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Access to energy in sub-Saharan Africa

By

Rachid Amui, Economic Affairs Officer, Commodities Branch, DITC, UNCTAD

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Content

- Energy access in SSA
- Factors affecting access to energy in SSA
- Overview of Africa’s energy resources
- Policy actions to enhance access to energy in SSA

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What is access to energy?

“A household having a reliable and affordable access
to both clean cooking facilities and to electricity, which is enough to supply a basic bundle of energy services initially,
and then an increasing level of electricity over time to reach the regional average” (IEA)

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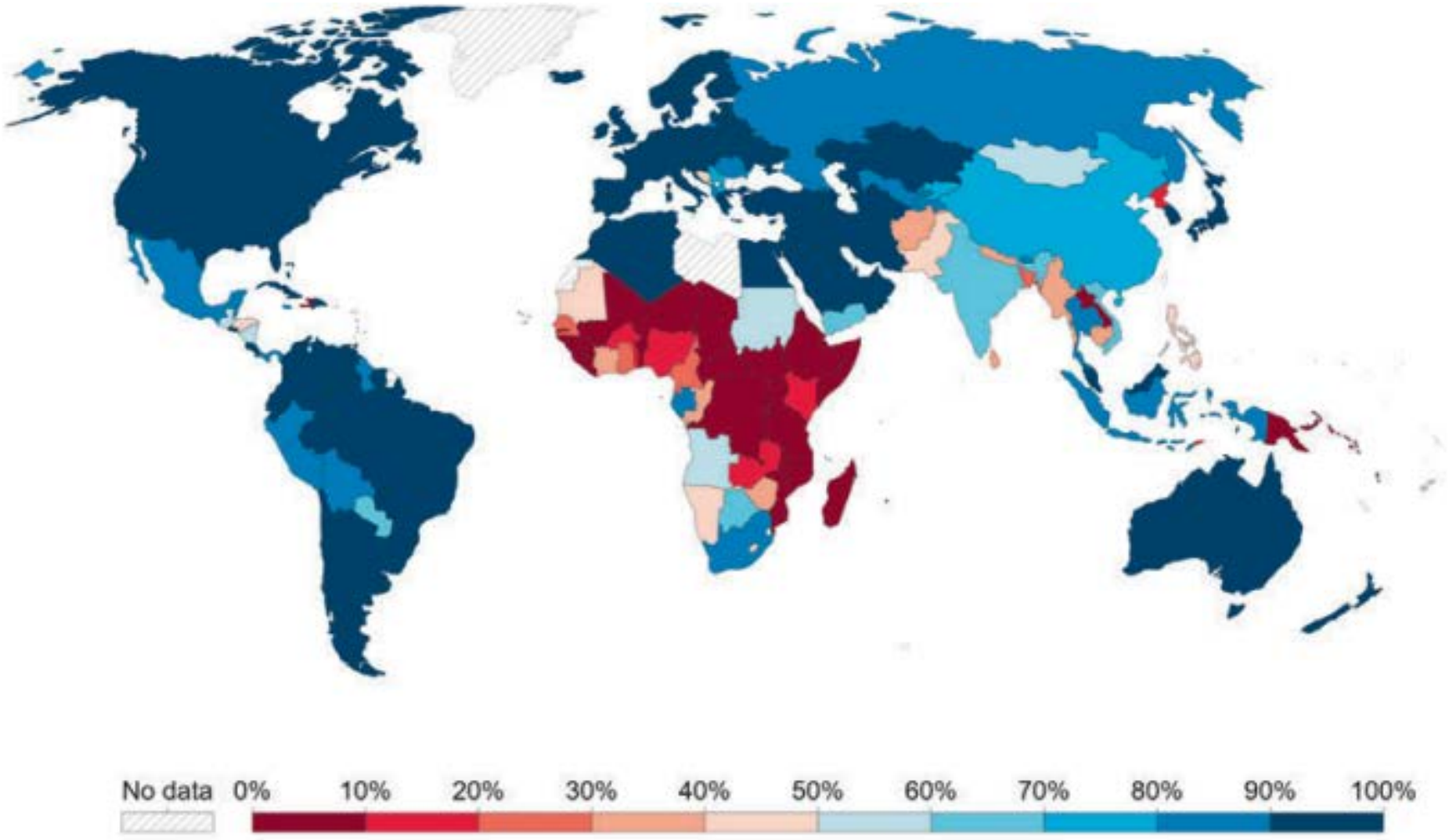
Share of population with access to clean fuels for cooking



