



## **On Sustainable Development Goal 7**

**The “SDG7 Initiative for Africa”: Accelerating clean energy investments for access and climate ambition in Africa**



United Nations  
Economic Commission for Africa



A.20-00081



## **Summary**

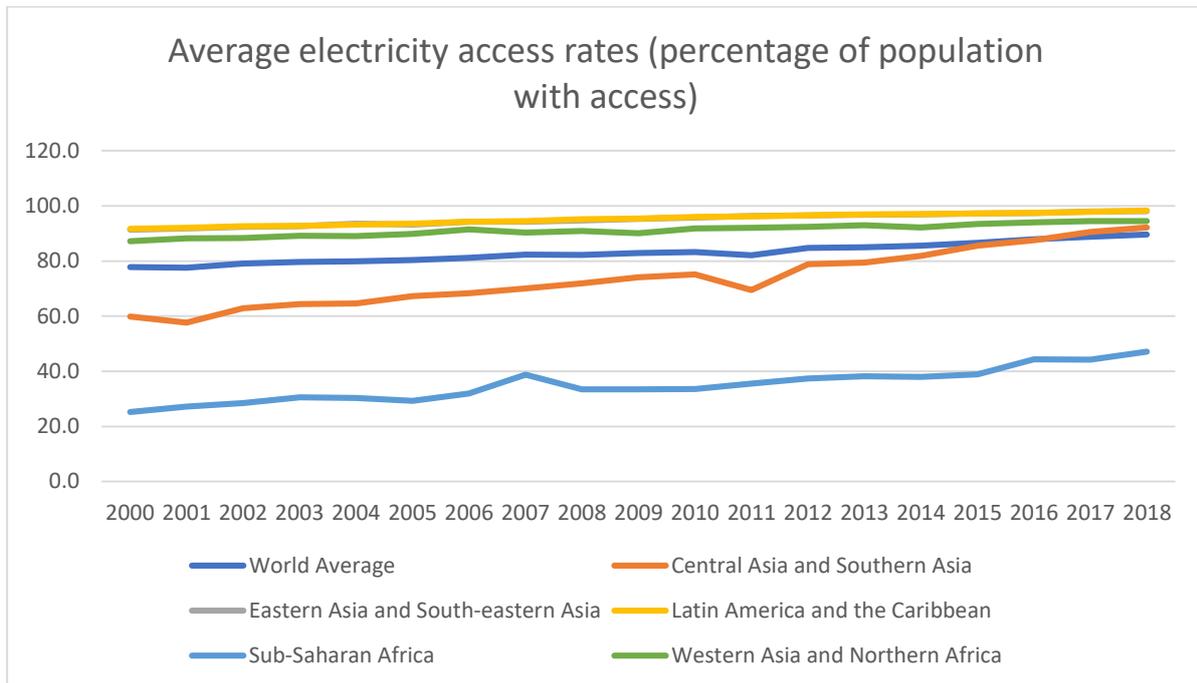
Climate change is causing unprecedented variations in the frequency and magnitude of extreme weather events: floods, droughts and heatwaves. How African countries prepare for and manage these extreme events will be fundamental to the performance of their economies and realization of their development aspirations as embodied in various national development plans, the United Nations 2030 Agenda for Sustainable Development and the African Union's Agenda 2063. Another key factor that will determine the attainment of Africa's development objectives is how the continent responds to its increasing need for access to adequate, secure and reliable energy services to industrialize, trade, provide better health and education services, reduce poverty and increase inclusion, boost economic growth and cater for population growth, a growing middle class, increasing urbanization and climate change.

To address these challenges and spur inclusive and resilient economies in Africa requires new and innovative approaches to leverage limited public resources against a background of competing demands for resources to mobilize the needed investments, particularly from the private sector. The Economic Commission for Africa (ECA) conceived the "SDG7 Initiative for Africa" to achieve this. The initiative is a mechanism built on three pillars - sustainability, governance and finance – to bring together countries, financiers and developers of clean-energy projects to align interests and combine scale and speed to fast-track financing from the private sector for deployment of clean energy in Africa. The initiative provides the mechanism through which the private sector can play a key role in supporting countries to close their energy-access deficits, meet increasing energy demands and contribute to climate action and ambition through enhanced nationally determined contributions to climate action (NDCs) in terms of the Paris Agreement. The initiative aims to crowd in financing from the private sector for over 10,000 megawatts (MW) of renewable electricity capacity in Africa by 2025.

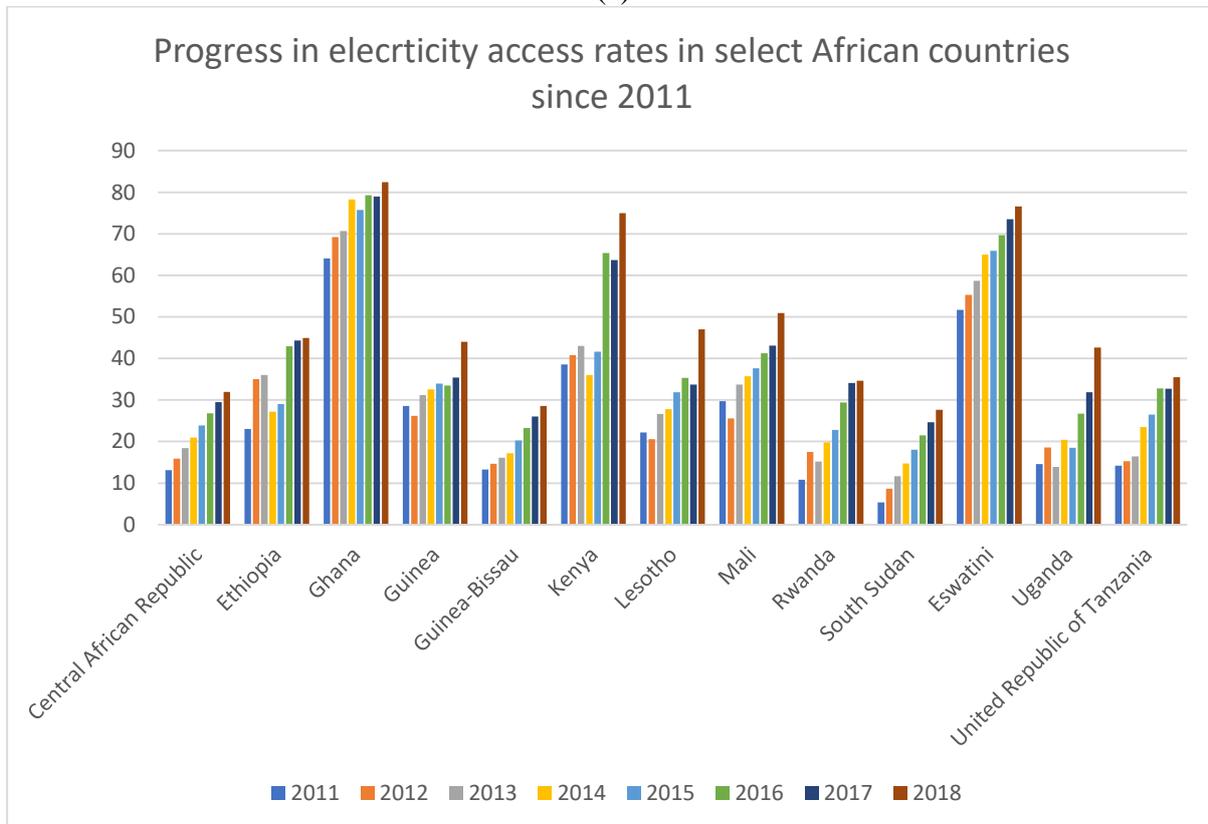
## **Africa's energy paradox**

Africa's energy situation is a paradox of abundant energy resources (including hydro, solar, wind and geothermal energy) and a very high deficit in access to modern energy, with about 590 million people still lacking access to electricity. This makes Africa the least electrified region in the world (figure 1a) although significant progress is being made in some countries such as Ethiopia, Ghana and Kenya in recent years (figure 1b).

