



# Large Infrastructure

## Access to electricity

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Last updated 25 May 2026 using IFs V8.50

## Access to electricity

Electricity infrastructure in Africa remains insufficient, with significant disparities between North Africa and sub-Saharan Africa. In 2022 (latest available data), about 58.5% of the continent's population had access to electricity, and only six countries—Egypt, Mauritius, Seychelles, Morocco, Algeria and Tunisia—had achieved universal access. In other words, roughly 41.5% of Africa's population still lacked electricity.

Access to reliable electricity is essential for economic growth and improvements in livelihoods. However, in many African countries, even a connection to the national grid does not guarantee a dependable power supply. Frequent power outages are a common feature of electricity provision across the continent. This limited access and unreliable supply, particularly in sub-Saharan Africa, constrain modern economic activities, public services, quality of life and the adoption of new technologies.

In sub-Saharan Africa, the number of people without electricity has risen as population growth outpaces electrification progress. As a result, it holds most of the global population without access to electricity. While the global electricity access rate reached 91.3% per cent in 2022, sub-Saharan Africa achieved only 51.5%, meaning that 597.4 million Africans are without access to electricity. Eighteen of the 20 countries with the largest access deficits in 2022 are in Sub-Saharan Africa. In terms of absolute numbers, the top three—Nigeria (98 million), DR Congo (81 million) and Ethiopia (58 million)—accounted for nearly a third of the entire global deficit. South Sudan, Burundi and Chad have the highest share of their populations without access to electricity, with around 90% of their people lacking access.

Access to electricity in Africa remains deeply unequal, with a pronounced gap between urban and rural areas. Historically, cities have enjoyed far greater electricity coverage than the countryside. As of 2022, 83% of the urban population in Africa had access to electricity, compared with only 42% in rural areas.

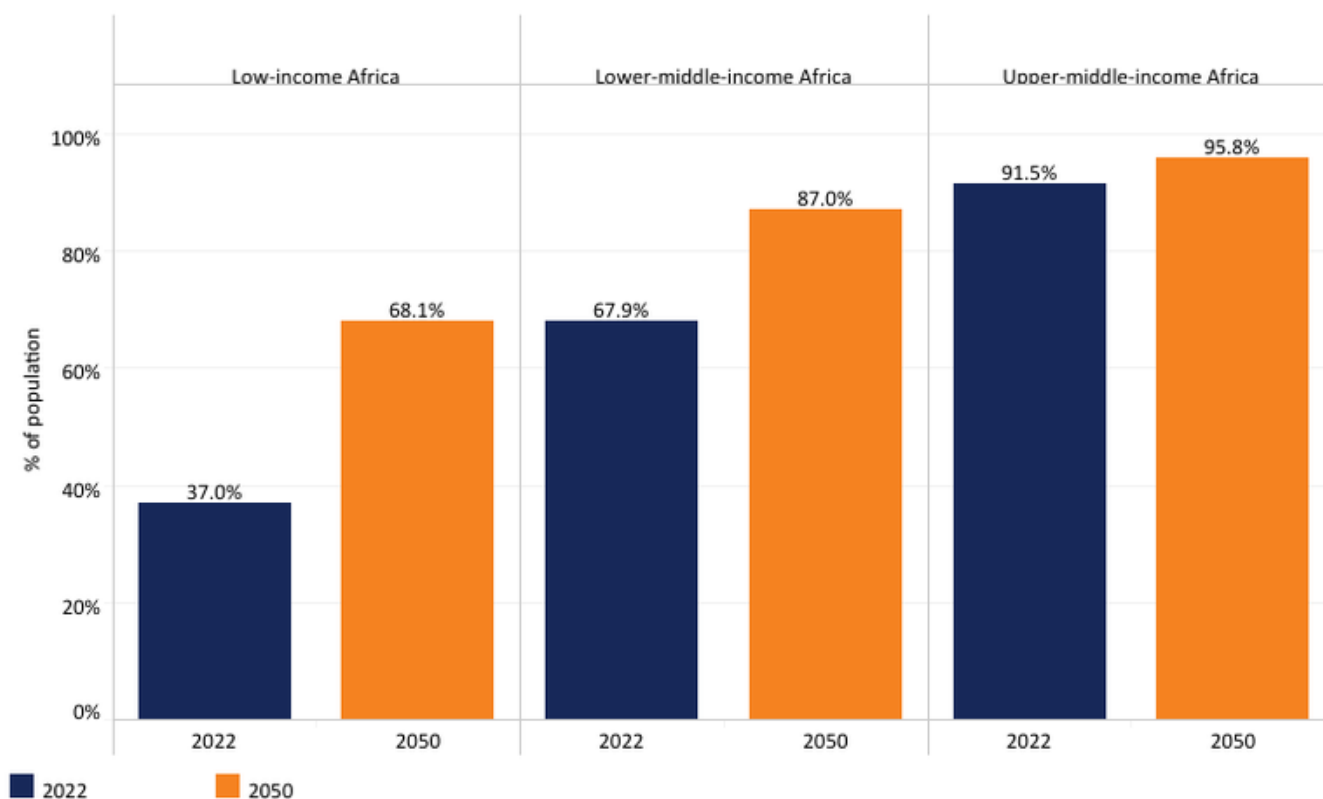
Expanding rural electrification can deliver transformative benefits to communities. Reliable electricity enables new economic activities, strengthens essential services and improves daily living conditions. Children can study more safely in the evenings, small businesses can operate longer hours and increase their income, and health facilities can refrigerate medicines and vaccines. Electricity reshapes how time is used, how income is generated and how public services are delivered. In turn, it influences educational attainment, economic participation and overall quality of life—particularly for women and children.