Source: World Bank, Our World in Data

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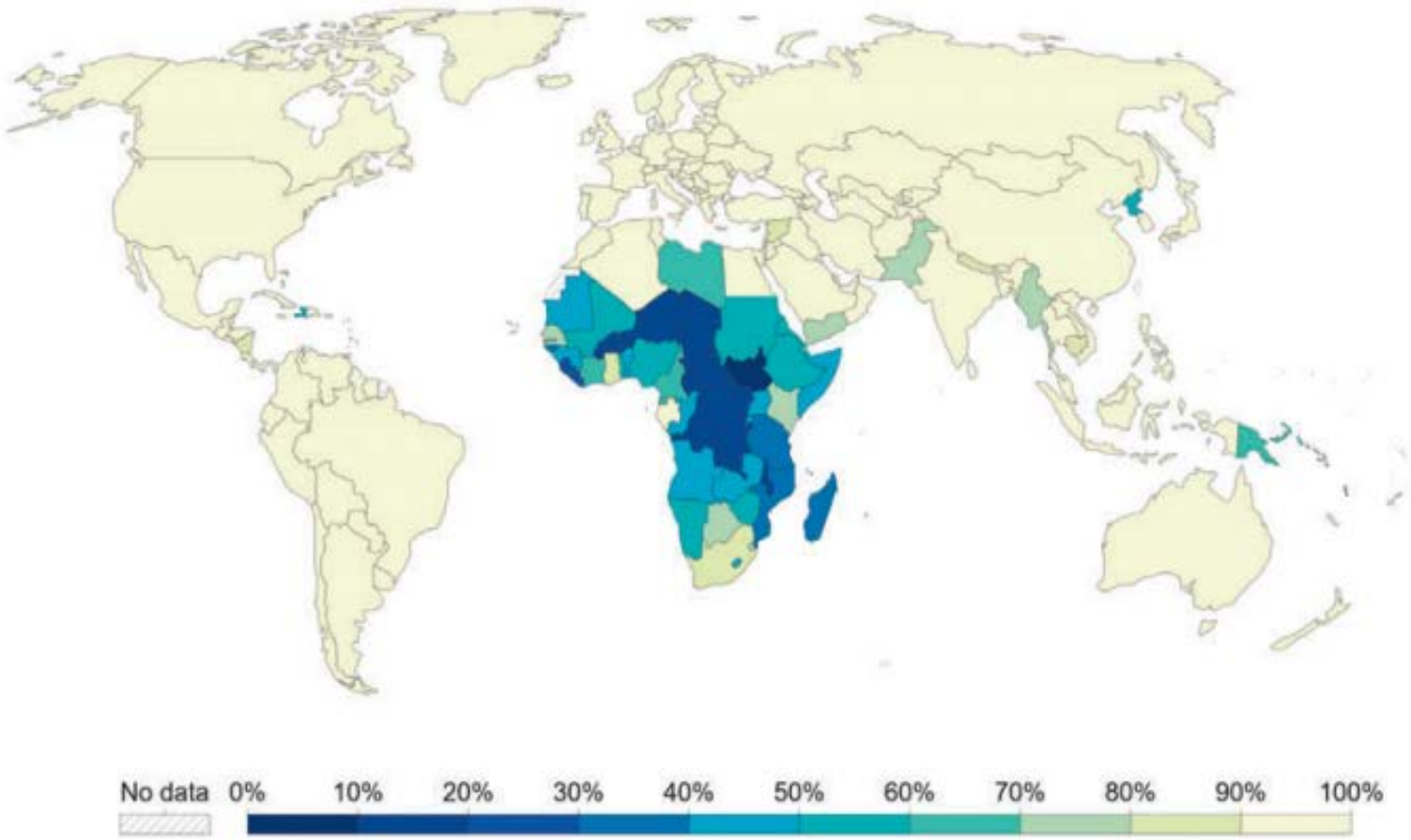
Factors affecting access to clean cooking fuels in SSA

