ratio and price, the ideal area for setting up a 1-GW ...

Cost of photovoltaic system Sudan

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Literature review on Hybrid Photovoltaic Diesel Power System in Sudan. Glob Eng Sci. 10(5) 202. GES.MS.ID.0004. DI 10.552/GES.202.10.0004. ... relatively high investment costs (compared to PV and ...

The cost of PV system in residential grid connected zones in Khartoum ... This research study focuses on designing a 1-GW solar power station in northern Sudan using the PVsyst7.0 software program ...

Determination of the optimal solar photovoltaic (PV) system for Sudan Solar Energy (IF 6.0) Pub Date : 2020-09-01, DOI: 10.1016/j.solener.2020.08.041 Sulaiman O Fadlallah ...

This problem is alleviated by optimal sizing as it results in reliable and cost-effective systems. Using PV systems in Iraq can help resolve the power generation deficiency. ... 00031-3 Sizing ...

For Stage 3, the levelized cost of electricity was estimated for a typical 2-kW rooftop PV system without policies (0.11 \$/kWh) and with a net-metering policy (0.07 \$/kWh). Energy generation ...

With a 4kW rooftop PV system it was estimated that 420,500 houses would be needed to meet the full electricity demand increase by 2030. If using the 9kW system, then only 187,00 homes would be needed.

Figure 1: Map of Sudan [2] The aim of this study is to find out how the solar energy can be used to produce electricity for a hotel in Sudan, the task is to design a stand-alone PV system, and a Solar/Diesel system, and then to ...

capacity in Sudan increased from 13MW in 2017 to 18MW in 2020[14]. This figure reveals that the country ... cost of the healthcare system access) ... off-Grid PV systems is the best long term ...

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 and reduce carbon emissions by ~18 million tons of carbon ...

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 ...

This research study focuses on designing a 1-GW solar power station in northern Sudan using the PVsyst7.0 software program. To determine the appropriate location for the solar-energy station, 14 criteria were evaluated. ... An economic evaluation should be performed to estimate the costs, revenues and profits of a solar PV system. Calculation ...

Cost of photovoltaic system Sudan

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Mentioning: 6 - Highlights Finding the optimal solar PV and the best locations for the utilization of solar energy in Sudan using HOMER. Investigating the costs and emissions that would be ...

Installed solar system cost for the best brands of solar panels in 2024. Below are the solar panel system costs for the 20 most frequently-installed residential solar panels. Many of the solar modules on this list are from trusted manufacturers with great efficiency ratings and warranties, which is likely the reason they are so popular.

Based on the findings, it is concluded that (1) utilizing the solar power system in Sudan is limited to simple applications like water pumping systems for irrigation in agriculture; (2) ... Furthermore, the electricity production cost (EPC) from the PV system is varied between 0.036 and 0.049 USD/kWh.

The cost of water (COW) and cost of gas (COG) of the PV/WT/DG/Batt system are also the lowest among all the four configurations and have been found 1.185 \$/m³ and 3.978 \$/m³, respectively. Energy management and capacity planning of photovoltaic-wind-biomass energy system considering hydrogen-battery storage

A typical of 5 feddans (21,000 m²) farm land situated at Al Gataina region, 65 km South of Khartoum is to be irrigated. Two irrigation systems are considered: Solar photovoltaic water pumping and ...

This problem is alleviated by optimal sizing as it results in reliable and cost-effective systems. Using PV systems in Iraq can help resolve the power generation deficiency. ... 00031-3 Sizing Stand-Alone Photovoltaic Systems for Various Locations in Sudan O m a r E l s a m m a n i E l s h e i k h I b r a h i m I n t e r n a t i o n a l University o f ...

PHOTOVOLTAIC PROJECT In 2000, the Global Environment Facility (GEF) launched a project to create a sustainable technical, institutional, and financial infrastructure to support the market penetration of solar photo-voltaic (PV) systems. The project aims to meet the growing energy demand in semi-urban Sudan with PV, rather than diesel, systems.

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