Figure 1  
**Energy access in Africa**



(a)

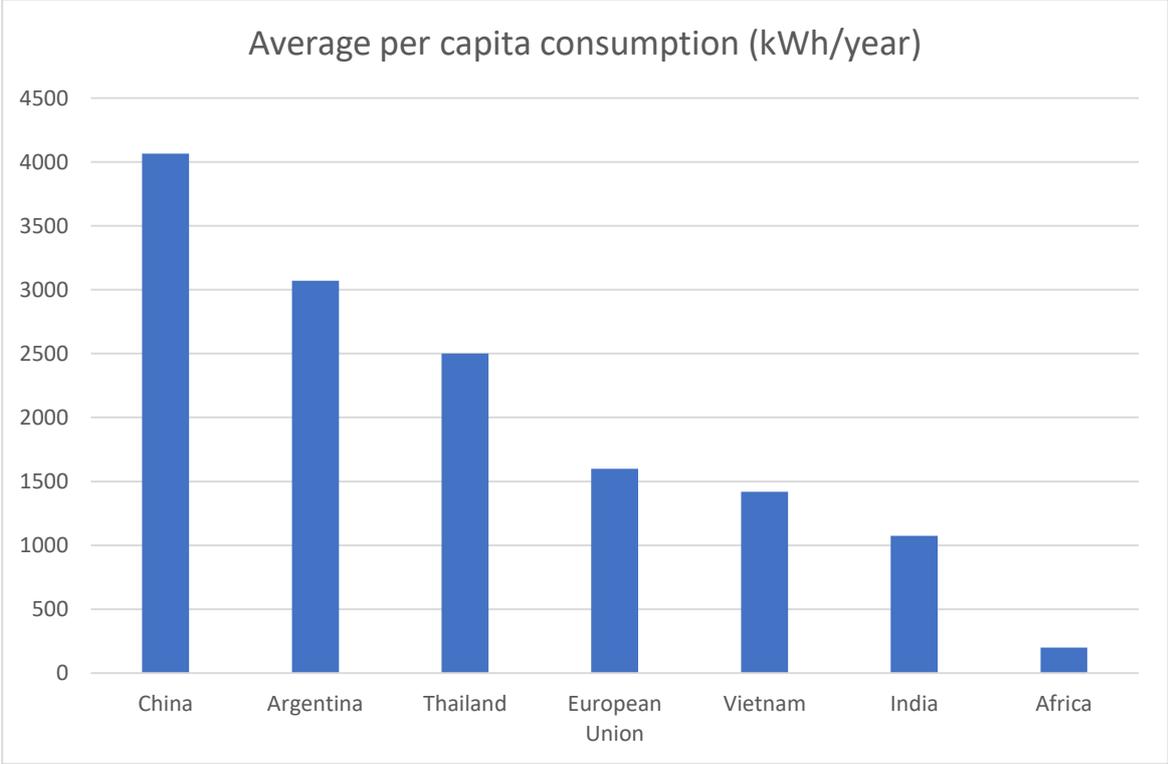


Compiled from Tracking SDG7 2019 (IEA, IRENA, UNSD, World Bank, WHO)

(b)

For those who have access to electricity, the quality and reliability are generally poor and the average per capita consumption of about 200 kilowatt-hours (kWh) per year is unacceptably low compared to other regions of the world (figure 2).<sup>1</sup> This ranges from per capita consumption of less than 100 kWh a year in countries such as Benin, Ethiopia and South Sudan and over 1,500 kWh a year in only a few countries such as Botswana, Egypt, Libya, Mauritius, Namibia and South Africa<sup>2</sup>. Access to reliable, secure and affordable energy services has huge development implications in key areas, such as education, health, agriculture and industry, needed for Africa’s long-term development. For example, access to electricity enhances the opportunity for children to study, particularly in the evenings. This in turn increases the level of educational attainment and ensures the building of human capital at national levels in the long run. Ensuring access to energy for the provision of health services contributes towards a healthy and productive population. In agriculture, access to electricity can significantly enhance productivity, create productive uses of energy that empower women in particular, extend the value chain and enhance global competitiveness, inter alia.

Figure 2  
**Electricity consumption in Africa compared to select regions and countries**



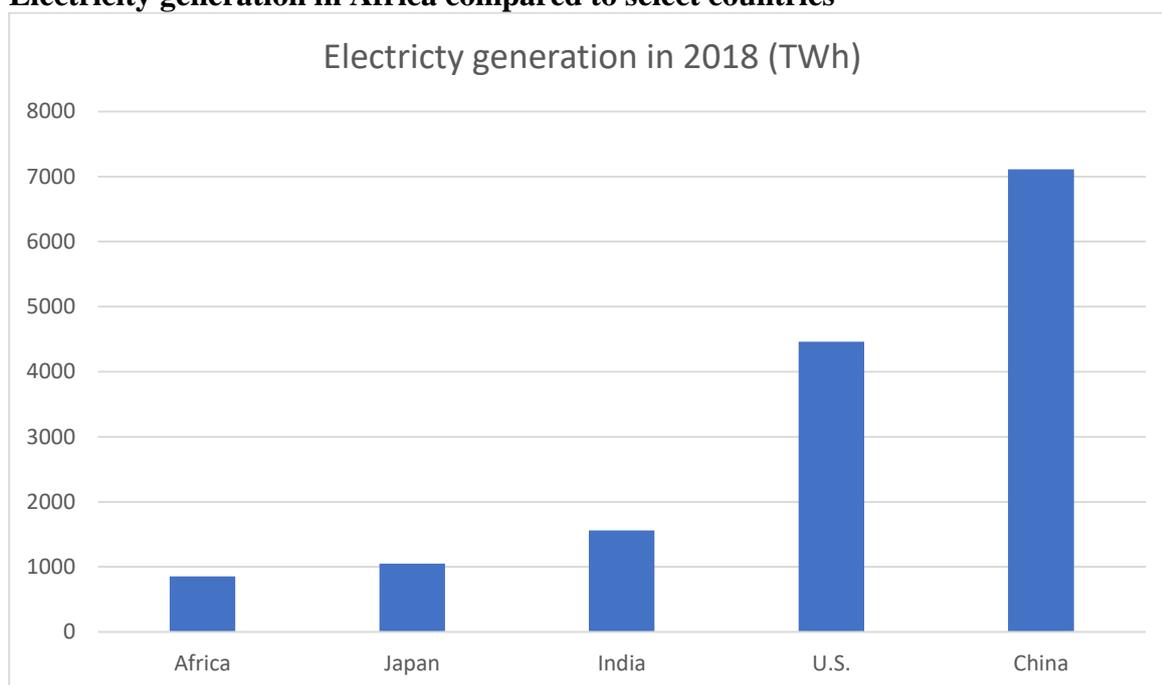
From World Bank Development Indicators

Tapping Africa’s resources of renewable energy to power industrialization on the continent has so much potential for growth, employment and trade, especially in view of the Africa Continental Free Trade Area. However, the present situation is that unreliable, low-quality and expensive power supplies are hampering the competitiveness of the continent’s

<sup>1</sup> This compares unfavourably to 1,600 kWh in the European Union, 1,075 kWh in India, 2,500 kWh in Thailand, 1,420 kWh in Vietnam, 3,070 kWh in Argentina and 4,066 kWh in China, for example.  
<sup>2</sup> See, for example, World Development Indicators data, available from-  
<https://datacatalog.worldbank.org/dataset/world-development-indicators>.

tradable goods industries. Although the potential for all forms of renewable energy resources<sup>3</sup> is very high, the current total installed capacity for electricity is only about 230 GW, which is far less than India's capacity of 338 GW or Japan's 297 GW.<sup>4</sup> South Africa's installed capacity of 54.2 GW<sup>5</sup> is approximately equal to the installed capacity in the rest of Africa, excluding North African countries. This compares to the new solar PV capacity that China added in 2017 alone.<sup>6</sup> This is just under the installed capacity of Indonesia, 3% of China's capacity and 6% of that of India. In terms of generation, the *BP Annual Statistical Review 2019* shows that Africa generated only 854 terawatt-hours (TWh) of electricity from all sources. This compares to Japan's generation of 1,052 TWh, India's of 1,561 TWh, the United States of America with 4,461 TWh and China which generated 7,111 TWh in the year (figure 3).