- Cheaper using traditional stoves; limited resources to purchase clean cooking technologies
- Few alternatives and low awareness about the environmental and health risks in using traditional stoves
- Lack of energy infrastructure for distributing clean fuels
- Preservation of cultural norms and traditional cooking methods and resistance to new technology

Share of population with access to electricity



Source: World Bank, Our world in Data

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Factors affecting access to electricity in SSA

Supply side

- Lack of sufficient generation capacity, coupled with poor transmission and distribution infrastructure
- Aging plants and infrastructure to move electricity from point of generation to end users
- Reliance on energy imports and vulnerability to price fluctuations,

Demand side

- Unaffordable electricity tariffs to lower income segments of the population.
- High fees charged to connect to an established distribution network relative to income levels
- Population growth driving increased demand for electricity

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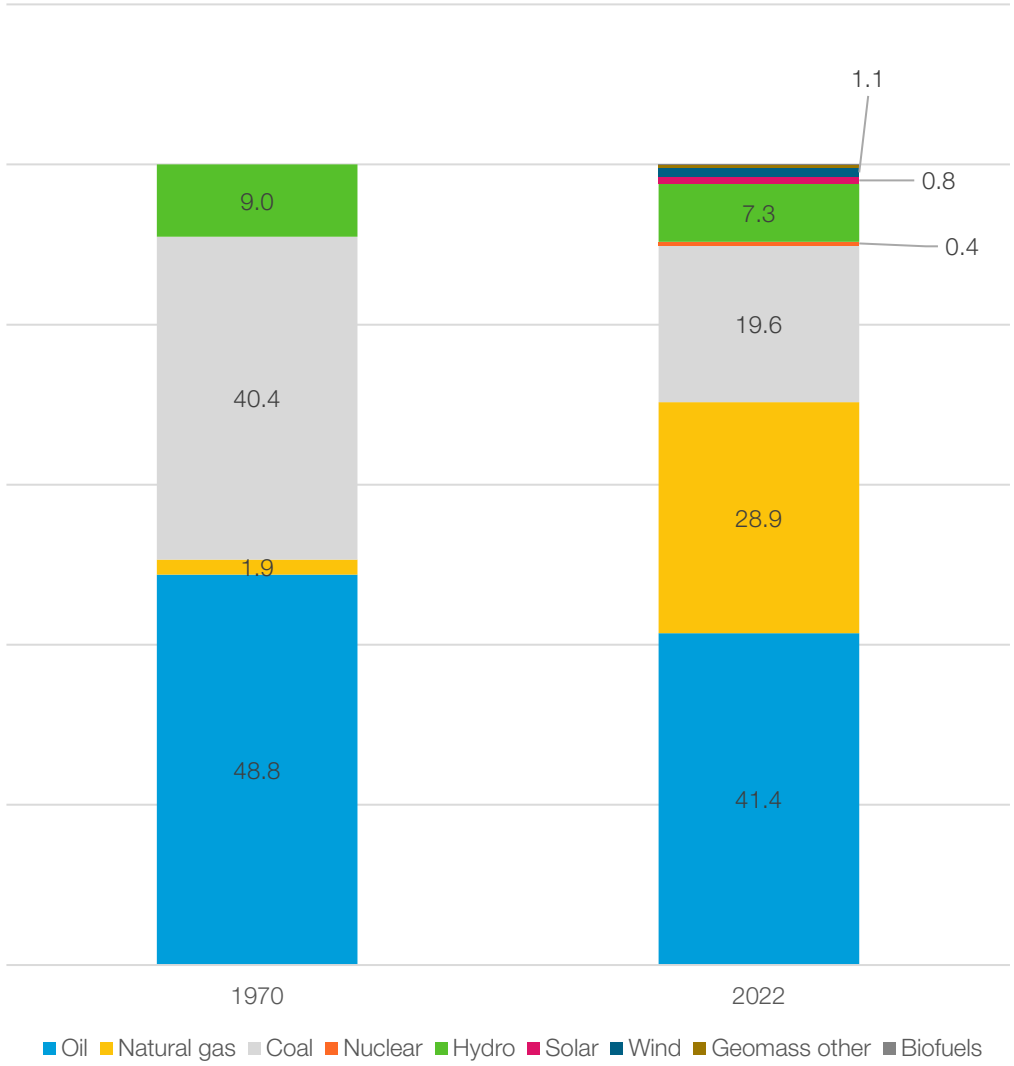
Shares of different Energy types in total energy consumed in Africa (per cent,1970/2022)



