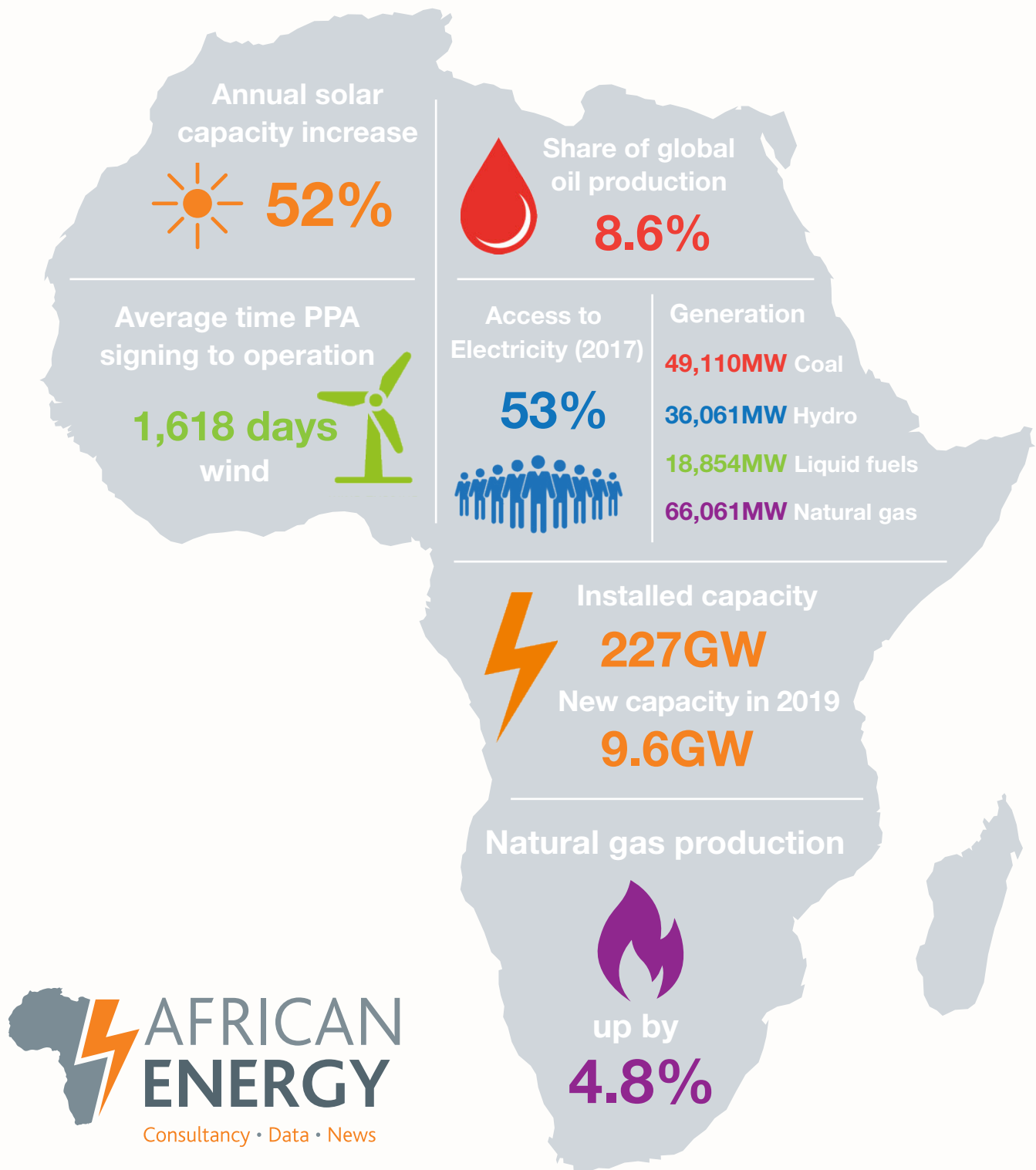


African Energy Atlas





Consultancy • Data • News

African Energy Atlas 2020/2021

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About the Atlas

The power maps in the African Energy Atlas 2020/2021 are informed by [African Energy Live Data](#), an industry-leading database with detailed entries on more than 6,200 power

Cartographer David Burles has used a wide variety of other sources to craft the maps but while considerably more open source material is available to inform our maps and graphics than when the Atlas was first published in 2007, huge gaps remain to even the most fundamental data sets.

We welcome positive and negative feedback, and data suggestions to enrich forthcoming editions.