Figure 3  
**Electricity generation in Africa compared to select countries**



From BP Annual Statistical Review 2019

<sup>3</sup> Some estimates indicate power capacity potentials of 10 TW of solar, 350 GW of hydropower, 110 GW of wind and over 15 GW of geothermal ([https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Brochure\\_New\\_Deal\\_2\\_red.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/Brochure_New_Deal_2_red.pdf))

<sup>4</sup> See, for example, <https://www.eia.gov/beta/international/data/browser>

<sup>5</sup> Department of Mineral Resources and Energy, Republic of South Africa, 2019. Integrated Resource Plan 2019.

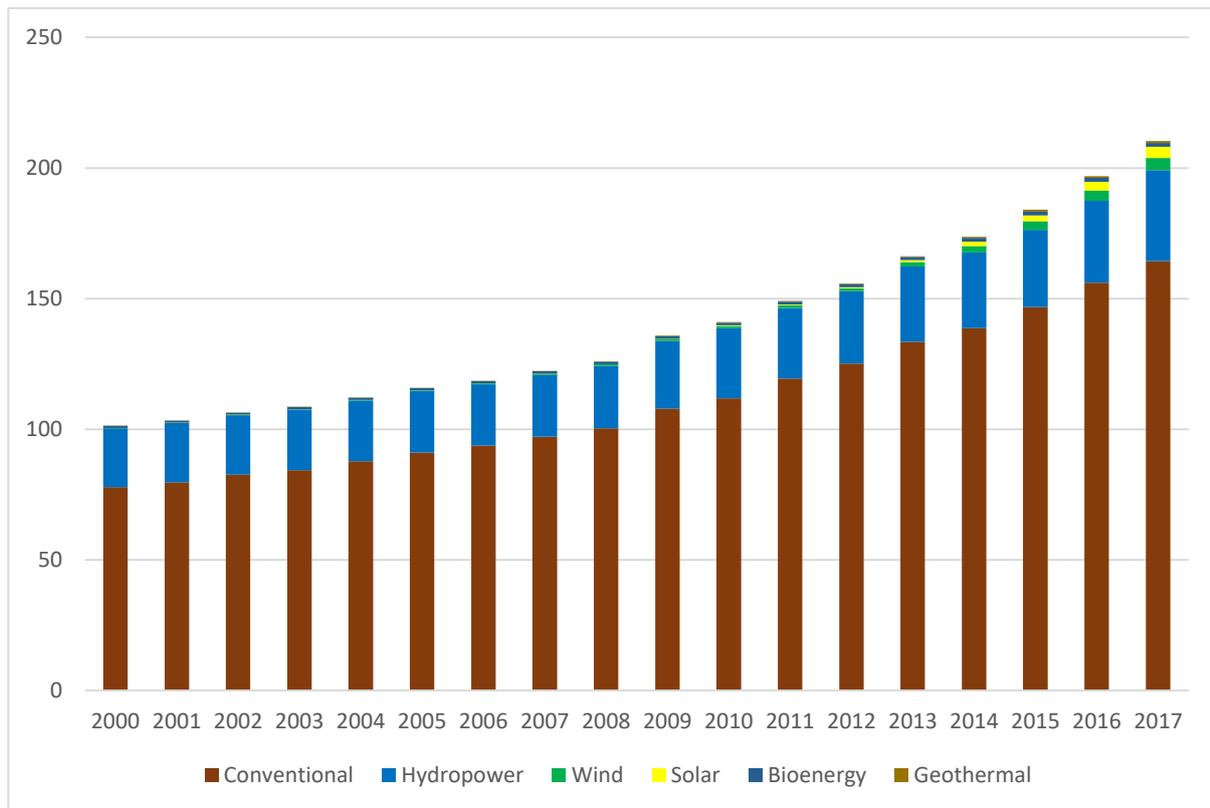
<sup>6</sup> See, for example, <https://www.researchandmarkets.com/reports/4855772/solar-photovoltaic-pv-market-update-2019>

## **A compelling case for clean energy investments in Africa**

There is a compelling case for private-sector investments in clean energy in Africa, which would help achieve the climate ambition of countries while attaining secure, reliable and clean and affordable energy goals with reduced stress on public resources:

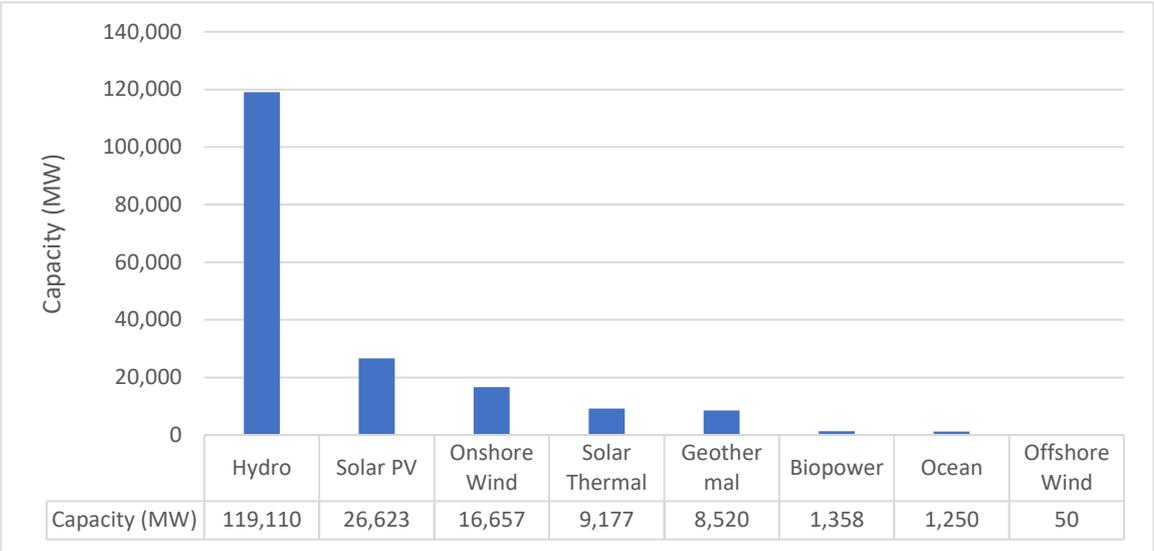
- Energy demand in Africa is increasing and will increase even more dramatically owing to various factors such as population growth, a growing middle class, industrialization, trade, urbanization and climate change.
- There is an urgent need to close the energy deficit on the continent rapidly. There is realistic potential to increase the installed capacity (presently 230 GW- see figure 4) by adding between 110 GW and 200 GW of renewable power by 2030 (figure 5), representing an investment opportunity of close to \$400 billion.
- Africa has an abundance of various forms of renewable energy resources, particularly solar, hydro, wind and bioenergy. These are competitive on costs compared to non-renewable sources because the technology costs for producing clean energy worldwide continue to decline and recent independent power producer tenders on the continent have resulted in some of the cheapest tariffs in the world – e.g. \$0.06 per kWh for the 72 MW World Bank/IFC Scaling Solar programme project in Zambia.
- Notwithstanding the dramatic increase in the deployment of non-hydro renewable power in Africa over the last five years (figure 6), the share of renewables in the power mix of many African countries remains well below the potential (figure 7).
- Africa is thus the key global opportunity for transformative deployment of clean energy. If the enabling policy and regulatory environments are supportive, the investment case for the private sector is compelling. This is particularly important at a time when public resources are becoming increasingly constrained with competing demands from other sectors such as health and education. The investment case is further strengthened by low interest rates globally, availability of capital, a history of good returns on investment from projects in Africa, and the high potential for energy trading through the existing power pools and interconnections under development.