Source: UNCTAD using data from BP Statistics

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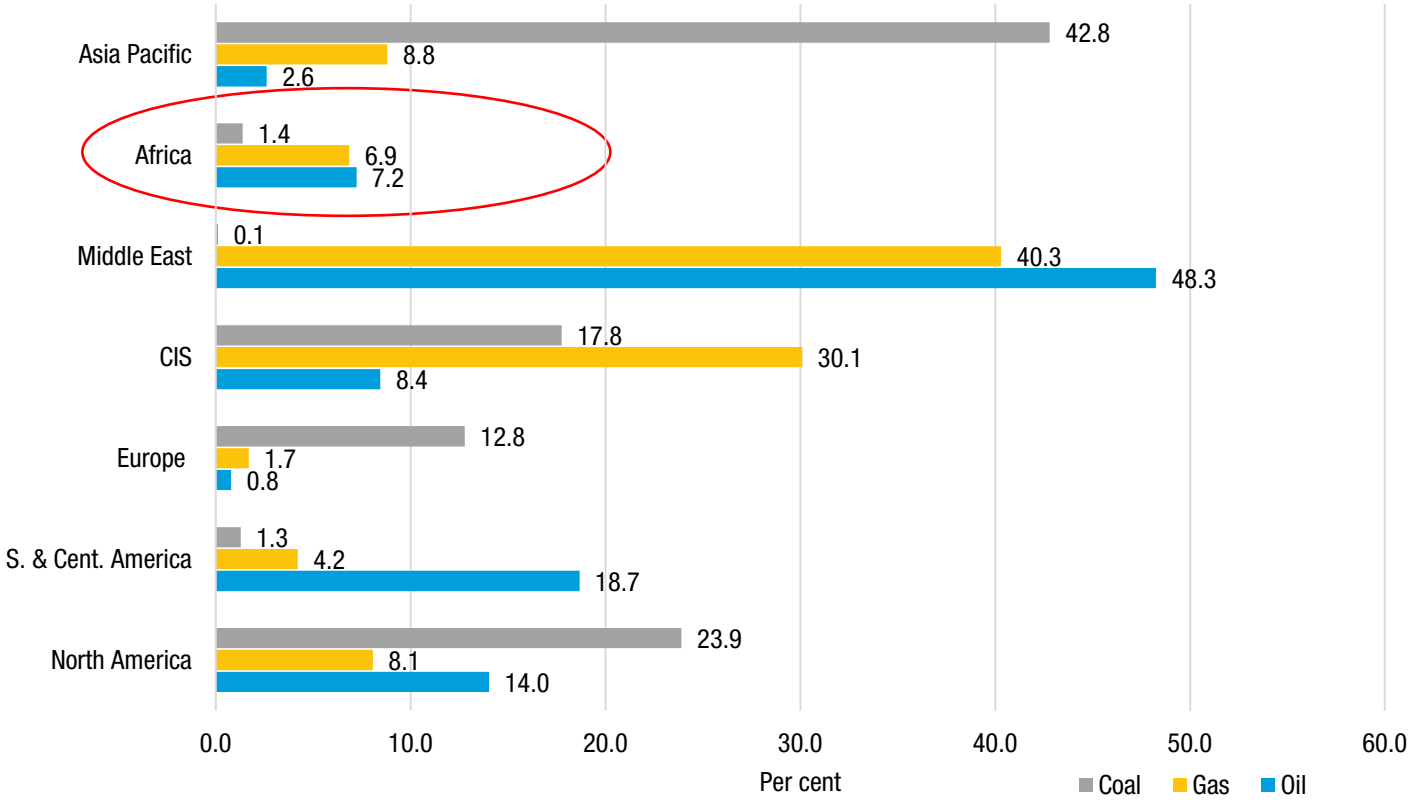
Coal, oil, gas reserves



