

Establishing off-grid electrification technologies including "Pay-As-You-go (PAYG)" models and the transactive energy distribution technology can offer a resilient energy supply to reduce the peak load at the national electricity grid.



Currently, solar energy development in Sudan is primarily driven by off-grid solutions, including solar home systems and small-scale solar installations for rural electrification. However, larger-scale utility projects are also gaining momentum, as international investors and organizations recognize Sudan's solar potential.



ApTech Africa, established in South Sudan in 2011, specializes in delivering off-grid solar solutions and home energy systems tailored to meet the needs of underserved communities. By installing reliable and sustainable solar-powered systems, ApTech Africa empowers households with clean energy, improving access to electricity, enhancing quality

## OFF GRID SOLAR SYSTEM SUDAN





To tackle energy poverty in South Sudan, SunGate Solar pioneered the deployment of a solar micro-grid to provide reliable 24-hour power to off-grid communities. To test its performance as a localized power generation and distribution network, SunGate Solar installed South Sudan's first solar microgrid to deliver clean, reliable, and



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The Norwegian company Scatec Solar has put a solar hybrid off grid into operation in Juba. The installation supplies electricity to the complex of the United Nations Mission in South Sudan (UNIMISS).

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In this research, the authors used the Peaks over Threshold (POT) method alongside short-term electricity generation data belonging to a 5.5 kW p off-grid photovoltaic (PV) system installed on the premises of the National Energy Research Center in Soba district, Khartoum, to estimate the panel generation factor (PGF) of the city that rests