Cover illustration

Power generation data is taken from [African Energy Live Data](#) and is for end 2019, except average time from PPA signing to operation, which is based on all available information in the database. Electricity access data is sourced from the SEforALL/World Bank database. Oil and gas data is for 2018 and taken from the *BP Statistical Review of World Energy*, June 2019.

Power definitions

Status:

Operating: plants that are producing electricity, even if this is substantially below maximum capacity.

Construction: building work is ongoing at the site.

Planned: any project which has not yet begun construction. This includes projects which are at a very early stage of development, such as identified hydro sites, as well as those which are much more advanced. The data tables shown under the maps refer only to projects with a planned commercial operation date of 2025 or earlier.

Fuels:

Natural gas: any plant fuelled by natural gas, whatever the source, including both LNG and pipeline gas.

Liquid fuels: includes all fuel oils, crude oils, shale oil and liquid gases.

Coal: technologies using coal as the original source of energy.

Nuclear: refers to technologies utilising the energy contained within the atomic structure of matter, including both fission and fusion.

Hydroelectricity: any technology based on the movement or weight of water from a river or reservoir, including pumped storage.

Solar: any technology producing electricity using energy from the sun.

Wind: any technology producing electricity using energy from the wind.

Geothermal: any plant using underground temperature differentials to produce power.

Biomass: technology using organic matter as a feedstock, including biogas technologies.

Other: includes combinations of fuels and hybrids where the individual capacities are not known, as well as ocean technologies, coal bed methane and industrial process heat.

September 2020 revisions

This edition of the *African Energy Atlas* was published in April 2020. A number of revisions have been made in September 2020.

Where updated datasets have become available, charts and graphics have been updated – the source of the data and, where possible, the date of its publication are noted.

Revised maps include new North Africa power maps. Data tables sourced from our own [African Energy Live Data](#) platform of more than 6,200 power generation plants and projects have not been updated. Our power data is not published on an annual basis but exists as a live service for subscribers to interrogate and where all entries correspond to a power plant on the ground that African Energy has investigated, verified and subjected to a rigorous fact checking process.

Search our database at: www.africa-energy.com/database

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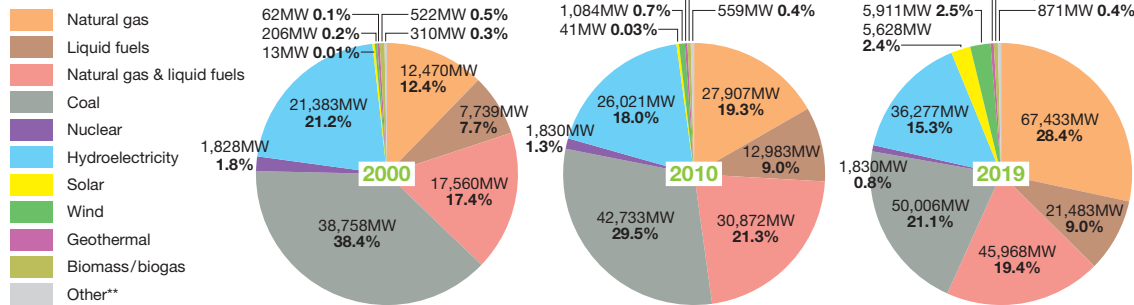
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African Energy Live Data

ALL AFRICA ENERGY MIX (on-grid & distributed*)



* distributed includes off-grid and plants embedded within the grid but supplying third parties such as industries and mines.
 ** other includes combinations of fuels and hybrids where the individual capacities are not known, as well as ocean technologies, coal bed methane and industrial process heat.

Source: African Energy Live Data
 © African Energy 2020
 (www.africa-energy.com)