Source: BP Statistics 2023

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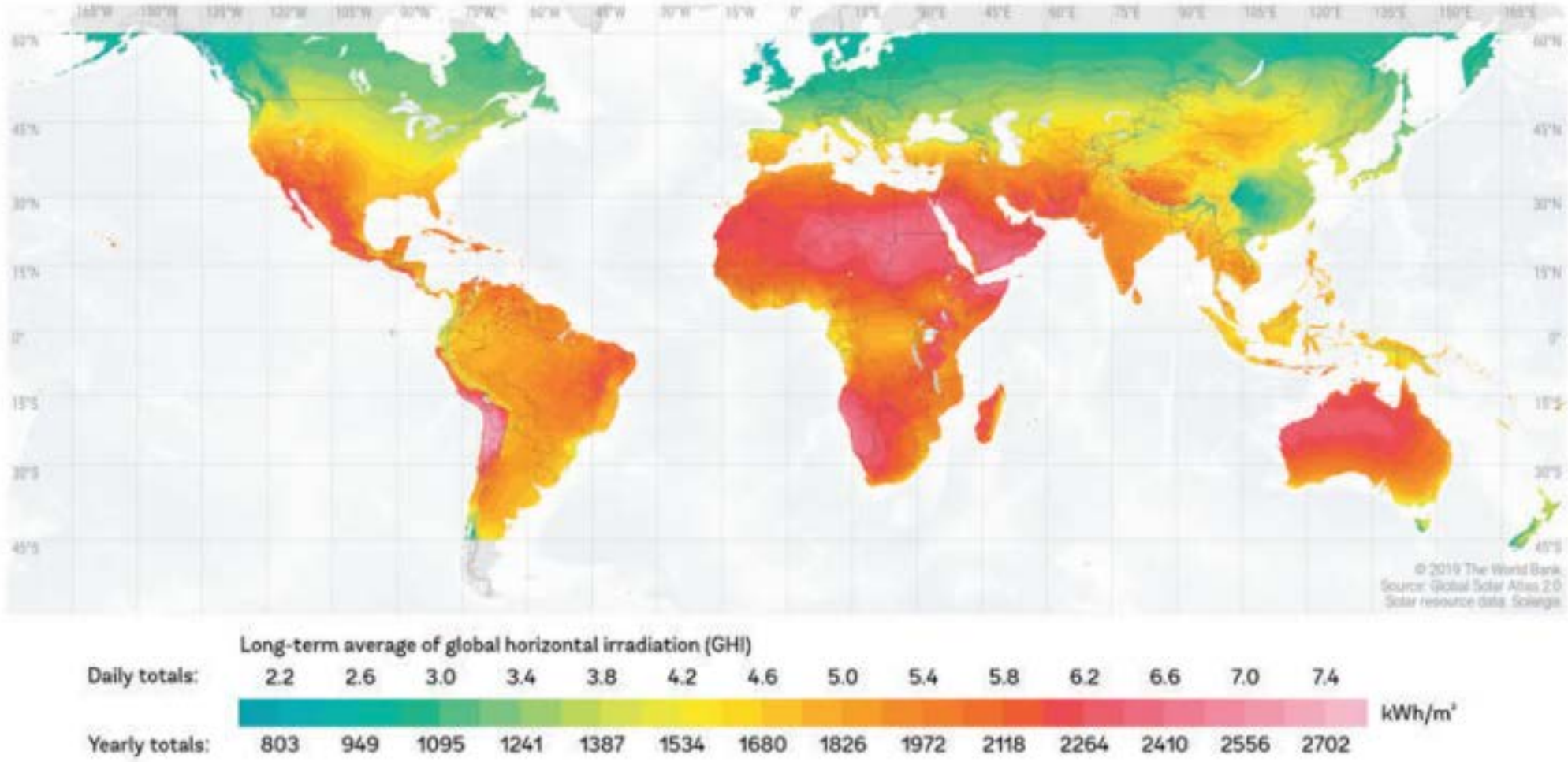
Solar resources

(Global horizontal irradiation worldwide, 2020)