Access levels vary significantly by income group and region. Northern African countries and higher-income nations, such as South Africa, generally achieve higher rates of rural electrification than lower-income countries. Chart 3 shows total electricity access in urban and rural areas by income group in 2022 and 2050.

In 2022, only 21.5% of rural residents in low-income African countries had access to electricity. The rate was higher in lower-middle-income countries (51.4%) and reached nearly 92% in upper-middle-income countries. Overall, thirteen African countries reported rural electricity access below 10%. In some cases—including Central African Republic, Chad, South Sudan and DR Congo—rural access rates remained below 2%.

Achieving universal electricity globally will therefore depend largely on progress in sub-Saharan Africa, particularly in its low-income countries, where the electrification gap is most severe.

Chart 3: Access to electricity: total, urban & rural in Africa by income groups, 2022 vs 2050

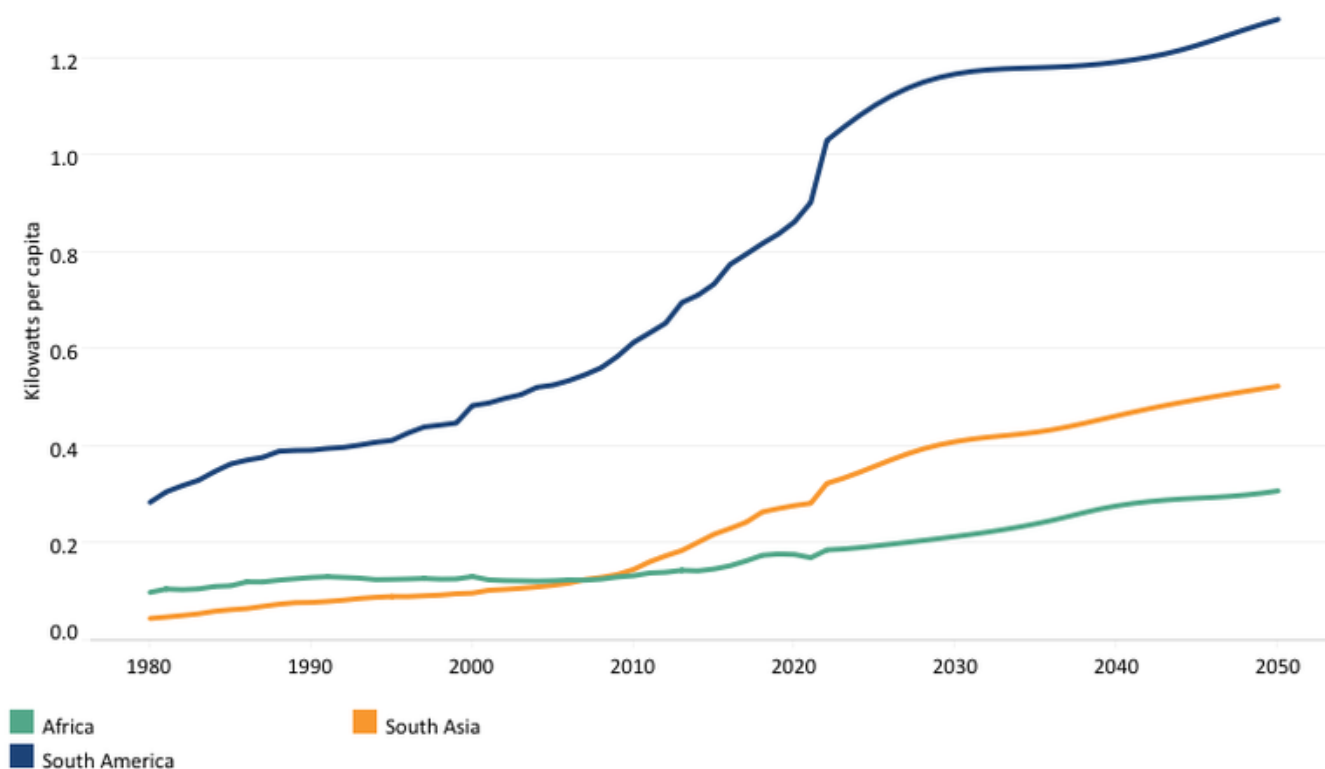


Source: IFs 8.50 initialising from WDI data

The percentage of firms in Sub-Saharan Africa reporting outages (72.1%) is higher than in any other world region. Moreover, electricity load-shedding in Africa tends to last far longer than in Asia or Europe. To mitigate the effects of unreliable electricity services, firms generate their own electricity, typically relying on diesel generators as a backup source of electricity. According to the World Bank, 51% of firms in Sub-Saharan Africa own or share a generator. Nigeria, for instance, is among the global top six countries (Nigeria, India, Iraq, Pakistan, Venezuela and Bangladesh) that generate electricity through back-up generators. According to a report by the International Finance Corporation (IFC), the amount spent every year in Nigeria on buying and operating small generators is about US\$12 billion, and the collective installed capacity of generators is eight times more than the entire national grid. The operations of back-up generators come with high financial costs, often double that of grid electricity, and this is a huge burden on the small and medium-scale enterprises (SMEs), which account for about 90% of businesses and over 80% of employment in Nigeria. Also, these generators emit carbon dioxide and carbon monoxide, which pose serious health and environmental risks.

Progress in electricity generation capacity has been limited. In 2022, Africa's electricity generation capacity per capita stood at only 0.17 kW, lower than 0.29 kW in South Asia and 0.92 kW in South America. Chart 4 shows electricity generation capacity per capita in Africa, South America and South Asia from 1990 to 2050. On the Current Path, per capita generation in Africa will reach only about 0.31 kW by 2050, still lagging behind South America (1.28 kW) and South Asia (0.52 kW) in the same year. Rather than closing the gap, Africa risks falling further behind despite its substantial potential.