SCORECARD FOR 2019

	Installed capacity kept up with population?	Increase in installed capacity growth rate?	Installed capacity kept up with GDP growth?	Proportion of renewables increased?	Proportion of non-hydro renewables increased?	Increase in non-hydro renewables growth rate?	Proportion of liquid fuels* decreased?
AFRICA	YES (4.4% / 2.4%)	NO (4.4% / 9.0%)	NO (4.4% / 5.6%)	YES (21% / 20%)	YES (6% / 5%)	YES (23% / 20%)	NO (9.3% / 9.2%)
North Africa	YES (5.0% / 1.9%)	NO (5.0% / 16.7%)	NO (5.0% / 8.5%)	YES (10% / 8%)	YES (5% / 4%)	NO (45% / 48%)	NO (4.5% / 4.4%)
West Africa	YES (4.8% / 2.7%)	YES (4.8% / 2.3%)	NO (4.8% / 9.5%)	NO (20% / 20%)	YES (2.0% / 1.7%)	YES (25% / 18%)	NO (18% / 16%)
Central Africa	YES (4.3% / 2.8%)	YES (4.3% / 3.2%)	YES (4.3% / 4.0%)	NO (65% / 65%)	NO (0.2% / 0.2%)	NO (0% / 9.7%)	YES (14.2% / 14.8%)
East Africa	YES (3.3% / 2.4%)	NO (3.3% / 8.0%)	NO (3.3% / 7.6%)	YES (63% / 62%)	YES (15% / 12%)	YES (25% / 18%)	YES (27% / 29%)
Southern Africa	YES (3.6% / 2.4%)	YES (3.6% / 2.5%)	YES (3.6% / 2.5%)	NO (25% / 25%)	NO (6.5% / 6.5%)	NO (3.5% / 5.1%)	NO (8.5% / 8.5%)

*only plants running exclusively on liquid fuels are included in this figure

Sources: population and GDP from the International Monetary Fund (2020); African Energy Live Data
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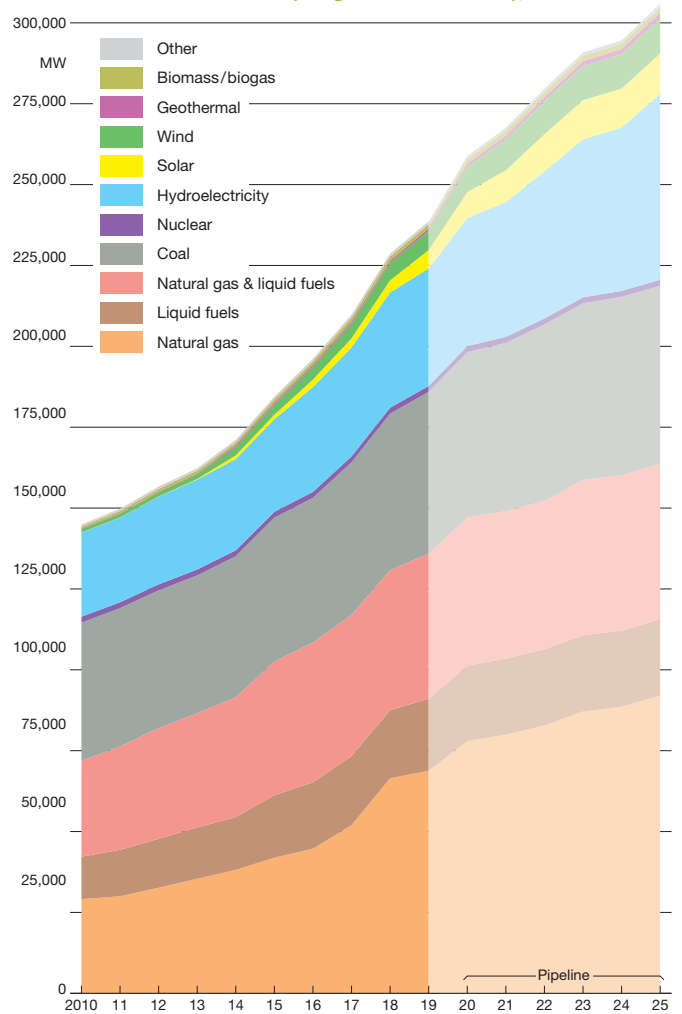
The Africa scorecard uses data from African Energy Live Data to provide snapshots of the state of the electricity sector during 2019. It illustrates whether electricity generation is expanding at the same rate as population and GDP growth, whether renewable energy use is increasing and if the rate of increase is being sustained, and whether reliance on costly fuel oils is being reduced.

All statistics were compiled before the impact of the coronavirus on the African power industry or economy could be assessed.

The graphics contained in these pages from African Energy Live Data illustrate the many transitions that Africa is going through and that these are still only at an early stage.