Figure 4  
**Cumulative installed electricity capacity in Africa by source (MW)**

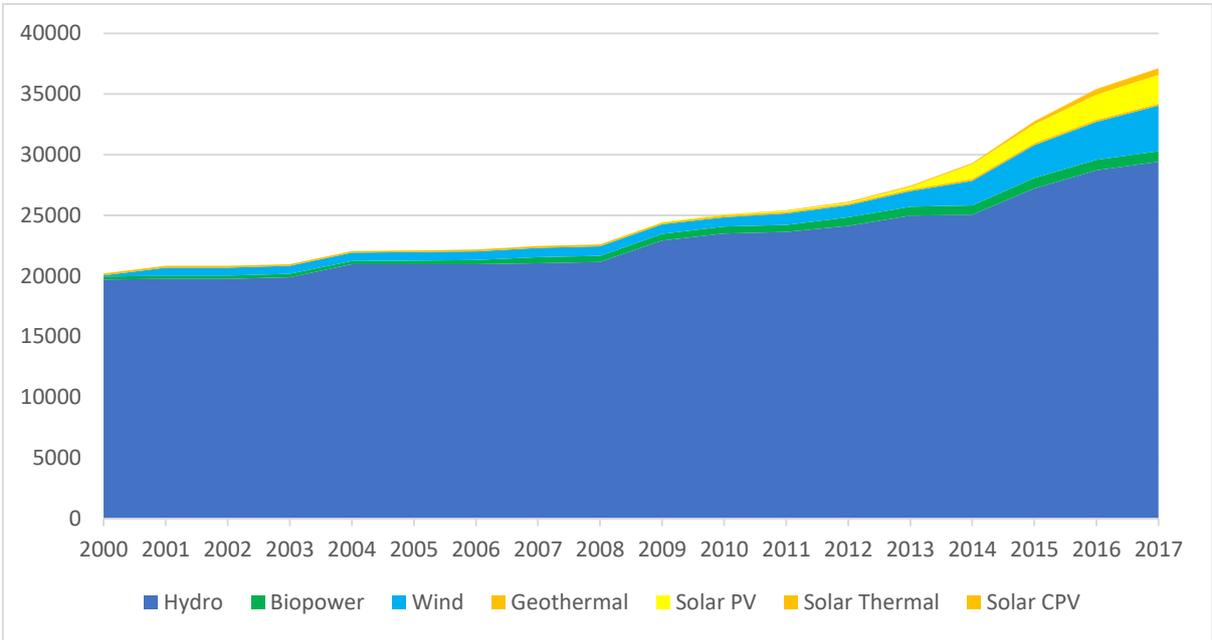


*Compiled from various sources, including the databases of GlobalData, Enerdata and the International Renewable Energy Agency (IRENA).*

**Figure 5**  
**Close to 200 GW of renewable power capacity announced, proposed or under construction as of 2019**

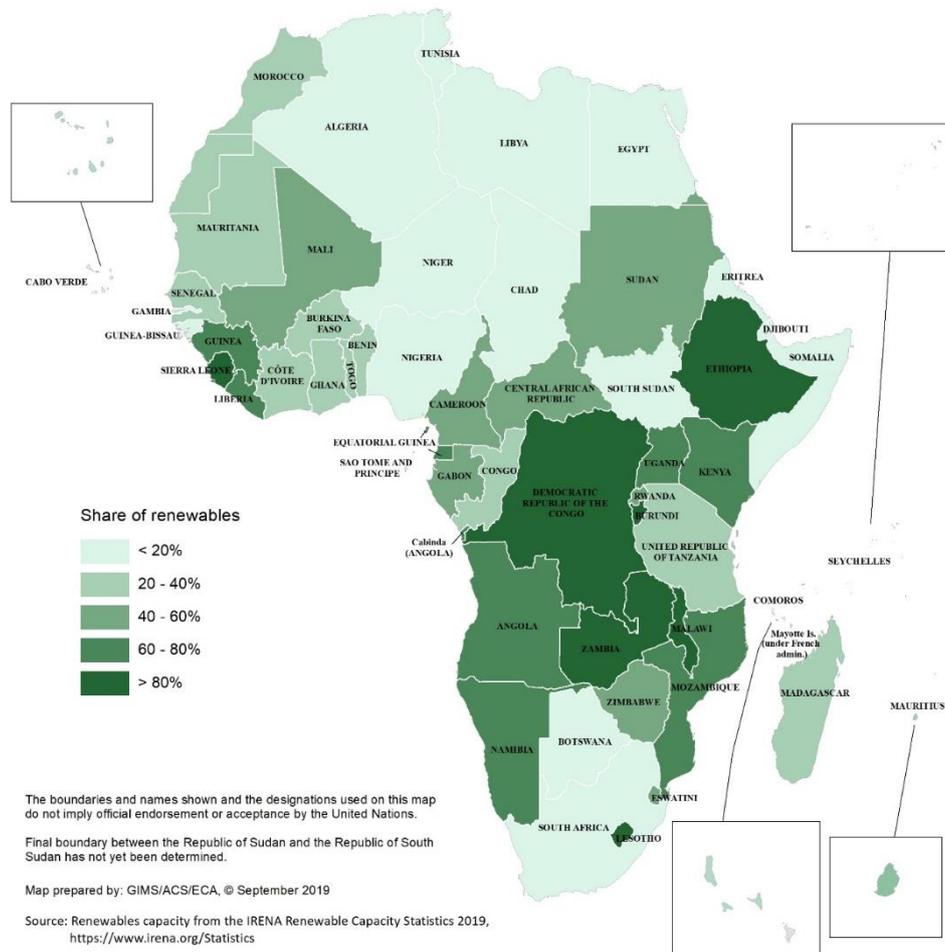


**Figure 6**  
**Cumulative renewable power installed capacity in Africa (MW)**



*Compiled from various sources, including GlobalData and the IRENA Renewable Capacity Statistics 2019.*

Figure 7  
Share of renewable power capacity in Africa's energy mix



## Responding to the global climate crisis and implications for Africa's development

The Paris Agreement on climate change is based on a voluntary approach that requires all Parties to the United Nations Framework Convention on Climate Change (UNFCCC) to develop, communicate, implement, monitor and report voluntary but ambitious nationally determined contributions to climate action (NDCs) based on their national contexts, development priorities, capabilities and circumstances. These NDCs provide the unique ratchet-up mechanism by which to assess the level of the collective ambition of Parties towards attaining the objective of the Paris Agreement, in other words to strengthen the global response to the threat of climate change in the context of sustainable development and efforts to eradicate poverty. The global ambition includes holding the increase in global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. It also includes increasing the ability to adapt to the adverse impacts of climate change and to foster climate resilience and low development of greenhouse-gas emissions in a manner that does not threaten food production. In addition, finance flows should be consistent with a pathway towards low emissions of greenhouse gases and climate-resilient development. Article 2 of the Agreement further states that it “will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances”.<sup>7</sup>

<sup>7</sup> [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf)

However, the global response to climate change is still very weak and the NDCs for many countries are not ambitious enough for concerted global action to be strong enough to avert the looming climate emergency. According to the Climate Action Tracker, all NDCs to date put the world on track for a global warming of more than 3 degrees Celsius (3°C) above pre-industrial levels<sup>8</sup>. In fact, the *Global Climate 2015-2019* report by the World Meteorological Organization (WMO) shows that climate change is accelerating, with the concentration of greenhouse gases in the atmosphere increasing to record levels and locking in warming that will last for generations<sup>9</sup>. The WMO report indicates that we are already at global warming of 1.1 degrees, which is much higher for Africa, and that the five years 2015-2019 were the warmest such period on record.

