Emerging nuclear energy technologies: An alternative path to Australia's energy security

December 18, 2023

Source: Unsplash

NUCLEAR ENERGY HAS A VITAL ROLE TO PLAY IN SUPPORTING OUR ENERGY TRANSITION, WRITES AMIR GAZAR FOR THE CENTRE FOR YOUTH POLICY.

The Labor government's policy on energy, which encompasses mostly intermittent sources of renewable energy such as new wind and solar farms, has only resulted in an increase in consumer prices and failed projects. Jeopardising Australia's national security and causing anger and frustration amongst the Australian public, especially vulnerable rural communities, are just some of the negative outcomes of this approach. For instance, the Chalumbin wind farm (86 turbines, 602 MW, capital cost $1 billion), whose proposal was approved by Environment Minister Tanya Plibersek and the Queensland Labor government, is under litigation by traditional owners as it is set to clear 1000 hectares of land that is important to the local indigenous community. This approach, coupled with the blatant opposition of senior

members of the government to a commercial nuclear program in Australia, has refuelled the nuclear debate.

The current opposition to nuclear energy primarily stems from fear of traditional nuclear reactors with 1960—1990 technology, where high-risk incidents have occurred over the past few decades. However, advances in modern nuclear generation over the last ten years have resulted in commercial nuclear technology with lower hazardous waste risk and shorter deployment time. For instance, advanced small modular reactors (SMRs) are broadly supported and invested in by the United States and Canada. SMRs are small reactors that are premanufactured and can be installed in small spaces speedily to support high-demand microgrids, for example, warehouses, hospitals, or manufacturing plants. Or they can replace controversial new renewable energy projects; for instance, an SMR can deliver the required level of energy with minimal land usage at a lower cost instead of the Chalumbin wind farm project. Which in turn can preserve farming and heritage land, protecting indigenous and farming communities.

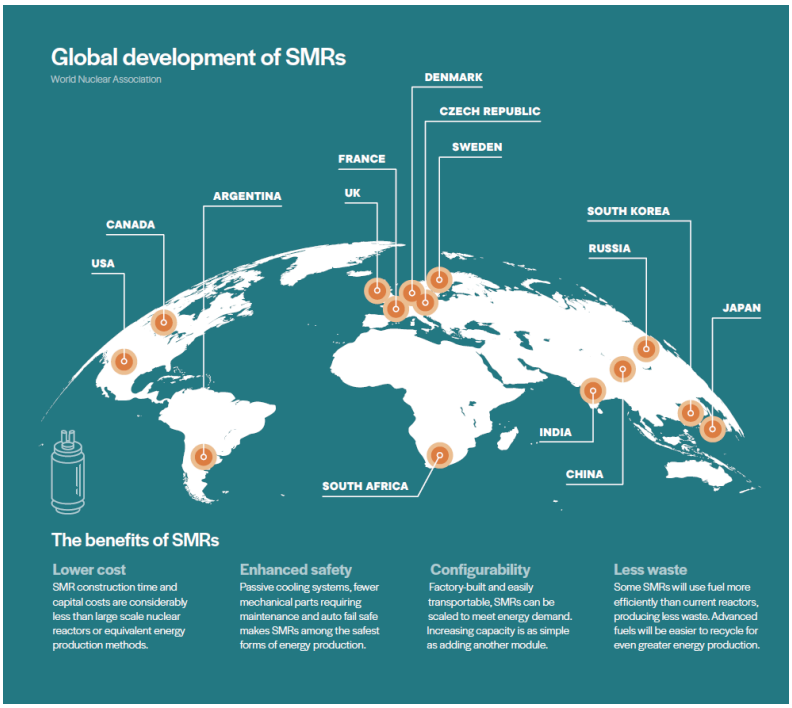
US infrastructure as a service provider Standard Power will develop two small modular reactor-powered facilities in Ohio and Pennsylvania to provide nearly 2,000 MW of clean energy for nearby data centres. The SMRs will be produced by NuScale Power Corporation, which as of October 2023, is the only technology provider and producer of SMRs that has obtained U.S. regulatory approval. ***Image: NuScale's VOYGR SMR. Credit: NuScale***

By dismissing nuclear energy's role in Australia, we will not only not be able to deploy SMRs to support our energy transition, but we will also have no market share when it comes to new nuclear technology globally. For instance, Canada, a Tier 1 nuclear country rich with fossil fuels, has a comprehensive SMR program. Canada aims to be an early mover in the global SMR market by capturing most of the market share in SMR. This will secure benefits in Canada, including science and technology, intellectual property, supply chain, and jobs.

Furthermore, SMRs are a perfect match for baseload supply to Australia's grid. Considering Australia's renewable transition is primarily reliant on wind and solar, which have an intermittent nature, they can compromise the grid's stability and Australia's energy security if not backed up by renewable baseload sources such as hydroelectricity or nuclear.

Developing the nuclear sector in Australia will not be an easy task; it requires not only government backing but also bringing various business sectors together. For instance, the mining sector will need to heavily ramp up mining of not only uranium but also critical minerals such as copper, zinc, and iron ore required for the

manufacturing of SMRs. Energy giants such as Chevron need to direct investment into SMRs as part of its New Energies initiative. Consequently, this will create a significant bottom-up economic movement where local communities are trained in operating and maintaining these new technologies, which in turn can benefit these communities directly in addition to direct decarbonisation benefits. Nuclear technology offers a promising avenue for job creation, especially for indigenous Australians.



Source: Small Modular Reactors in the Australian Context, 2nd Edition

The emergence of a new, untapped technology sector provides an opportunity for free training programs, such as TAFE courses, to equip indigenous Australians with the requisite skills. Which can help close the gap for these communities. Moreover, it avoids NIMBY (Not in My Backyard) issues, where the intermittent source of energy (wind or solar) is constructed on heritage or farming land, but most of that renewable energy is used in capital cities, hence providing minimal benefit to remote communities. Wind and solar projects often favour urban centres to the detriment of rural communities. In contrast, nuclear energy can provide a more equitable distribution of benefits.

The Albanese government, senior members of the Labor Party, and the Teal crossbench frequently dismiss the viability of having a commercial nuclear program in Australia. Conversely, Opposition Leader Peter Dutton and senior members of the Liberal Party frequently advocate for the advancement of new energy technologies, specifically nuclear energy, in Australia.

We need to reiterate this critical point of policy difference in our campaigns and talking points to ensure that young Australians hear our alternative point of view for a decarbonisation policy that is based on science and facts rather than the dominating Chernobyl or doomsday-type narratives parroted by the current government.

Furthermore, the importance of providing a detailed policy proposal was reiterated in the failed Voice Referendum, where we saw in the latest poll (Newspoll) prior to the referendum that 43 percent of Australians aged 18 to 34 were planning to vote no. This shows that not only is formulating a concise commercial nuclear policy based on the Liberal Party's principles vital, it is also what is best for young Australians. This is what young Australians want to see,

as we will have to live with the long-term implications of poor policymaking by the Labor government on decarbonisation.

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