RSIS S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES
Nanyang Technological University, Singapore

RSIS COMMENTARY

www.rsis.edu.sg No. 185 – 18 December 2023

The COP28 Pledge to Accelerate Nuclear Power Capacity

By Julius Cesar Trajano

SYNOPSIS

The inclusion of nuclear energy in the Global Stocktake of COP28 and the pledge of several countries to triple nuclear power capacity by 2050 signify growing support for its deployment. But as countries consider whether to use nuclear energy in their transition to clean energy, expanding nuclear capacity is an uphill task as there are major hurdles to overcome.

COMMENTARY

Nuclear power had its moment at the 28th Conference of the Parties to the UN Framework Convention on Climate Change (COP28) held recently in Dubai from 30 November to 12 December. For the first time, nuclear energy was included in the Global Stocktake, a final agreement that assesses where the world stands in achieving the objectives of the 2015 Paris Agreement. Signatories wanted to accelerate the deployment of low-emission technologies including nuclear energy to help achieve deep and rapid decarbonisation.

Furthermore, 22 countries led by the United States signed a joint non-binding declaration recognising the key role of nuclear power in reaching the goal of limiting temperature rise to 1.5 degrees Celsius. They pledged to triple nuclear energy capacity by 2050.

Renewed Optimism

Several countries also agreed to convene the first high-level Nuclear Energy Summit in March 2024 to highlight the new impetus for nuclear power and to jointly discuss solutions to remove obstructions to the tripling of nuclear capacity.

Meanwhile, the International Atomic Energy Agency (IAEA) issued a statement at COP28 urging the need to expand the use of nuclear power to fight climate change and to help build "a low carbon bridge" to the future. The statement was supported by some 40 countries, including those already operating nuclear power plants as well as the newcomers.

These countries acknowledged that all available low-carbon technologies, including nuclear power, should be recognised, and actively supported. Developing them for transition to a "net zero" world requires the continuous operation of the existing fleet of nuclear power plants, building a new generation of reactors, and investing in the emerging Small Modular Reactor (SMR) technology.

The urgent need to triple nuclear power capacity in order to reach global net-zero emissions by 2050 is backed by the comprehensive scenario assessments of the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change.

It should be noted that at COP28, nuclear power was promoted as one of the zero-carbon energy sources and was not pitted against other non-carbon sources. Nuclear energy is not the *only* solution to climate change although it has an important role to play, together with other clean energy sources, in mitigating climate change and addressing energy insecurity.

Nuclear in Clean Energy Transition

Strengthening energy security, in the context of global clean energy transition, requires significant financial and technological investments in zero-carbon energy sources. However, transitioning away from dirty fossil fuels and guaranteeing stable and affordable electricity supply around the clock would be difficult to achieve if the world relies solely on fluctuating renewables.

In the global transition to clean energy, the complementary roles of both nuclear power and renewable energy can no longer be ignored. In fact, the latest global energy forecast indicates that nuclear power and renewables "dominate" electricity demand growth from 2022 to 2025, together meeting more than 90 per cent of additional global power demand for the next three years.

The Asia-Pacific region has seen renewed interest in nuclear power. In particular, Northeast Asian countries are involved in business and technological investments in

developing SMR projects while Southeast Asian countries, as possible commercial users, are exploring SMRs as a future clean energy source.

East Asia hosts 43 per cent of new nuclear reactors, with three quarters in China alone. The governments of Japan and South Korea are adopting new policies to expand the share of nuclear energy and reversing anti-nuclear pronouncements which were triggered by the 2011 Fukushima nuclear accident.

In February 2023, Japan's Cabinet officially adopted the "green transformation" policy that permits the operation of nuclear reactors beyond their current 60-year limit alongside the construction of new nuclear reactors. South Korea's government issued a new energy policy that aims to maintain the share of nuclear power in the country's energy mix at a minimum of 30 per cent by 2030. China is already building more nuclear reactors, including its own SMR technology.

Key Challenges

Tripling nuclear capacity by 2050 will, however, be an uphill task. There are major hurdles, including the creation of an enabling policy environment with updated domestic regulatory and governance frameworks, securing international cooperation and supportive public opinion, and dealing with politicised nuclear issues, amongst others.

Global cooperation is essential, especially in harmonising regulatory approval rules worldwide to make it easier for countries to purchase or sell SMR technologies. But such cooperation can be hampered by intense technological and geopolitical rivalries among nuclear powerhouses.

China and Russia have not signed the joint declaration initiated by the US on tripling nuclear capacity. Like the US, both countries are at the forefront of SMR development and are aspiring to deploy and export the world's first commercial onshore SMR.

Current nuclear safety standards do not cover potential accident scenarios and hazards that would only be relevant to SMRs. In this regard, while existing global safety and security regimes may seem to be adequate for now, the harmonisation of regulatory guidelines and requirements wherever possible, as well as the possible harmonisation of regulatory licensing and approval processes, should be achieved for the safe and secure deployment of SMRs. There are presently more than 70 SMR designs under development in 18 countries, some of them in the Asia-Pacific with advanced reactor technologies. A majority of these designs have yet to be licensed.

Politicising nuclear issues can also muddle the pathway to enhanced nuclear safety. One example is the decision of Japan to release treated water from the Fukushima Daiichi Nuclear Power Station into the Pacific Ocean. This was opposed by China,

which immediately banned all imports of Japanese seafood, notwithstanding safety assurances and constant monitoring by the IAEA.

Another obstacle that needs to be removed is the large upfront cost of building large, conventional nuclear power plants. The shift to a cleaner, more secure energy mix will require not just SMRs but also large reactors to be successful. Apparently, other countries that signed the pledge to triple the use of nuclear energy intend to build large reactors.

Conclusion

It is noteworthy that the pledge has called on the World Bank, international financial institutions, and regional development banks to include nuclear energy in their organisations' energy lending policies as needed. Financial and development assistance from such institutions would be critical to help developing countries gain access to a range of clean energy sources, including the construction of large nuclear power plants.

Public opposition has been the usual stumbling block to expanding the use of nuclear power. But as countries grapple with the impacts of climate change and energy insecurity issues, public opinion on nuclear energy has turned positive.

If the pledge to triple the use of nuclear power by 2050 is achieved and key challenges to it are removed, it would result in nuclear power generating about one-third of all global electricity. This will be a major step towards the phasing down of fossil fuels.

Julius Cesar Trajano is a Research Fellow at the Centre for Non-Traditional Security Studies, S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University (NTU), Singapore.