

Why nuclear should be considered as a viable option for economic growth

By [Gaopalelwe Santswere](#)

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President Cyril Ramaphosa rightly pointed out in his State of the Nation Address (Sona) the devastating effects of climate change on our planet and motivated for adding more renewable and clean energy to our national energy mix.



Gaopalelwe Santswere, executive chairman of SAYNPS. Image Chege Publishing

While South African Young Nuclear Professional Society (SAYNPS) agrees wholeheartedly with this, we must remind the nation that when compared with all energy sources nuclear power is certainly one of lowest emitters of greenhouse gases. In fact, there are no greenhouse gases emitted during the operation of a nuclear power plant, the gases are emitted during fuel manufacture, plant construction and transport of materials.

Nuclear is also a very cost effective base-load energy source which is absolutely essential for achieving the country's very ambitions mining and industrialisation goals. Numerous studies have shown that nuclear power plants are one of the most affordable and certainly the most reliable sources of base-load electricity, even more so in South Africa where "cheaper" hydroelectric power and gas sources are unavailable.

Sustainable Development Goals

We have further witnessed how many countries globally have very successfully adopted nuclear science and technology to support their efforts towards reaching the 17 Sustainable Development Goals (SDGs) set out in the United Nations (UN) 2030 Agenda for Sustainable Development. Many countries use nuclear science and technology to meet their development objectives in areas including human health, food production, water management and environmental protection but mostly importantly energy security.

Globally, there have been great success stories which demonstrate just how nuclear technology can assist in reaching these ambitious goals, such as the International Atomic Energy Agency's response to the Ebola virus in West Africa, the Zika virus in Latin America and the Caribbean, as well as relief to natural disasters in Asia and Latin America. Let's not forget our own success story, in the not so distant past, the Nuclear Energy Corporation of South Africa (Necsa) was the second largest exporter of life saving nuclear isotopes in the world. It was purported in 2018 that nuclear medicine produced at the facility was injected into someone somewhere in the world every three seconds and that every three hours a life was saved.

Nuclear energy and fourth-generation nuclear power plants must therefore become a necessity if we are to be at the forefront of green growth, of low-carbon industrialisation, of pioneering new technologies and of taking quantum leaps towards the economy of the future. We therefore encourage the president to truly examine the vast amount of groundbreaking work that has already gone into the country's pebble bed modular reactor (PBMR) project, and revive the project to put South Africa back into the global lead of small modular reactors.

Land reform

While SAYNPS applauds the president's approach to land reform, the organisation must point out that nuclear power requires far less land than any other low carbon sources of energy. By way of example, if one compares the once planned Thyspunt nuclear power plant with an electrical capacity of 4000MW, to the Jeffreys Bay Wind Farm with an electrical capacity of 140MW. We find that, although the Jeffreys Bay Wind Farm generates 68 times less energy than the proposed nuclear power plant, it occupies an area seven times the size of the nuclear plant. This implies a land use multiple factor of 476 times.

This means that by incorporating nuclear energy into our mix we will have far more arable land to be distributed among young aspiring black farmers. Not to mention water desalination, which when linked to nuclear power plants has the ability to cost effectively turn large arid areas in the Northern Cape into agricultural hubs.

Youth unemployment

Over the past few years, we have been incredibly disheartened by the increasingly high unemployment rate in the country. While South Africa's unemployment rate is high for both the youth and adults, the unemployment rate among young people aged 15-34 is the highest, indicating that the youth are particularly vulnerable in the current labour market. A large number of these young people have become discouraged with the labour market and are turning to less savoury means to put food on the table.

Independent analysis which was done for the proposed 96GW build programme shows that the construction phase alone will contribute almost 33,000 direct and sustainable jobs over a period of eight to 10 years. This without considering the immense multiplier effect that would be created through localisation requirements, which will create even more sustainable careers as well as develop new local high-tech enterprises and certainly pave the way for the fourth industrial revolution.

A new nuclear build expansion programme would also foster a much needed supplier development pipeline and will encourage a wider development of artisanal skills such as coded welders, boilermakers, plant operators, carpenters, electricians and pipefitters, which are all skills currently lacking in the country.

Finally I would like to point out that an increase in South Africa's infrastructure projects and a renewed focus on the country's nuclear energy industry expansion would further encourage learners to take up incredibly important STEM

(science, technology, engineering, mathematics and innovation) subjects and provide them with an opportunity to contribute to a wider economy as well as become more globally competitive.

ABOUT THE AUTHOR

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