- The scorecard shows that the growth rate of non-hydropower renewable power continues to be exponential, with a year-on-year increase of 23% in 2019 compared to 20% in 2018.
- Overall growth of installed capacity has slowed however, as can be seen from the scorecard, and the proportion of costly and polluting liquid fuels in the energy mix marginally increased.
- This hints at underlying transitions in market structure which have slowed the pace of growth. Attention has shifted to transmission and distribution, while many governments are looking to the private sector for investment and scaling back the role of state-owned enterprises.
- The graph on page 9 showing net capacity additions by ownership type shows that by 2022, more than half of new capacity additions in each region will be privately funded. Given the short lead times of private wind and solar plants this is likely to be an underestimate.
- Regionally, North Africa will continue to be the largest market but other regions are set to gain in importance. West and Southern Africa have growing pipelines of projects which are here significantly underestimated because likely large

ALL AFRICA ENERGY MIX (on-grid & distributed), 2010–25



Source: African Energy Live Data
 © African Energy 2020 (www.africa-energy.com)

Financiers see huge potential but bottlenecks frustrate as debt rises again

Huge figures are bandied about for infrastructure costs and for the funds to support the carbon transition. But while financiers have money for well-structured projects, a potential revolution in energy investment is held back by lack of capacity, moribund markets and governance shortfalls, while heavily indebted resource-dependent economies remain as vulnerable as ever to volatile global markets. Covid-19 will accentuate these weaknesses

Advisers and financiers hungry for above-average rates of return and new business opportunities have talked up Africa's potential to emerge as a major frontier for private infrastructure financing. Their support for a far greater number of IPPs and other privately financed infrastructure, longer-term debt financing operations, mergers and acquisitions and other transactions holds undoubted promise for cash-strapped but potentially fast-growing economies. In parallel, China has taken a lead in developing sometimes controversial financing structures that have seen huge investments in infrastructure becoming a reality as roads are built and electricity generated.

Others see the potential for providing billions of dollars more, as the World Bank Group, African Development Bank (AfDB), European Union, Germany, France and other bilateral donors have all placed infrastructure at the centre of their development policies. AfDB vice-president for private sector, infrastructure and industrialisation Pierre Guislain has estimated Africa's infrastructure needs at \$130bn-\$170bn/yr, with a financing gap of \$68bn-\$108bn. He argued that, while "this may sound insurmountable, it also presents an opportunity to foster innovative financial solutions and partnerships that have the potential to unlock funding".

This huge challenge will be amplified by the Covid-19 pandemic, which was blighting economies worldwide as *Atlas 2020/2021* was published. The early signs were not promising, with investors likely to seek comfort in established markets rather than emerging frontiers for investment.

The global health crisis came after a period when private equity and other cutting-edge investors had worked hard to unlock Africa's infrastructure potential, seeking to tap new interest from pension funds, sovereign wealth funds, equities market and other private investors, which have so far been largely absent from deals on the continent. Long underdeveloped sectors such as power generation in sub-Saharan Africa have seen an uptick in private support, but have a majority of economies seen a big financial boom in line with the continent's ambitions? The brutal answer was 'no', even before the Covid-19 pandemic undermined so many assumptions. Local and international private financing flows for critical sectors like water and sanitation, electricity distribution and transmission remain elusive in all but a few economies.

The problems are familiar: persistent bottlenecks due to bureaucracy, over-complex and costly financial structures and

insolvent local counterparts continue to hold up otherwise commercially viable schemes. IPPs, merchant power structures and investment in transmission companies are the norm in Latin America and Asia, but in Africa, the number of IPPs – while growing – remains highly constrained, and successful private electricity distribution companies like Umeme in Uganda are very much an exception.