Global warming has serious implications for Africa's development. The continent is already being severely impacted by the adverse impacts of climate change and this will continue into the long run unless there is concerted global stepped-up commitment and action to tackle climate change. African countries have indeed shown strong commitment to tackle climate change. All countries, except Angola, Eritrea, Libya and South Sudan, have ratified the Paris Agreement with ambitious NDCs which the countries themselves have estimated would require close to \$3 trillion of conditional and unconditional finance for implementation, a sum close to one year of Africa's gross domestic product (GDP) in current terms<sup>10</sup>. Most African countries prepared their intended nationally determined contributions to climate actions (INDCs) in a hurry ahead of the twenty-first session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) in 2015. An INDC became an NDC upon ratification of the Paris Agreement if no new INDC had been submitted. Consequently, many of the INDCs (NDCs) have various shortcomings, including lack of sectoral coherence or alignment with national development plans, and insufficient inputs from subnational levels of stakeholders.

All Parties to the Paris Agreement were asked to submit new or revised NDCs in 2020 ahead of the first global stocktake scheduled for 2023, with the condition that countries can only revise their ambition to the current level in the NDCs or, preferably, higher. Whichever way countries choose, the 2020 window for revised or new NDCs provides a unique opportunity for African countries to:

- address the various shortcomings of their current NDCs, including in ambition, alignment with national development plans and sectoral coherence
- revisit the means of implementation
- tap new opportunities, including clean energy and the blue economy
- demonstrate leadership to tackle climate change to ensure the continent's development objectives as embodied in the African Union's Agenda 2063 and the United Nations 2030 Agenda for Sustainable Development are not derailed by the adverse impacts of global warming.

These NDCs can only be implemented with sufficient finance, technology and capacity development and it is important to note that it would be highly that African countries will achieve the goals and targets outlined in their NDCs without substantial support.

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<sup>8</sup> <https://climateactiontracker.org/global/temperatures/>

<sup>9</sup> <https://public.wmo.int/en/media/press-release/global-climate-2015-2019-climate-change-accelerates>

<sup>10</sup> <https://www.imf.org/external/datamapper/NGDPD@WEO/OEMDC/ADVEC/WEOWORLD/AFQ>

During the United Nations Secretary-General’s Climate Action Summit in September 2019, Chile (as President of the 25<sup>th</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change) launched the Climate Ambition Alliance that brings together those countries who want to enhance their climate ambition in the 2020 round of NDCs revisions or commit to achieving net zero emissions by 2050.<sup>11</sup> So far, 19 African countries have signaled they will enhance the ambition of their NDCs in 2020 (as shown in table 1), while eight African countries (out of 65 globally) have opted to attain net zero emissions by 2050. Six countries have already confirmed that they will update their NDCs in 2020.

Table 1.

**African countries signing up to the Climate Ambition Alliance**

| Signalled to Enhance NDC Ambition in 2020 | Intend to Update NDC in 2020     | Committed to Net Zero Emissions by 2050 |
|---|----------------------------------|---|
| Benin                                     | Algeria                          | Benin                                   |
| Burkina Faso                              | Democratic Republic of the Congo | Cabo Verde                              |
| Cabo Verde                                | Guinea-Bissau                    | Comoros                                 |
| Chad                                      | Kenya                            | Ethiopia                                |
| Comoros                                   | Lesotho                          | Mauritius                               |
| Côte d’Ivoire                             | Zimbabwe                         | Namibia                                 |
| Ethiopia                                  |                                  | Seychelles                              |
| Ghana                                     |                                  | South Sudan                             |
| Guinea                                    |                                  |   |
| Liberia                                   |                                  |   |
| Mali                                      |                                  |   |
| Mauritius                                 |                                  |   |
| Morocco                                   |                                  |   |
| Namibia                                   |                                  |   |
| Nigeria                                   |                                  |   |
| Seychelles                                |                                  |   |
| South Africa                              |                                  |   |
| South Sudan                               |                                  |   |
| United Republic of Tanzania               |                                  |   |

<sup>11</sup> <https://sdg.iisd.org/news/chile-launches-climate-ambition-alliance/>

## **Clean energy actions in African nationally determined contributions to climate action**

Climate change offers significant opportunities for public and private investments in technologies and processes for clean development in Africa, including renewable energy. These could boost trade, industrialization, agricultural production and food security, enhance climate resilience and create clean jobs for the continent's increasing youthful population.

The NDCs of all African countries refer to actions involving clean energy in one form or another. They cover all end-use sectors and technologies, as shown in table 2. Power supply dominates in terms of sectors, while hydropower, solar and wind are predominant in terms of technology. However, in terms of specific clean-energy targets and ambition only 22 countries have set targets for clean energy in their NDCs (table 3), while the renewable power capacity additions to 2030 in those countries with stated renewable power actions is close to 22 GW, as shown in table 4.

However, as shown in table 5, the volume of renewable power projects under construction, announced or proposed is far higher than the capacity targets in the NDCs of most African countries. The 2020 revision window of NDCs is, therefore, a unique opportunity for African countries to revise their climate actions to include more clean energy for both mitigation and adaptation responses to climate change.

Investment in interconnections and strong grids for transmission and distribution to link Africa's power pools and create a power market to attract investments is critical if African countries are to harness the full benefits of their abundant and distributed renewable energy resources for access and security of supply. The case for interconnecting the power pools of Africa to create such a market and enable a strong climate-resilient power system is enhanced by the fact that some countries, including Angola, Burundi, the Democratic Republic of the Congo, Libya, Rwanda and the United Republic of Tanzania, belong to two or more power pools, thus providing the potential readily to connect all the power pools. Yet, hardly any of the NDCs of African countries include actions on in this important area. Thus, the 2020 window for revision of NDCs provides the opportunity for African countries to consider regional approaches to climate action in their NDCs.

Table 2.

