RSIS S. RAJARATNAM SCHOOL OF INTERNATIONAL STUDIES
Nanyang Technological University

RSIS COMMENTARY

www.rsis.edu.sg No. 058 – 17 March 2016

Five Years After Fukushima: Southeast Asia's Nuclear Dilemma

By Julius Cesar I. Trajano

Synopsis

Since the devastating Fukushima nuclear disaster in 2011, debates have been ongoing among key stakeholders (governments, nuclear vendors, NGOs and academe) on whether Southeast Asia should use or reject nuclear power.

Commentary

FIVE YEARS ago, in March 2011, a powerful earthquake off Japan's northeast coast triggered a massive tsunami that led to a nuclear disaster at the Fukushima Daichi nuclear power plant. Unsurprisingly, that disaster prompted numerous national governments, including in Asia, to re-examine their nuclear power development plans and safety regulations. Even in Japan until today, its nuclear industry and government are struggling to revive all of the country's nuclear power plants (NPPs). Just recently, a local court ordered the shutdown of two nuclear reactors, citing insufficient safety measures put in place. Despite new safety standards introduced in 2013, much of the public remains wary. Only a handful of the 43 operable reactors in Japan have implemented the new post-Fukushima safety regulations.

Nonetheless, as the world commemorates the fifth anniversary of the Fukushima disaster, there is now a significant shift from Europe to Asia in nuclear power production, led by China. While the Fukushima accident in 2011 tempered what could have been an unprecedented nuclear energy growth in the region, the global nuclear industry is now pinning its hopes on Asian economies. In Southeast Asia, Vietnam is set to commission its first nuclear power plant (NPP) by 2025 while Indonesia has long been preparing for the possible utilisation of nuclear power.

Addressing the challenges

However, there are still significant regional concerns over nuclear safety and security in Southeast Asia. As some ASEAN countries plan to pursue nuclear power, they need to create and maintain a pool of local nuclear professionals with actual relevant experience in the nuclear industry. Furthermore, well-trained and experienced nuclear professionals are also crucial in institutionalising competent and independent safety regulatory bodies. The region currently does not have enough human resources that can safely operate its future NPPs.

Given the growing need to further enhance Indonesia's human resource development programme and expertise in operating a nuclear reactor, Indonesia's National Nuclear Energy Agency (BATAN) plans to construct the Indonesia Experimental Power Reactor (I-EPR) to prepare for the possible future utilisation of nuclear power. BATAN also regularly cooperates with the local regulatory body BAPETEN and with the IAEA to boost nuclear safety measures in the country's research reactors. In Vietnam, various programmes have been adopted to address the lack of nuclear professionals in the country. The Nuclear Energy Specialist Training (NEST) programme was introduced in 2014 to train young leaders for Vietnam's nuclear power programme.

Embracing nuclear power

In view of the challenges to nuclear power development plans, ASEAN states interested in using nuclear energy need to assure their neighbours that they can safely operate their NPPs in the future. To nuclear energy companies and vendors, Southeast Asia is ready to pursue nuclear energy and should do so. They claim that nuclear energy can help Southeast Asian nations achieve the twin goals of strengthening energy security and reducing greenhouse gas emissions.

The nuclear industry is confident and optimistic that countries in the region can safely use nuclear power given the significant improvements made in nuclear safety since the Fukushima accident. The lessons learned from the accident have helped nuclear companies intensify the safety and security features of nuclear reactors. They also cite the deep geological nuclear waste disposal technology currently being developed in Finland and France to serve as a permanent solution to the long-standing problem of accumulating high-level radioactive waste.

Rejecting nuclear power

On the other hand, to anti-nuclear NGOs, Southeast Asia needs to be ready for a nuclear catastrophe if countries in the region build NPPs. Contrary to the claims by nuclear companies, anti-nuclear NGOs deem nuclear power an unclean source of energy as it generates radioactive waste. It is also extremely dangerous as a single accident in one NPP can affect the wider region. They also cite interminable radioactive nuclear waste as the primary reason why ASEAN states should reject nuclear power. Nuclear waste remains radioactive for thousands of years, making nuclear power inherently and irredeemably hazardous.

Anti-nuclear NGOs strongly encourage countries to invest in the development of renewable energy, which has emerged as a safe, flexible and easily deployed

energy source with a lower carbon footprint than nuclear power. They assert that as most governments in the world are phasing out nuclear energy and investing in renewable energy and energy efficiency technologies, Southeast Asia should follow this trend and reject nuclear energy.

If people adopted sustainable energy efficiency measures, they argue, this would meet 20 per cent of global energy demand, making nuclear energy irrelevant.

However, phasing out nuclear power has proven to be too expensive. For instance, Germany's plan to transform its energy system to one reliant on renewable power as it phases out nuclear energy could cost up to €1 trillion. Renewables and nuclear energy should not be viewed as competing energy sources. They can co-exist and complement national energy mixes. Nuclear energy allows nations to buy time while waiting for renewable technologies to be fully developed.

Role of the scientific community

There are large sections of the public with no firm views for or against nuclear energy; the attitudes of this middle ground will be critical. The scientific community can help the public and governments understand the recent updates on nuclear power, the status of the crippled Fukushima reactors and their implications for the region.

The scientific community has an important role in shaping nuclear energy policies in Southeast Asia. Scientists need to engage in active research in nuclear energy policy in order to gather solid evidence that will form part of government decisions. They have to publish policy papers, briefs, statements; participate in public education and debates; and communicate with governments. They also have to engage local and international nuclear experts to study nuclear energy issues in their own national context. It is important for both academic and scientific communities to contribute to the public debate and raise awareness of recent developments in nuclear energy that will affect policy choices in the region.

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