Source: Global solar atlas 2.0

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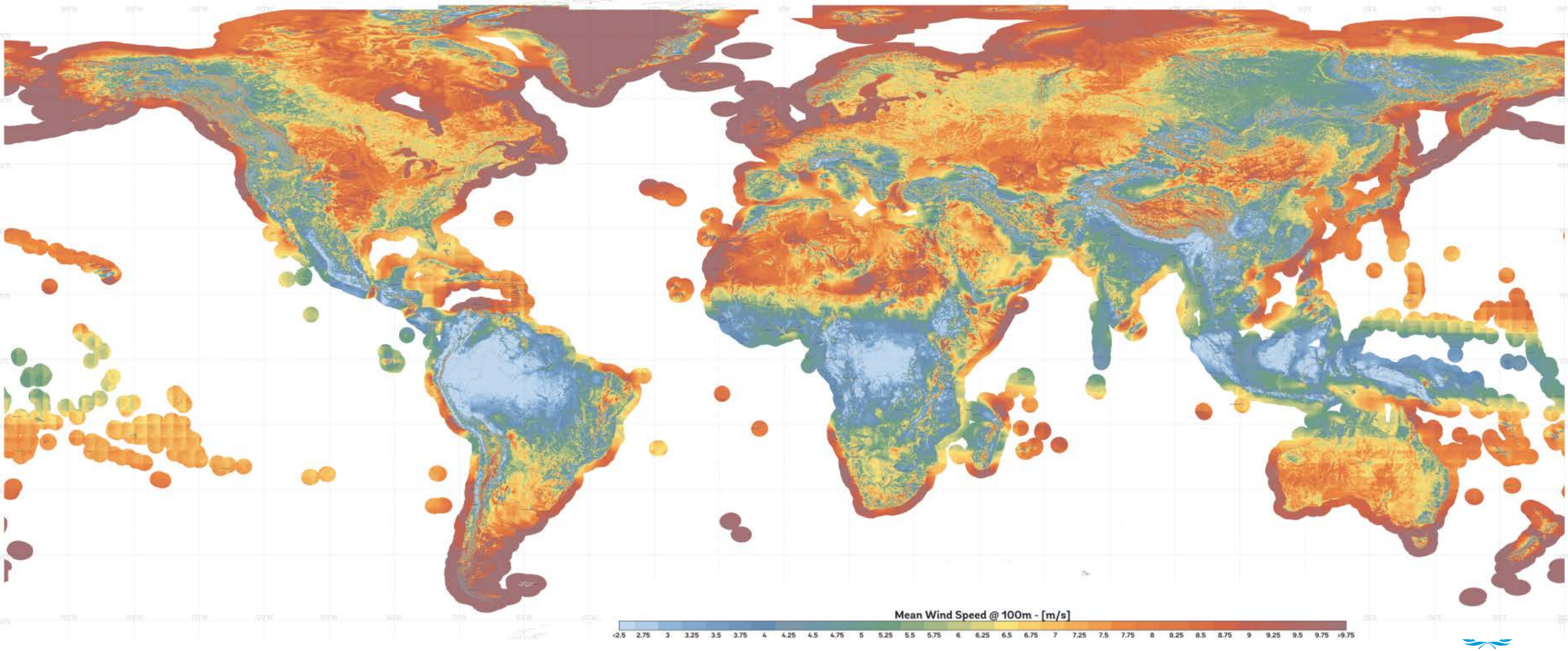
Wind resources

(average wind speeds at a height of 100m)



