

# Africa

## Nuclear Industry in Africa



### Overview

01

operating nuclear power plant

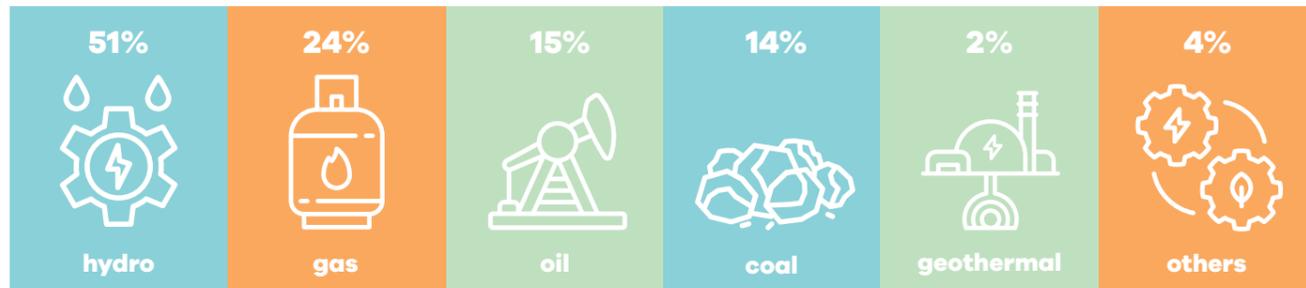
02

nuclear reactors operating

00

under construction

### Generation mix



### Nuclear facts



4 countries of the region are mining uranium



a third of the almost 30 countries currently considering nuclear power are in Africa



it will take 10 to 15 years to create the necessary nuclear infrastructure in the region



# Viewpoint

## Countries of sub-Saharan Africa have a growing interest in nuclear energy

One of the most monumental tasks we currently face as a global community is the need to eliminate energy poverty. According to the IEA, approximately 620 million people in Sub-Saharan Africa do not have access to electricity. An even more shocking picture emerges when we look at indicators by country: only Ghana has electrification rates of over 70%; the rate of electrification is below 5% in Malawi, Chad, the Central African Republic, Liberia, and Sierra Leone; and the 48 countries of sub-Saharan Africa have a combined installed power capacity of just under 70 GW, roughly equivalent to the installed power capacity of Spain.

At the same time, the region ironically has great potential in the field of renewable energy – hydro and solar, in particular. However, in order to use intermittent renewable sources without risks of energy shortages and blackouts, a clean and reliable backload source is needed. This is why the countries of sub-Saharan Africa have a growing interest in nuclear energy.

Russia’s nuclear vendor, Rosatom, has so far signed nuclear cooperation agreements with more than 15 countries in sub-Saharan Africa, and China’s state-owned CGN and France’s EDF are currently in negotiations with several countries in the region. Everything indicates that the following decade will see a plethora of nuclear energy projects implemented throughout the continent.

However, building a large, conventional nuclear power plant does not seem to be a viable option in many countries in sub-Saharan Africa at this point in time. The IAEA recommends that the capacity of a country’s power grid be about 10 times the capacity of a NPP in order for that NPP to be connected safely. Today, only a handful of African countries meet those requirements. Even the dynamically developing country of Kenya has an installed capacity of only 2,400MW, while the capacity of a modern Gen 3+ reactor is usually higher than 1000 MW.

For this reason, small modular reactors (SMRs) should be the technology of choice for the countries of Sub-Saharan Africa. These reactors have an average capacity of 50-100 MW per unit, can be mass produced, and can be deployed in remote areas. Even more importantly, SMRs are easier to finance and faster to build than big, conventional NPPs. One module costs significantly less in comparison with one conventional nuclear power unit.

But SMRs are a rather advanced technology and none of the countries of Sub-Saharan Africa, except for South Africa, can even be called a newcomer to the nuclear energy industry – they literally have zero experience operating commercial plants. This is why it is necessary to ensure that all required support be provided to countries along the way, from help creating a nuclear regulatory framework from scratch to help building infrastructure to help training new personnel.

An excellent option for countries wanting to study the benefits of nuclear energy before building a power plant is to install a research reactor. Such research reactors are exported by South Korea and Argentina. There is also a more complex, turnkey solution available – Rosatom’s Centre for Nuclear Science and Technology (CNST). Such centres include a research reactor and scientific laboratories and can also be equipped with medical and irradiation facilities. Medicine and irradiation are amongst a wide range of other non-energy applications of nuclear technologies that can also be studied via research reactors, applications that too can contribute to the sustainable development of African countries.

by the NNWI and African Young Generation in Nuclear



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