## Overview of clean energy actions in the NDCs of African countries

| Country                     | NDCs clean energy actions by sector |          |           |          |                   |         |       | NDCs clean energy actions by technology |        |      |            |                     |             |
|-----------------------------|-------------------------------------|----------|-----------|----------|-------------------|---------|-------|---|--------|------|------------|---------------------|-------------|
|                             | Agriculture                         | Industry | Transport | Building | Energy production | Cooking | Waste | Hydro                                   | Solar  | Wind | Geothermal | Bioenergy / biomass | Natural gas |
| Burundi                     | Green                               |          |           |          | Blue              | Purple  |       | Blue                                    | Yellow | Grey | Brown      | Green               |             |
| Djibouti                    |                                     |          | Grey      | Yellow   | Blue              | Purple  |       |   | Yellow | Grey | Brown      |                     |             |
| Eritrea                     |                                     | Red      | Grey      |          | Blue              | Purple  | Black |   | Yellow | Grey |            |                     |             |
| Ethiopia                    |                                     |          |           |          | Blue              |         |       | Blue                                    |        |      | Brown      |                     |             |
| Kenya                       | Green                               | Red      | Grey      |          | Blue              |         | Black |   | Yellow | Grey |            |                     |             |
| Rwanda                      |                                     | Red      | Grey      |          | Blue              |         | Black | Blue                                    | Yellow |      | Brown      | Green               |             |
| South Sudan                 |                                     |          | Grey      |          | Blue              |         |       | Blue                                    | Yellow | Grey | Brown      | Green               |             |
| Sudan                       |                                     |          |           |          | Blue              |         | Black | Blue                                    | Yellow | Grey | Brown      | Green               | Brown       |
| Uganda                      | Green                               |          | Grey      |          | Blue              |         |       | Blue                                    | Yellow |      | Brown      |                     |             |
| United Republic of Tanzania |                                     |          | Grey      |          | Blue              |         | Black | Blue                                    | Yellow | Grey |            | Green               |             |
| Angola                      | Green                               |          |           |          | Blue              |         |       | Blue                                    | Yellow | Grey |            | Green               |             |
| Botswana                    |                                     |          |           |          |                   |         |       |   |        |      |            |                     |             |
| Lesotho                     |                                     |          | Grey      |          | Blue              |         |       | Blue                                    | Yellow |      |            |                     | Brown       |
| Malawi                      |                                     | Red      |           | Yellow   | Blue              |         | Black | Blue                                    | Yellow | Grey |            | Green               |             |
| Mozambique                  | Green                               |          | Grey      |          | Blue              |         | Black |   |        |      |            | Green               | Brown       |
| Namibia                     |                                     |          |           |          | Blue              |         |       | Blue                                    | Yellow | Grey |            | Green               |             |
| South Africa                |                                     | Red      | Grey      |          | Blue              |         |       |   | Yellow | Grey |            | Green               |             |
| Eswatini                    | Green                               | Red      | Grey      |          | Blue              |         |       | Blue                                    | Yellow |      |            | Green               |             |
| Zambia                      |                                     |          |           |          | Blue              |         |       | Blue                                    | Yellow | Grey |            | Green               |             |
| Zimbabwe                    |                                     |          |           |          | Blue              |         |       | Blue                                    | Yellow |      |            | Green               | Brown       |
| Madagascar                  |                                     |          |           |          | Blue              |         | Black | Blue                                    | Yellow |      |            | Green               |             |
| Benin                       |                                     |          |           |          |                   |         |       | Blue                                    | Yellow |      |            | Green               | Brown       |
| Côte d'Ivoire               | Green                               | Red      |           |          | Blue              |         |       | Blue                                    | Yellow |      |            | Green               | Brown       |
| Ghana                       |                                     |          |           |          | Blue              | Purple  |       | Blue                                    | Yellow | Grey |            |                     | Brown       |





Table 3

**Clean energy actions in the nationally determined contributions of African countries**

| Country                                 | Energy targets in NDC  | Energy actions in NDC   | Country                  | Energy targets in NDC                                | Energy actions in NDC   |
|---|--|---|--------------------------|--|---|
| <b>Algeria</b>                          | 27% share of electricity by 2030 to be from renewable energy                           | N/A   | <b>Equatorial Guinea</b> | N/A  | 7 MW hydropower   |
| <b>Angola</b>                           | N/A  | - 780 MW hydropower<br>- 100 MW wind  | <b>Eritrea</b>           | N/A  | - 40 MW solar/diesel mini grids<br>- 60 MW solar PV<br>- 100 MW wind<br>- 50 MW geothermal<br>- 50 MW offshore wind |
| <b>Benin</b>                            | N/A  | - 500 MW biopower<br>- 335 MW hydropower<br>- 95 MW solar photovoltaic (PV) | <b>Eswatini</b>          | Double renewable energy share of electricity by 2030 | N/A   |
| <b>Botswana</b>                         | N/A  | N/A   | <b>Ethiopia</b>          | N/A  | N/A   |
| <b>Burkina Faso</b>                     | N/A  | 20 MW of solar PV every 10 years  | <b>Gabon</b>             | 80% electricity from hydropower by 2025              | N/A   |
| <b>Burundi</b>                          | N/A  | N/A   | <b>Gambia</b>            | N/A  | N/A   |
| <b>Cabo Verde</b>                       | 30% share of electricity by 2025 from renewable energy unconditional; 100% conditional | N/A   | <b>Ghana</b>             | Scale up renewable energy power by 5% by 2030        | - Up to 300 MW of small-medium hydro<br>- Up to 150 MW of grid-connected wind<br>- 55 mini grids of 10 MW           |
| <b>Cameroon</b>                         | 25% share of electricity by 2035 from renewable energy, excluding large hydro          | 284 MW non-hydro renewable energy   | <b>Guinea</b>            | 30% renewable energy share                           | - 1523 MW hydropower<br>- 44 MW wind  |
| <b>Central African Republic</b>         | N/A  | 312 MW hydropower   | <b>Guinea-Bissau</b>     | 80% renewable energy share of electricity by 2030    | N/A   |
| <b>Chad</b>                             | N/A  | - 50 GWh/year from wind<br>- 200 GWh/year from solar PV                     | <b>Kenya</b>             | N/A  | N/A   |
| <b>Comoros</b>                          | 43% renewable energy share of electricity by 2030                                      | - 14 MW geothermal<br>- 14 MW solar   | <b>Lesotho</b>           | N/A  | - 50 MW hydropower<br>- 40 MW solar PV<br>- 35 MW wind  |
| <b>Côte d'Ivoire</b>                    | 42% renewable energy share (26% hydro and 16% other renewable energy)                  | N/A   | <b>Liberia</b>           | 30% renewable energy electricity share by 2030       | 30 MW biopower  |
| <b>Democratic Republic of the Congo</b> | N/A  | N/A   | <b>Libya</b>             | N/A  | N/A   |
| <b>Djibouti</b>                         | N/A  | - 10 MW biopower<br>- 30 MW wind<br>- 250 MW solar PV<br>- 5 MW tidal       | <b>Madagascar</b>        | 79% renewable energy share of electricity by 2030    | N/A   |
| <b>Egypt</b>                            | N/A  | N/A   | <b>Malawi</b>            | N/A  | 800 MW hydropower by 2025   |

| Country                      | Energy targets in NDC   | Energy actions in NDC  | Country                            | Energy targets in NDC                                | Energy actions in NDC  |
|------------------------------|---|--|------------------------------------|--|--|
| <b>Mali</b>                  | 10% renewable energy share of electricity by 2020   | 100 MW   | <b>Seychelles</b>                  | 15-20% renewable energy share by 2030                | 105 MW of solar PV   |
| <b>Mauritania</b>            | N/A   | N/A  | <b>Sierra Leone</b>                | N/A  | N/A  |
| <b>Mauritius</b>             | N/A   | N/A  | <b>Somalia</b>                     | N/A  | - 15 MW solar PV<br>- 500 MW hydropower  |
| <b>Morocco</b>               | 52% renewable energy by 2030 (20% solar, 20% wind, 12% hydro)   | Additional renewable energy capacity of 5,825 MW by 2030<br>- 1 GW solar PV (unconditional)<br>- 2 GW wind (conditional)<br>- 775 MW hydropower (unconditional)<br>- 2 GW solar thermal and PV (conditional)<br>- 100 MW hydro (conditional) | <b>South Africa</b>                | N/A  | N/A  |
| <b>Mozambique</b>            | N/A   | N/A  | <b>South Sudan</b>                 | N/A  | N/A  |
| <b>Namibia</b>               | 70% of renewable energy power share by 2030   | N/A  | <b>Sudan</b>                       | 20% renewable energy share by 2030                   | - 1 GW of solar PV<br>- 1 GW of wind<br>- 100MW of concentrated solar power (CSP)<br>- 50 MW of small hydro<br>- 80 MW of waste to energy (WTE)      |
| <b>Niger</b>                 | 30% renewable energy electricity share by 2030  | 250 MW   | <b>United Republic of Tanzania</b> | N/A  | N/A  |
| <b>Nigeria</b>               | N/A   | 13 GW  | <b>Togo</b>                        | 4% renewable energy share of electricity by 2030     | N/A  |
| <b>Congo</b>                 | - Target for 4,000 GWh consumption by 2025, with 85% from hydro<br>- Solar mini grids for rural electrification | N/A  | <b>Tunisia</b>                     | 30% of renewable energy share of electricity by 2030 | 3,185 MW of renewable energy installed capacity by 2030, up from 358 MW in 2017<br>- 1, 755 MW wind<br>- 1,610 MW solar PV<br>- 450 MW solar thermal |
| <b>Rwanda</b>                | N/A   | 100 solar mini grids of 9.4 MW   | <b>Uganda</b>                      | N/A  | 3,200 MW of renewable capacity by 2030, up from 729 in 2013  |
| <b>Sao Tome and Principe</b> | 47% renewable energy share of electricity by 2030   | - 12 MW solar PV<br>- 13 MW hydropower   | <b>Zambia</b>                      | N/A  | N/A  |
| <b>Senegal</b>               | N/A   | - 360 MW solar PV (200 MW conditional)<br>- 350 MW wind (200 MW conditional)<br>- 144 MW hydropower<br>- 50 MW biopower (conditional)<br>- 50 MW solar thermal (conditional)<br>- 400 MW combined cycle gas fuel switch (conditional)        | <b>Zimbabwe</b>                    | N/A  | Stepwise increase in capacity of Kariba from 666 MW to 750 MW and then 1,050 MW  |

