Why nuclear energy is so attractive for South Africa's industry

By Des Muller

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South Africa has an established and experienced nuclear industry, with some of our great talents behind the development of small modular reactors (SMRs) and the operation of new-generation nuclear power plants around the world.

Source: supplied

Although our industry has been geared toward operating and maintaining the Koeberg and Safari reactors, the previous nuclear newbuild procurement programmes and Koeberg life extension projects have kickstarted our industry with new entrants qualifying for these opportunities.

Preferred strategy

During the 2007 nuclear build procurement programme, South Africa's industry was well aligned with the international nuclear vendors and their construction partners while localising their offers to Eskom. Being a turnkey engineer, procure and construct (EPC) solution, in partnership with competent local contractors, the risks experienced in our recent coal builds would have been mitigated. This remains the preferred project delivery strategy for nuclear energy.

The 2007 localisation target would have delivered a local spend of over R300bn over 15 years. This would have prevented the collapse of our construction and manufacturing sectors and significantly reduced today's high levels of unemployment. For the sake of the millions of unemployed people in South Africa, let us not deny our industry this opportunity again. Let's give our youth a chance to develop decent careers for themselves and create a future for this country.

Should the National Energy Regulator of South Africa (Nersa) approve the Section 34 Determination, we will have the added benefit of more nuclear vendors with SMRs included in our procurement process. Large-scale generation III reactors are through their ‘first of a kind’ (FOAK) phase, with many reactors successfully connected to the grid and delivering designed performance. Many large-scale Gen III reactors and SMR prototypes are under construction around the world, significantly reducing construction risks for South Africa.

A country that is setting a great example for South Africa on localising a nuclear new build is the United Kingdom (UK). They have similarities with our industry, having last built nuclear power plants almost four decades ago. Through an innovative government-led industrial support programme and a well-geared industry, the local content for the first pair of units reached above 60% and is currently on target. The UK’s nuclear fleet build programme will benefit from the experience and lessons learned from the first power plant, with significant reductions in build costs, schedule, and electricity tariffs.

Sustainable jobs

A nuclear build programme has far-reaching effects across the industry’s supply chain, from advanced education to apprenticeship training, with lasting jobs and careers in planning, regulatory affairs, siting studies, engineering, manufacturing, and construction disciplines, over the first 10 years, and operations & maintenance jobs over 60 to 80 years. Nuclear energy has no peers in creating decent sustainable jobs and should therefore be supported by our now transformed industries.

Participation in the nuclear industry supply chain requires much higher standards in quality, safety, and workmanship. Considering the scale of the opportunity at hand, gearing your business for these standards is justified. These nuclear energy qualifications will also open our local industry to previously denied export markets and other safety-class sectors like, aerospace, fourth industrial revolution (4IR) precision manufacturing and liquified natural gas (LNG).

The exact timing on preparing our local industry for a nuclear build programme is critical. Starting at the right time will optimise the local content of the build and not expose our industry to unnecessary risk. Our industry should be developed on a gradient, through nuclear industry orientation, management system assessments, and prequalification programmes.

ABOUT THE AUTHOR

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