

As electricity demand grows, Rwanda looks to small modular reactors and international partnerships to meet Vision 2050 energy goals.

Rwanda is turning to nuclear energy to meet its growing electricity needs as the country works toward becoming a high-income economy by 2050, Prime Minister Edouard Ngirente said Monday.

Opening a two-day summit in Kigali on nuclear energy innovation, Ngirente said the country will need at least 5 gigawatts of electricity to achieve its long-term development goals. That's more than 10 times the power Rwanda currently produces.

"We must take bold steps," Ngirente said. "Nuclear energy offers reliable, clean and continuous power day and night, in all seasons."

The Nuclear Energy Innovation Summit for Africa (NESIA 2025) has brought together experts and government officials from 30 countries. They are discussing how African nations can harness nuclear power, especially through small modular and micro reactors that are safer, cheaper and easier to install than traditional nuclear plants.

More than 600 million Africans still live without electricity. Many rely on wood and charcoal for cooking and heating, which damages forests and contributes to climate change.

Ngirente warned that with Africa's population expected to reach 3 billion in the next 40 years, demand for electricity will skyrocket. Power shortages could stall progress in technology, agriculture, health care and other vital sectors.

"We cannot keep relying on sun, wind or rainfall alone," he said. "These sources are not consistent, and not everyone has equal access to them."

Rwanda's Nuclear Plans

Rwanda is already working with international partners to explore nuclear energy options. In 2023, it signed an agreement with Dual Fluid Energy Inc., a company based in Germany and Canada, to pilot a nuclear reactor in Rwanda.

The country is focusing on Small Modular Reactors (SMRs) and Micro Reactors, which are compact nuclear systems that produce less than 100 megawatts of

electricity. They require less land, are easier to maintain and can be shut down safely if needed.

Rwanda aims to build its first nuclear plant by 2030, with operations expected to begin soon after. More than 200 Rwandan students are currently studying nuclear science abroad and are expected to join the workforce by 2028.

“We are training talent and building capacity,” Ngirente said. “We want to make sure Rwanda is ready, both technically and safely.”

The Rwanda Atomic Energy Board (RAEB) said the plant will be located in a secure area away from residents. It will require around 230 workers and could generate up to 100 megawatts of power—enough to make a major impact on the country’s energy supply.

A Shared African Challenge

Several African leaders attending the summit stressed the importance of working together on nuclear energy.

Tanzania’s Deputy Prime Minister, Dr. Doto Biteko, said regional cooperation could help African nations build nuclear reactors faster and more affordably. Niger’s Prime Minister, Ali Mahamane Lamine Zeine, said his country is committed to contributing its uranium resources to the continent’s energy future.

Despite its vast natural resources, much of Africa still suffers from limited electricity access. Leaders at the summit said nuclear energy could be a game changer.

“This continent will become a global energy market,” Ngirente said. “With growing cities, smart technologies and industrial development, we must plan ahead.”

Currently, Rwanda produces about 406 megawatts of electricity. Experts say one gram of uranium can produce the same amount of energy as three tons of coal, without polluting the environment.

With the right partnerships and preparation, officials say, Rwanda could become one of the first countries in the region to generate nuclear power for peaceful and sustainable development.