Chart 4: Electricity generation capacity per capita in Africa compared with South America and South Asia, 1980-2050



Source: IFs 8.50 initialising from WDI data

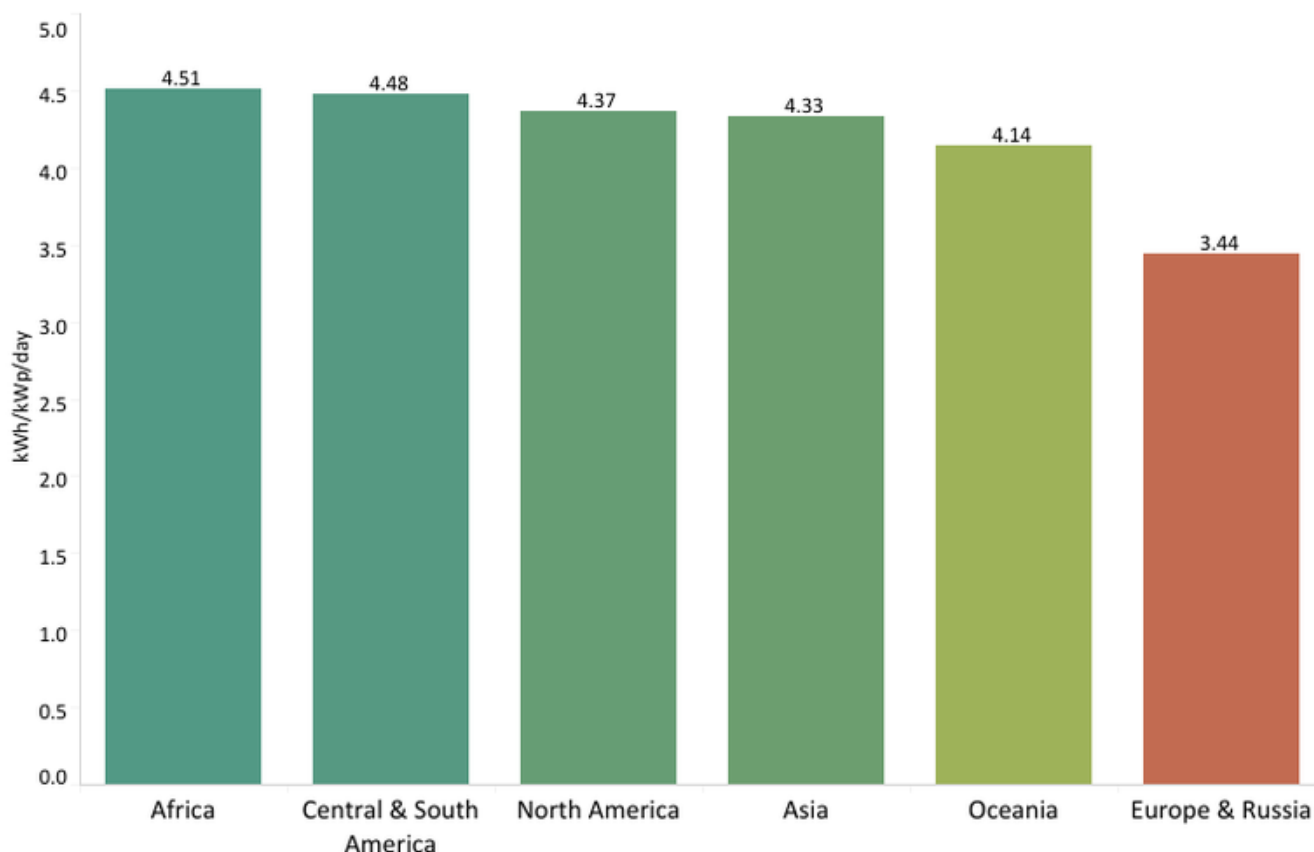
Electricity generation in Africa is expanding at less than 2% per year—far below the pace of population and GDP growth. As a result, per capita electricity consumption is falling. According to [UN statistics](#), Africa’s average electricity consumption stood at around 660 kWh per capita in 2015. By 2022, it had dropped to just 514.7 kWh per capita, the lowest level recorded since at least 1998. This trend reflects not only a persistent access gap, but a failure to scale energy systems at a time when Africa must rapidly increase power consumption to support industrialisation, enhance competitiveness and stimulate private-sector growth.