Table 4

**Clean energy capacities in the nationally determined contributions of African countries**

| Country                  | Hydropower (MW) | Wind (MW)    | Solar PV (MW) | Solar thermal (MW) | Geothermal (MW) | Biopower (MW) | Mini grids (MW) |
|--------------------------|-----------------|--------------|---------------|--------------------|-----------------|---------------|-----------------|
| Angola                   | 780             | 100          |               |                    |                 |               |                 |
| Benin                    | 335             |              | 95            |                    |                 | 500           |                 |
| Burkina Faso             |                 |              | 20            |                    |                 |               |                 |
| Central African Republic | 312             |              |               |                    |                 |               |                 |
| Comoros                  |                 |              | 14            |                    | 14              |               |                 |
| Djibouti                 | 10              | 30           | 250           |                    |                 | 10            |                 |
| Equatorial Guinea        | 7               |              |               |                    |                 |               |                 |
| Eritrea                  |                 | 100          | 60            |                    | 50              |               | 40              |
| Ghana                    | 300             | 150          |               |                    |                 |               | 10              |
| Guinea                   | 1 523           | 44           |               |                    |                 |               |                 |
| Lesotho                  | 50              | 33           | 40            |                    |                 |               |                 |
| Liberia                  |                 |              |               |                    |                 | 30            |                 |
| Malawi                   | 800             |              |               |                    |                 |               |                 |
| Morocco                  | 775             | 2 000        | 1 000         | 2 000              |                 |               |                 |
| Rwanda                   |                 |              |               |                    |                 |               | 9               |
| Sao Tome and Principe    | 13              |              | 12            |                    |                 |               |                 |
| Senegal                  | 144             | 350          | 360           |                    |                 | 50            |                 |
| Seychelles               |                 |              | 105           |                    |                 |               |                 |
| Somalia                  | 500             |              | 15            |                    |                 |               |                 |
| Sudan                    | 50              | 1 000        | 1 000         | 100                |                 |               |                 |
| Tunisia                  |                 | 1 755        | 1 610         | 450                |                 |               |                 |
| Uganda                   | 2 471           |              |               |                    |                 |               |                 |
| Zimbabwe                 | 384             |              |               |                    |                 |               |                 |
| <b>TOTAL</b>             | <b>8 454</b>    | <b>5 562</b> | <b>4 581</b>  | <b>2 550</b>       | <b>64</b>       | <b>590</b>    | <b>59</b>       |

Table 5  
Renewable power projects announced, proposed or under construction in Africa

| Country                          | Biopower | Geothermal | Hydro  | Solar PV | Solar Thermal | Wind (Onshore) | Grand Total |
|----------------------------------|----------|------------|--------|----------|---------------|----------------|-------------|
| Algeria                          |          |            |        | 11       | 370           |                | 381         |
| Angola                           | 235      |            | 8 280  |          |               |                | 8 515       |
| Benin                            |          |            |        | 51       |               |                | 51          |
| Botswana                         | 1        |            |        | 200      | 100           |                | 301         |
| Burkina Faso                     | 1        |            | 235    | 324      |               |                | 561         |
| Burundi                          |          |            | 385    | 8        |               |                | 393         |
| Cameroon                         |          |            | 2 735  | 285      |               |                | 3 020       |
| Cabo Verde                       |          |            |        | 350      |               |                | 350         |
| Chad                             |          |            |        | 100      |               |                | 100         |
| Democratic Republic of the Congo |          |            | 38 774 | 2        |               |                | 38 776      |
| Djibouti                         |          | 50         |        | 300      |               |                | 350         |
| Egypt                            |          |            | 2 438  | 5 043    | 430           | 3 143          | 11 053      |
| Equatorial Guinea                |          |            | 200    |          |               |                | 200         |
| Eswatini                         | 82       |            | 120    | 111      |               |                | 313         |
| Ethiopia                         | 170      | 2 100      | 30 704 | 1 228    |               | 700            | 34 902      |
| Gambia                           | 14       |            |        | 10       |               |                | 24          |
| Ghana                            | 82       |            | 1 121  | 2 281    |               | 425            | 3 909       |
| Guinea                           |          |            | 790    | 88       |               |                | 878         |
| Guinea-Bissau                    |          |            | 20     | 31       |               |                | 51          |
| Côte d'Ivoire                    | 52       |            | 456    | 85       |               |                | 593         |
| Kenya                            | 149      | 5 193      | 1 605  | 2 029    |               | 461            | 9 437       |
| Lesotho                          |          |            | 1 200  | 51       |               |                | 1 251       |
| Liberia                          |          |            | 40     | 70       |               |                | 110         |
| Libya                            |          |            |        | 104      |               | 240            | 344         |
| Madagascar                       |          |            | 499    | 40       |               |                | 539         |
| Malawi                           |          |            | 953    | 100      |               |                | 1 053       |
| Mali                             |          |            | 1 085  | 231      |               |                | 1 315       |
| Mauritania                       |          |            |        | 81       |               |                | 81          |
| Mauritius                        |          |            |        | 24       |               |                | 24          |
| Mayotte                          |          |            |        | 5        |               |                | 5           |
| Morocco                          | 2        |            | 670    | 1 381    | 2 052         | 1 930          | 6 035       |
| Mozambique                       |          |            | 5 319  | 242      |               |                | 5 561       |
| Namibia                          | 100      |            | 612    | 830      | 150           | 150            | 1 842       |
| Niger                            |          |            |        | 40       |               |                | 40          |
| Nigeria                          | 42       |            | 4 456  | 5 966    |               |                | 10 464      |
| Congo                            |          |            | 18     |          |               |                | 18          |
| Reunion                          | 41       |            |        | 30       |               |                | 71          |
| Rwanda                           | 12       |            | 302    | 15       |               |                | 328         |
| Senegal                          |          |            | 128    | 192      |               | 159            | 478         |
| Seychelles                       |          |            |        | 5        |               |                | 5           |
| Sierra Leone                     |          |            | 193    | 16       |               |                | 209         |

|                             |              |              |                |               |               |              |                |
|-----------------------------|--------------|--------------|----------------|---------------|---------------|--------------|----------------|
| South Africa*               | 153          |              | 2 500          | 6 000         | 14 400        | 300          | 23 353         |
| Sudan                       |              |              | 1 100          | 40            |               |              | 1 140          |
| Togo                        |              |              |                | 35            |               |              | 35             |
| Tunisia                     |              |              | 3              | 320           | 4 555         | 500          | 5 378          |
| Uganda                      | 82           | 450          | 3 942          | 591           |               |              | 5 065          |
| United Republic of Tanzania |              | 727          | 4 977          | 166           |               | 600          | 6 470          |
| Zambia                      | 77           | 22           | 6 466          | 1 258         |               |              | 7 824          |
| Zimbabwe                    | 238          |              | 1 778          | 1 496         |               |              | 3 512          |
| <b>Grand Total</b>          | <b>1 534</b> | <b>8 542</b> | <b>124 104</b> | <b>31 865</b> | <b>22 057</b> | <b>8 607</b> | <b>196 708</b> |