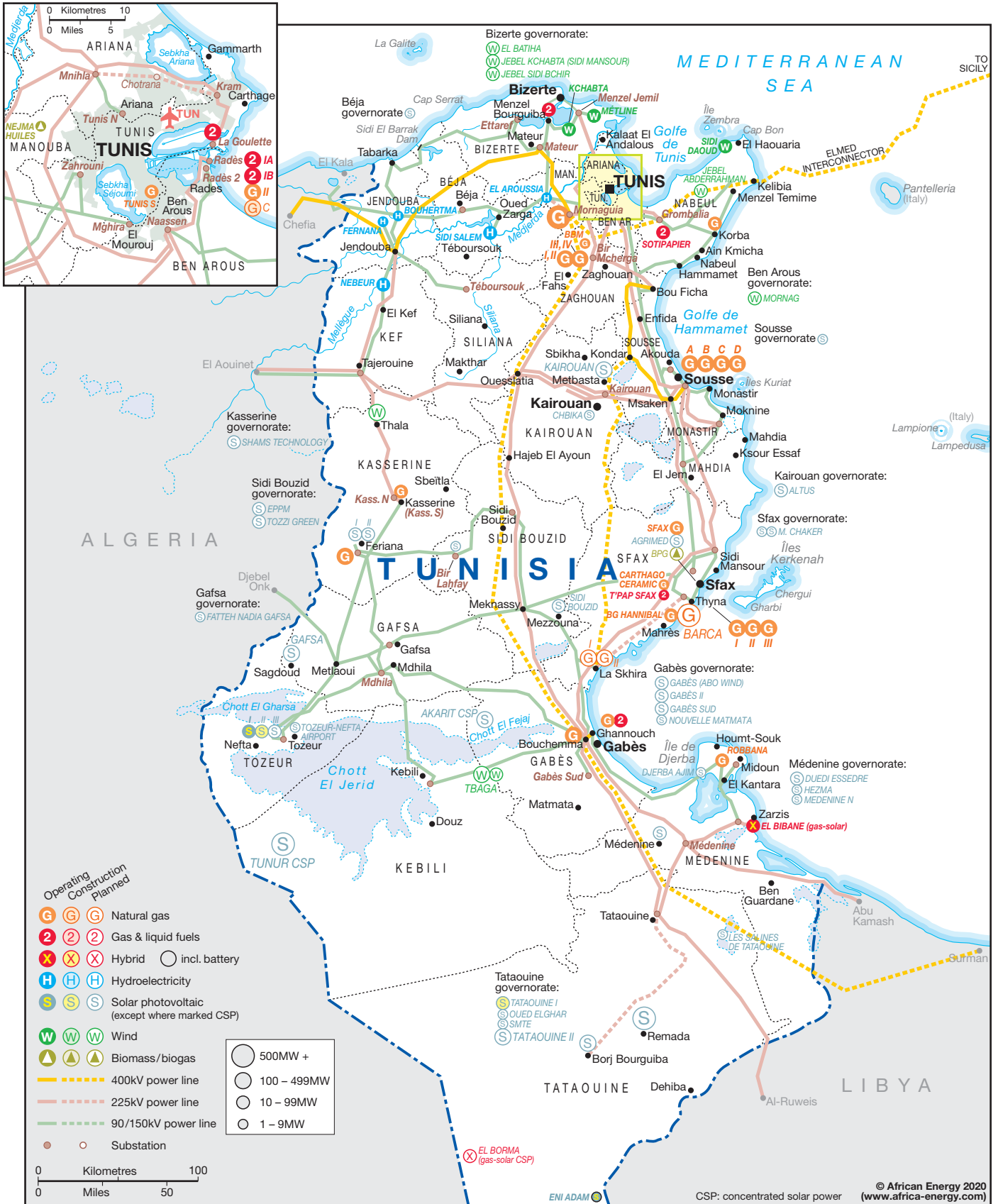
Africa is looking at African solutions to raise finance via local banks, pension funds and other emerging investor classes. Initiatives such as the African Continental Free Trade Area have potential to create a vibrant new trading bloc in regions that transact a pitifully small percentage of their commerce with their neighbours. It is not surprising that West Africa, which has done more than most to promote open borders – and, via the CFA franc, a common currency – is the most integrated. Where borders remain closed – as between Algeria and Morocco since 1994 – all sides lose.

Local content

African resources have global importance, but investors still find it hard to place their money in these industries, despite countries promoting local content initiatives that give a minimum percentage of equity in oil fields to local companies. Nigeria has developed a well-established network of indigenous companies operating across its oil industry. New upstream licences in Republic of Congo require 25% local content, usually around 10% for state-owned Societe Nationale des Petroles du Congo and the rest for local private companies; they may lack the capital necessary to finance their share and could carry reputational risks from beneficial ownerships involving politically exposed persons.

South Africa needs huge uplift for a population that, nearly 30 years on, is still waiting for its post-apartheid expectations of social equity and economic advancement to be met. The black economic empowerment industry has become associated with crony capitalist ploys to enrich only a few. During Jacob Zuma's failed presidency, the once mighty state utility Eskom was potentially fatally damaged by economic mismanagement and state capture. Eventually even the Renewable Energy IPP Procurement Programme – widely seen as a model for solar and wind procurement on the continent – was endangered.

Efforts to strengthen both national public sector structures and local business practices are essential if Africa is to attract anywhere near the necessary levels of financing to support



Plants/projects	Capacity (MW)
Operating	6,065
Construction	1,095
Planned*	1,150

Access to electricity (2018, millions)	
Population	11.57
Those with access	11.54
% with access	99.8

Source: African Energy Live Data, April 2020. Search for a power plant or project at www.african-energy.com/database
 * Projects with a planned commercial operation date of 2025 or earlier.

Sources: SForALL, World Bank

Equatorial Guinea, São Tomé and Príncipe

