

CASE STUDY · SUSTAINABLE TOURISM · FRANCISTOWN, BOTSWANA

Botswana's First Fully Solar-Powered Guesthouse

Villa de Chazha Guesthouse—94.5% energy independent, zero grid dependency

Installed by African Sun Energy · UK–Botswana–Kenya Joint Knowledge Exchange on Renewable Energy

BPC Rooftop Solar Programme-Approved

43,100 kWh

annual clean
electricity generated

94.5%

of total load
needs met by solar

55 kWh/day

exported to national
grid — minimum

30 t CO₂

displaced over
system lifetime

<4 years

expected return
on investment

THE CHALLENGE

Botswana's tourism sector faces a persistent tension: hospitality operations demand reliable, high-quality power, yet the national grid depends heavily on electricity imported from South Africa exposing operators to price volatility, supply risk, and a growing sustainability gap vs international expectations.

For Villa de Chazha, the question was not whether to act but how. The answer became a landmark for the entire sector.

THE SOLUTION

Solar PV + Battery Storage

19.68 kWp array with 10.24 kWh lithium-ion storage provides reliable power 24/7. Battery backup ensures continuity during grid outages.

Solar Thermal Water Heating

SolarisKit HelioFlow™ collector eliminates electric water heating one of the highest-draw loads in any hospitality operation. Operates from –10°C to 110°C.

Smart Monitoring + Grid Export

GoodWe integrated smart metering and data loggers provide real-time performance data. Minimum 55 kWh exported to the BPC grid daily.

REPORTABLE IMPACT

43,100 kWh/yr

Annual clean electricity generated by the solar PV system

94.5%

Of Villa de Chazha's total electricity load met by solar

55 kWh/day

Minimum clean energy exported to the BPC national grid daily

30 t CO₂

Carbon displaced over system lifetime — equivalent to removing 6 petrol cars from the road for 10 years

<4 years

Expected full return on investment

SDG ALIGNMENT

SDG 7



SDG 13



SDG 17



It is equally satisfying to see the benefits of this installation reach beyond our Guesthouse, and we look forward to working with the research team from BUIST," said Rebonyeng Hick, Director at Villa de Chazha Guesthouse

Villa de Chazha · Case Study

UK–Botswana–Kenya Knowledge Exchange on Renewable Energy

THE BIGGER PICTURE

This project was developed under the Joint Knowledge Exchange on Renewable Energy between Botswana, Kenya, and the United Kingdom a trilateral programme advancing technology transfer, clean energy deployment, and sustainable development across partner countries.

Villa de Chazha is the proof of concept. Botswana has over 1,500 registered tourism accommodations. Applying this integrated PV-thermal model across even 10% of the sector would deliver significant reductions in grid dependency and open a pipeline of bankable clean energy projects aligned to national SDG commitments.

The commercial model is straightforward: the system pays for itself in under four years and continues generating clean power and grid export revenue for 30+ years. For operators, investors, and development finance partners, the economics are as compelling as the environmental case.

REPLICATION OPPORTUNITY

- 1,500+** Registered tourism accommodations in Botswana
- 10%** Adoption = significant MW of new clean capacity
- 20+ yrs** Clean energy revenue per installation after payback
- SDG 7** Directly advances universal energy access targets

SYSTEM SPECIFICATIONS

SOLAR PV + STORAGE SYSTEM

System capacity **19.68 kWp**

Annual generation **43,100 kWh**

Inverter **GoodWe 20kW Low Voltage Hybrid**

PV modules **Jinko Solar 615Wp bifacial**

Mounting **K2 Systems Multirail**

SOLAR THERMAL SYSTEM

Collector **SolarisKit HelioFlow™**

Pump **Grundfos UPS4 GO**

Controller **Resol DeltaSol CS/2**

Storage **150L insulated water tank**

Temp. range **-10°C to 110°C**

IN PARTNERSHIP WITH



TECHNICAL PARTNERS



Replicate this model in your property or portfolio

Contact Sustainable Energy Botswana to commission your integrated solar assessment

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