\* South Africa's numbers are from the new capacity additions announced in the 2019 Integrated Resource Plan

*Compiled from GlobalData database of power plants.*

## **Key challenges must be addressed urgently to unleash Africa's clean energy potential**

To unlock Africa's clean energy potential for sustainable development on the continent requires transformational leadership and mechanisms to fast-track policy and regulatory reforms to put in place the enabling environment needed to enhance the confidence of investors and leverage limited public resources against a background of competing demands for resources to mobilize the needed investments from the private sector. This requires transformational leadership and mechanisms to address key issues, including, among others:

- policy and regulatory reforms covering generation, transmission and distribution
- strong institutions and enhanced bankability of utilities
- cost reflective tariffs and subsidy reform
- clear, structured and transparent procurement plans for long term investments and level playing field for all market participants
- rule of law and a transparent and accessible legal system
- promotion of innovation and use of digitalization for robust grid and decentralised systems
- responding to climate change and enhanced access through investment in interconnections, strong and climate resilient grids for cross border trade with higher shares of renewables

## **Enhancing energy access and climate ambition in Africa through clean energy investments: The "SDG7 Initiative for Africa"**

Investments are needed to address the high deficit in energy access in Africa and to capitalize on the challenges posed by climate change to spur inclusive and resilient economies. But the challenge of realizing these investments requires new and innovative approaches to leverage limited public resources against a background of competing demands for resources so that financing can be mobilized, particularly from the private sector. ECA conceived the "SDG7 Initiative for Africa" to achieve this. The initiative brings together countries, financiers

and developers of clean-energy projects to align their interests and to combine scale and speed to fast-track financing from the private sector for deployment of clean-energy projects in Africa. The initiative provides the mechanism through which the private sector can play a key role in supporting countries to close their deficit gap in energy access, meet increasing energy demand and contribute to climate action and ambition through enhanced nationally determined contributions to climate action (NDCs) under the Paris Agreement.

To make the investments happen with multiple wins, the “SDG7 Initiative for Africa” is based on three key pillars of sustainability, governance and finance (see figure 5).

- The pillar of sustainability supports the achievement of the Sustainable Development Goals (SDGs) through long-term financing for clean energy solutions, environmental sustainability and business sustainability, with the following values:
  - ✓ Clean power and other clean-energy programmes, including transport fuels and electric mobility, managing and transforming otherwise flared gas, and smart cities
  - ✓ An enabling environment which allows countries to honour their commitments to climate action and meet objectives in access to energy.
- The pillar of governance ensures adherence to responsible investment principles such as those promoted by the United Nations-supported Principles for Responsible Investment, covering environmental, social and governance factors, with the following benefits:
  - ✓ Investments in transmission and interconnections infrastructure to enhance the business case for generation assets
  - ✓ Political support and prioritization of national and regional projects.
- Finally, the pillar of finance mobilizes private-sector finance through bonds issued in capital markets and putting in place de-risking instruments to fast-track investments for a bundle of clean-energy projects covering different countries and technologies. The key values are:
  - ✓ Support for project preparation for enhanced bankability
  - ✓ Technical and regulatory support to countries, including capacity development (regulators, utilities and project sponsors)
  - ✓ Bankable project pipeline
  - ✓ 10,000 MW of clean energy capacity deployed over 5 years.

Figure 8.  
The “SDG7 Initiative for Africa”

|  |  |   |  |   |  |
|--|--|---|--|---|--|
| <b>Objective</b>   |  |   |  |   |  |
| To crowd-in private-sector financing for clean energy to energize sustainable development in Africa faster and better, as well as to strengthen and upgrade transmission systems.  |  |   |  |   |  |
| All parties to the initiative sign up to the core principles of sustainability and governance.   |  |   |  |   |  |
| <b>Three pillars</b>   |  |   |  |   |  |
| <b>Sustainability:</b><br>Supports achievement of the Sustainable Development Goals (SDGs) through long-term financing for clean energy solutions, environmental sustainability and business sustainability  |  | <b>Governance:</b><br>Adheres to responsible investment principles such as those promoted by the United Nations-supported Principles for Responsible Investment, covering environmental, social and governance factors  |  | <b>Finance:</b><br>Mobilizes private-sector finance through bonds issued in capital markets and putting in place risk-mitigation instruments to fast-track investments for a bundle of clean energy projects covering different countries and technologies. |  |
| <b>LEVERAGE</b>  |  |   |  |   |  |
| World - renowned investment expertise and resources  | Experiences of major clean energy project developers in Africa   | Political will and leadership in a number of African countries  | Big portfolio of announced renewable energy projects | Low interest rates globally   | Declining costs of renewable energy technologies |
| <b>Value addition</b>  |  |   |  |   |  |
| Clean energy programmes, including transport fuels and electric mobility, managing and transforming otherwise flared gas, and smart cities<br><br>An enabling environment which allows countries to honour their commitments to climate action and meet access objectives: | Investments in transmission and interconnections infrastructure to enhance the business case for generation assets<br><br>Political support and prioritization of national and regional projects | Support for project preparation for enhanced bankability<br><br>Technical and regulatory support to countries, including capacity development (regulators, utilities and project sponsors)<br><br>Bankable pipeline of 10,000 MW of clean energy projects deployed over 5 years |  |   |  |

|   |
|---|
| <b>Indicative strategic partners</b>  |
| United Nations Global Compact, PIMCO, Enel, Development Bank of Southern Africa, Africa50, NSIA, China Three Gorges, among others |

**Indicative finance structuring options**

**Standalone option**

|   |  |
|---|--|
| <b>Senior tranche</b><br>Public SDGEurobond   | <b>Equity or subordinated capital</b><br>Sovereign support, private investors                                    |
| Publicly traded, modest liquidity<br>70% of capital requirement<br>Backed by cash flows from a diversified pool of projects | Privately held position, no liquidity<br>30% of capital requirement<br>Provides credit support to senior lenders |

**Insurer option**

|  |  |   |
|--|--|---|
| <b>Senior tranche</b><br>- Public SDG Eurobond   | <b>Mezzanine tranche</b><br>- Institutional capital  | <b>Equity or subordinated capital</b><br>- Sovereign support, private investors                           |
| Publicly traded, modest liquidity<br>30% of capital requirement<br>Backed by cash flows from a diversified pool of projects<br>Potentially wrapped by political risk insurance providers or development finance institutions | Subordinated debt with hold-to maturity intention<br>40% of capital requirement<br>Wrapped by political risk insurance providers or development finance institutions | Privately held position, no liquidity<br>30% of capital requirement<br>Provides credit support to lenders |

**Development bank option**

|   |  |                                  |   |
|---|--|----------------------------------|---|
| <b>Senior tranche</b><br>- Public SDG Eurobond  | <b>A Loan</b><br>- Development bank  | <b>B Loan</b><br>- Asset manager | <b>Equity or subordinated capital</b><br>- Sovereign support, private investors                           |
| Publicly traded, modest liquidity<br>30% of capital requirement<br>Backed by cash flows from a diversified pool of projects | Subordinated debt with intention to hold to maturity<br>40% of capital requirement |                                  | Privately held position, no liquidity<br>30% of capital requirement<br>Provides credit support to lenders |

## **Staying the course, ensuring progress**

In the first instance, the “SDG7 Initiative for Africa” aims to mobilize private-sector investments for over 10,000 MW of renewable energy projects (geothermal, hydro, wind and solar) in Africa by 2025. In subsequent stages the initiative will address energy efficiency, decarbonization of the energy system in all end-use cases, gas flaring, and digitalization and decentralization for enhanced access.

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