Scaling up power generation is therefore an urgent and strategic priority. In 2024, Africa added only 6.5 gigawatts (GW) of utility-scale capacity to its grid. Nearly half of this came from hydropower, driven by new units from major projects such as the Grand Ethiopian Renaissance Dam, Tanzania’s Julius Nyerere hydropower project, Cameroon’s Nachtigal plant and Uganda’s Karuma dam. Solar energy represented the second-largest share, with large-scale additions in Egypt and South Africa, alongside smaller projects across at least nine other countries. The remaining capacity came from natural gas—mainly in Algeria, Ghana and Nigeria—as well as coal and wind, mostly from South Africa and Morocco. By contrast, India alone added 18 GW in renewables in that year. To meet its development ambitions, Africa must double or triple its annual power-sector buildout.

It is estimated that Africa needs to add at least 16 GW of new grid-connected generation capacity annually until 2050 and invest US\$3.2–4.3 billion per year in transmission infrastructure to meet even its most basic growth targets. Achieving this will require decisive action to fully harness Africa’s vast yet underutilised energy resource base. Chart 5 depicts the average long-term practical potential solar energy output by world region. Africa leads the world in average solar energy potential,

with the capacity to generate 4.51 kilowatt-hours per kilowatt-peak per day (4.51 kWh/kWp/day). In other words, for every one kilowatt-peak of installed solar capacity, a system generates an average of 4.51 kWh of electricity per day—the highest level globally. The report by the African Solar Industry Association indicates that the continent’s installed solar capacity increased by 17% in 2025, driven by imports of solar panels from China. The continent has vast renewable energy potential, including an estimated 11 TW of solar power, 350 GW of hydropower, 110 GW of wind energy and 15 GW of geothermal capacity. Despite these abundant resources, Africa currently utilises less than 10% of its hydropower potential.

**Chart 5: Average long-term practical potential solar energy output, by world region**



Source: World Economic Forum, 2022

Beyond limited access or insufficient supply, electricity in Africa—particularly in sub-Saharan Africa—is significantly more expensive than in other regions. The African Development Bank estimates that electricity costs in Africa are **three times** higher than in other developing regions. High electricity costs in Africa are largely driven by the lack of investment in generation capacity and distribution networks. Ironically, several African countries export substantial quantities of energy, including coal and unrefined oil and gas, but they end up importing refined fuels.

The continuous increase in demand for electricity in Africa is expected to be **four times** higher in 2040 than it was in 2010. In the Current Path, Africa will still have around 543 million people without access to electricity in 2050, remaining virtually unchanged from today. However, the percentage of Africans without access will have declined to 21%. Improving the supply and distribution of electricity infrastructure is a priority, considering Africa’s vast and environmentally friendly electricity generation potential.

Despite uneven progress across countries, significant efforts have been made to expand electricity access through a combination of grid extension, mini-grids and off-grid solutions. As Africa seeks to accelerate economic growth and industrialisation, the expansion of green energy offers a strategic opportunity to leapfrog carbon-intensive development

pathways and transition directly toward a more sustainable, resilient and renewable energy future.

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Kouassi Yeboua (2026) Africa Large Infrastructure Futures. Published online at [futures.issafrica.org](https://futures.issafrica.org). Retrieved from <https://futures.issafrica.org/thematic/11-large-infrastructure/> [Online Resource] Updated 25 May 2026.



## About the authors

Dr Kouassi Yeboua previously worked as a Senior Researcher at AFI, where he led significant ISS studies on the long-term development prospects of the Democratic Republic of Congo, the Horn of Africa, Nigeria, Malawi, and Mozambique. His research focuses on development economics, macroeconomics, gender, and economic modeling. He holds a PhD in Economics.

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