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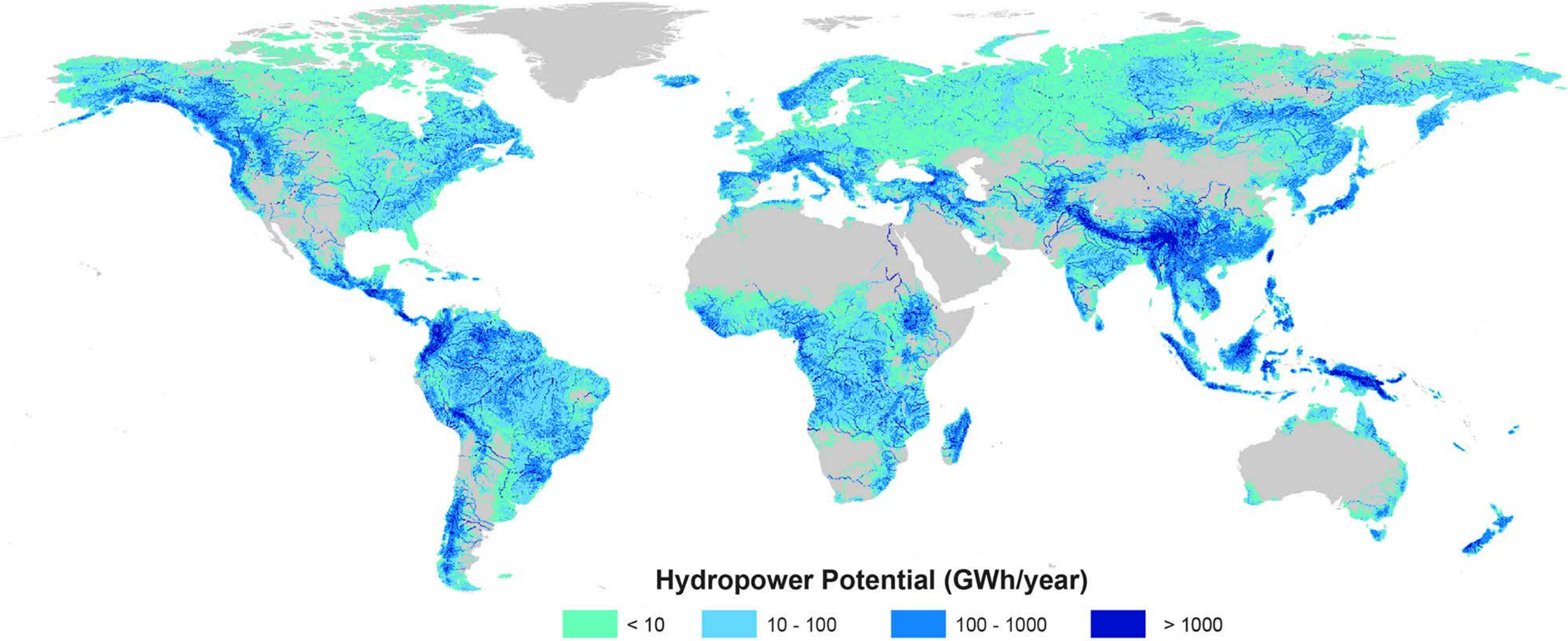
Source: Global wind atlas 3.0

Hydropower potential



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Source: Hoes et al, 2017

Geothermal resources

Source: Global energy network institute

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Renewable energy used for electricity generation

Energy type	Potential (GW)	Per cent harvested
Wind	110 GW	2
Solar	11 TW	1
Hydro	350 GW	5 - 6
Geothermal	15 GW	-

Source: AfDB, AFREC*

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Some policy actions to improve access to clean cooking fuels in SSA

- Prioritize access to clean cooking fuels in national planning and policies
- Provide financial incentives to make clean cooking technologies more affordable for low-income households.
- Facilitate local production of clean cooking fuels – e.g. biogas from agricultural waste or ethanol from locally grown crops
- Scale up successful clean cooking projects and initiatives, replicating them in other regions and communities.

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Some policy actions to improve access to electricity in SSA

- Promote development of renewable energy sources as a means of expanding electricity generation
- Upgrade and maintain electricity generation, transmission, and distribution infrastructure
- Promote mini grids whose energy supply is from local energy resources such as solar and wind.
- Create a conducive environment for private sector investment in the energy sector

Country examples

- Distribution of 10,000 free 13 kg cooking gas cylinders and burners to increase cooking with clean and affordable energy (Uganda)
- Lake Turkana wind farm investment provides 17 % of installed electricity capacity (Kenya)
- Deployment of solar mini grids increasing in SSA to serve communities that are not connected to the main grid (e.g. Kenya, Nigeria)
- Approx 950 MW of geothermal energy exploited to power close to 4 million homes (Kenya)


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