Aloe Energy

COUNTRY REPORT · NOVEMBER 2026

Guinea-Bissau: grid and electricity access

West African Power Pool

1.5 M
people live without night-time light, a proxy for no power

19%
of them live within 15 km of a power line

219
km of high-voltage lines, 66 kV and above

10
MW of operating power plants, 10 MW and above

3
power plants and transmission lines planned or under construction

About 1.5 million people in Guinea-Bissau live where satellites see no electric light at night, and 19% of them live within 15 km of a power line. This page brings together what our open atlases show for Guinea-Bissau: about 219 km of high-voltage lines, 10 MW of power plants and the projects still to come.

WHAT THIS MEANS

189,000 people without power live 2 to 15 km from a line: close enough to plan for the grid, too far for a quick connection.



Map: Aloe Energy WAPP grid atlas. Lines © OpenStreetMap contributors (ODbL).

NEAR THE GRID, NOT ON IT

About 1.5 million people in Guinea-Bissau, roughly 69% of the population, live where satellites see no electric light at night. Of them, 19% live within 15 km of a mapped or predicted power line: 103,000 within 2 km, 189,000 2 to 15 km away, and 1.2 million farther out. The largest group lives more than 15 km from any line, where standalone solar and mini-grids are the realistic first step for years to come.



Within 2 km of a line: **103,000** (7%)
2 to 15 km: **189,000** (12%)
More than 15 km: **1.2 million** (81%)

"Without night-time light" is a satellite proxy, not a measured access rate.

THE GRID TODAY

Guinea-Bissau's mapped high-voltage network runs to about 219 km of lines at 66 kV and above, with 4 substations. The highest voltage on the map is 220 kV, and 100% of the line length runs at 220 kV or more. Installed capacity was about 10 MW (GEM Sep 2026). The latest international tracking report puts access to electricity at 44% of people.

Mapped line length

Voltage	km
220 kV	219
Total	**219**

PLANTS AND PIPELINE

One operating power plant of 10 MW and above adds up to about 10 MW, 100% of it solar. The largest is Helios Solar solar farm (10 MW, solar). Another 3 plants totaling about 63 MW are under construction or planned.

Operating capacity by type



Solar: **10 MW** (100%)

EMISSIONS

In 2024, each megawatt-hour used in Guinea-Bissau came with about 0.76 tonnes of CO2, including imports. The table also gives the combined margin used for carbon projects.

Grid emission factor, 2024 (tCO2/MWh)

Measure	tCO2/MWh
Generated in country	0.762
Electricity used, with imports	0.762
Combined margin (for carbon projects)	0.381

SECOND LIFE

Between 2026 and 2040, about 864 tonnes of solar equipment and stationary batteries are expected to retire in Guinea-Bissau, most of it off-grid solar kits and mini-grids. That is 0.2% of the total for the 49 countries in our second-life atlas.

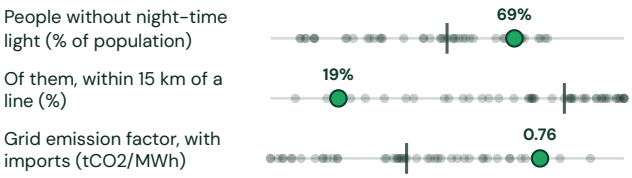
Solar and batteries retiring each year (tonnes)



CLEAN ENERGY CERTIFICATES

I-REC status: not approved yet, so renewable plants here cannot issue I-RECs.

HOW IT COMPARES



Each dot is one country with a page on aloeenergy.org; the line marks the median. Positions only, no ranking.

Sources: Grid lines: OpenStreetMap contributors (ODbL), gap-fill from the World Bank Africa grid (2017); power plants: Global Energy Monitor (September 2026), WRI and public project sources; capacity and access: regulators, utilities and Tracking SDG7 2026; people and distance to the grid: WorldPop 2020 and gridfinder (CC BY 4.0); second life: Aloe second-life model (central case); emission factor: Aloe grid emission factors (Ember).

Aloe Energy

The full page, with the interactive atlas, is at aloeenergy.org/countries/guinea-bissau. The maps are free to view; the data behind them is available on request: brandon@aloeenergy.org. Aloe Energy is a not-for-profit initiative working on energy access across Africa, with open grid maps and data from Southern and Eastern to West and Central Africa.

Scan for the live page and map

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FULL DATA

More about Guinea-Bissau

Everything else our research pages show for this country, from published sources. Each section names the page where the method and sources are.

PRICES AND RELIABILITY

LIT BUT OFF THE MAP

Where the lights are and the map is not

Satellites see 13 lit places in Guinea-Bissau at night. 4 are within 2 km of a mapped line, 1 are 2 to 10 km away and 8 are 10 km or more from any mapped line. Places lit far from the map point to lines the map is missing, mines and plants with their own power, or mini-grids.

The lit places off the map cover about 29 km² and are home to about 187,587 people.

Lit places by distance to a mapped line

Distance	Lit places	Newly lit
Within 2 km of a mapped line	4	
2 to 10 km away	1	1
10 km or more	8	6

See them on the map: the "Lit but off the map" layer of the grid-edge atlas (aloeenergy.org/research/grid-edge).

CLIMATE AND CARBON

Carbon per new connection

The Mission 300 compact for Guinea-Bissau adds about 117,200 new connections by 2030: 73,100 to the grid, 17,100 on mini-grids and 27,100 with solar home systems.

Counted with what household surveys show people use for light now (kerosene is the main light in 5% of homes without power), they avoid about 2,340 t of CO2 a year and add about 20,000 t from the power they use, a net addition of 17,661 t a year.

New connections and CO2, central case

Measure	Value
New connections by 2030	117,229
CO2 avoided (t a year)	2,340
CO2 added (t a year)	20,000
Net CO2 avoided (t a year)	-17,661
Net per 1,000 connections (t a year)	-150.7

The default methodology view and every source: carbon per connection (aloeenergy.org/research/carbon-per-connection).

CIRCULAR AND MOBILITY

WASTE TO WEALTH

Power from waste

Guinea-Bissau's sugar mills, landfills, sewage works, factories and crop residues could make about 9 MW of power that is not built yet (central case), avoiding about 24,004 t of CO2e a year.

Power from waste by source (MW, central case)

Source	MW
City waste	0.2
Crop and sawmill residues	8.5

Every site, costs and the method: power from waste (aloeenergy.org/research/waste-to-energy).

SECOND LIFE

Who could use a second-life panel

Places in Guinea-Bissau that could use a second-life solar panel add up to about 108 MWp (range 48 to 243): 96 MWp to cut generator use in towns, 8 MWp for mini-grids, 4 MWp for household systems and 0.1 MWp for 2 health facilities and 1 schools with no light at night.

Mapped by half-degree cell, with years to 2040: where the panels are needed (aloeenergy.org/research/second-life#where-demand).

E-MOBILITY

Electric transport, per km

On Guinea-Bissau's grid, an electric motorbike emits about 53 g of CO2 per km from the power it charges with, against 48 g for a petrol one (10% more, because of how this grid makes its power).

CO2 per km from use (g)

Vehicle	Electric	Petrol or diesel	Difference
Motorbike	53	48	+10%
Bus	986	1,673	-41%
Small car (newer petrol car)	158	125	+26%

Life-cycle figures, a cost calculator and city air: e-mobility (aloeenergy.org/e-mobility#per-km).

Sources: Lit places: NASA Black Marble night lights, compared with our mapped lines (grid-edge atlas). Carbon per connection: compact targets, household lighting surveys (census, MICS, DHS, MTF) and our grid emission factors. Power from waste: FAOSTAT, Global Energy Monitor and OpenStreetMap sites, in our waste-to-energy model. Second-life demand: grid-edge screening, compact targets, World Bank Enterprise Surveys and health and school facility lists, in our second-life atlas. Transport per km: our grid emission factors and vehicle energy use; running costs from national pump prices and tariffs.