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SYNOPSIS

Nuclear terrorism in Southeast Asia remains a low-probability, high-impact threat. Although the Philippines has made progress through regulatory reforms such as PhilATOM and successful uranium seizures, regional gaps in border monitoring and treaty participation persist. Strengthening ASEAN cooperation and institutional capacity is vital to securing the region's growing nuclear energy ambitions.

COMMENTARY

Ukrainian President Volodymyr Zelenskyy's recent accusation that Russia is engaging in "nuclear terrorism" underscores rising global concern over the weaponisation of radiological risks short of full-scale nuclear war. In Southeast Asia, where such threats are often framed as low-probability but high-impact, the Philippines' little-known 2024 seizures of depleted uranium suggest these incidents are not isolated, but part of a regional security challenge that warrants closer scrutiny.

Terrorist acts involving nuclear materials need not reach the scale of Cold War nuclear fears to cause strategic disruption. Today's terrorists can create widespread chaos without a fully developed nuclear weapon by using radiological dispersal devices, or "dirty bombs", assembled from nuclear materials or radioactive sources used in medicine or industry. Attacks on existing nuclear facilities could trigger mass panic, economic paralysis, and long-term displacement.

Historical evidence illustrate the scale of disruption that can occur even without malicious intent. The disasters at Chernobyl and Fukushima demonstrate that radiation exposure, economic disruption, and psychological trauma can persist for

decades. A terrorist attack could be designed to amplify these consequences, increasing casualties and magnifying social and economic disruption.

In Southeast Asia, where high urban density, porous maritime and land borders, and uneven regulatory capacity persist, the consequences of a terrorist nuclear attack could be particularly severe.

The Philippines' Evolving Nuclear Security Framework

The Philippines has taken important steps to strengthen its nuclear security governance architecture. Central to this progress is the passage of the Philippine National Nuclear Safety Act last year, which establishes the Philippine Atomic Energy Regulatory Authority (PhilATOM) as an independent nuclear regulator. This reform addresses a long-standing institutional challenge, in which the Philippine Nuclear Research Institute (PNRI) previously held both promotional and regulatory responsibilities, an arrangement inconsistent with international best practices that call for clear regulatory independence.

PhilATOM's creation places the Philippines on firmer institutional footing as the country explores deploying nuclear energy. Alongside its involvement in major international nuclear safety and security treaties, these reforms signal Manila's commitment to aligning its domestic regulatory system with global nuclear governance standards.

At the same time, the Philippines has benefited from ongoing international capacity-building partnerships, particularly with the International Atomic Energy Agency (IAEA) and the United States Department of Energy. This cooperation has been critical in training customs officials, law enforcement agencies, and regulators in nuclear security, transport safety, and radiological emergency response.

Operationally, Philippine agencies have also demonstrated growing capability in detecting and responding to radiological threats. The PNRI's Mobile Expert Support Teams provide radiation detection and monitoring at major public events, an increasingly important capability in crowded urban settings. One notable example is the annual *Traslacion*, held during the Feast of Jesus Nazareno in Manila, which attracts millions of devotees in one of the country's largest religious processions.

The Depleted Uranium Case

In 2024, Philippine authorities uncovered one of the country's most significant radiological trafficking incidents when more than 100 kilograms of depleted uranium were seized during coordinated National Bureau of Investigation (NBI) operations in Pasay City, Cagayan de Oro, and Mandaue City.

It was revealed that nuclear material had quietly circulated across multiple urban centres before being intercepted. The PNRI provided critical technical support by identifying the isotopes involved, confirming contamination levels, and ensuring the safe handling of the seized material. This demonstrated the country's ability to respond effectively when such incidents are detected.

That said, the case also exposed troubling vulnerabilities. It remains unclear how this nuclear material initially entered the Philippines, how it moved between multiple cities undetected, or whether the individuals involved fully understood its potential hazards. While the swift inter-agency response demonstrated operational readiness, the incident underscores the need to strengthen border monitoring, expand radiation-detection coverage, and further build institutional capacity as the Philippines and ASEAN prepare for increased movement of nuclear and radiological materials.

Challenges and Strategic Vulnerabilities

Despite its progress, the Philippines continues to face several structural challenges that could weaken its nuclear security posture if left unaddressed.

First, human resource capacity remains limited. The current regulatory workforce is small relative to the expanding scope of responsibilities associated with nuclear governance. Within the PNRI's Nuclear Regulatory Division, only a small number of personnel specialise in nuclear security and safeguards. As PhilATOM expands its mandate, sustained recruitment, training, and professional development will be essential, but these processes take time, given the specialised technical expertise required.

Second, border control and radiation monitoring infrastructure remain unevenly distributed. The 2024 seizure of depleted uranium raises serious questions about how this nuclear material was able to bypass detection and enter the country undetected. Ensuring comprehensive monitoring across airports, seaports, and other entry points will become increasingly important, particularly as the movement of nuclear materials is expected to increase alongside regional nuclear energy development.

Third, gaps remain in treaty participation. Although the Philippines is a party to several key international nuclear security instruments, it has yet to ratify the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT). Ratifying this convention would strengthen the country's legal framework for prosecuting nuclear-related offences and promote greater international cooperation to prevent nuclear terrorism.

Among these, broader regional vulnerabilities persist. ASEAN countries have varying levels of regulatory capacity, legal frameworks, and technical readiness for nuclear governance. Nuclear materials transported across Southeast Asia may pass through multiple jurisdictions, each with differing levels of oversight and enforcement capacity. Without greater regulatory harmonisation, the region risks becoming vulnerable to exploitation by criminal trafficking networks or terrorist groups.

These vulnerabilities highlight a fundamental reality: nuclear security cannot be treated solely as a national responsibility, because weaknesses in one ASEAN member state could create shared vulnerabilities across the entire region.

Policy Implications for the Philippines and ASEAN

As the Philippines moves closer to potential nuclear power adoption, several policy priorities emerge that are relevant not only to the country but also to the broader ASEAN region.

First, strengthen PhilATOM as an independent and well-resourced regulatory authority.

The Philippines must invest significantly in workforce development, technical expertise, and stable funding mechanisms to ensure that PhilATOM can effectively perform its regulatory and oversight functions. A credible and competent nuclear regulator is the foundation of any safe nuclear energy programme and is critical to maintaining public confidence.

Second, institutionalise whole-of-government coordination and operational readiness.

The depleted uranium interdiction shows that Philippine agencies can collaborate effectively when required. However, as nuclear-related activities expand, such coordination must evolve into a sustained and institutionalised system, that includes customs authorities, law enforcement agencies, local governments, and the health and transport sectors.

Third, enhance border monitoring infrastructure and strengthen regional cooperation.

Radiation detection systems should be deployed and maintained at all major points of entry. At the regional level, ASEAN can leverage platforms such as the ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM) to promote regulatory harmonisation, facilitate information sharing, and support member states with limited technical capacity.

With an estimated 8.5 gigawatts of nuclear power capacity projected across Southeast Asia by 2037, ASEAN's collective security will increasingly depend on stronger regional coordination, including joint exercises, shared incident-response mechanisms, and cooperative frameworks for the safe transport of radioactive materials.

As a potential early adopter of nuclear energy, the Philippines is well-positioned to help inform this regional transition by sharing regulatory experience, crisis-management lessons, and institutional insights derived from the development of PhilATOM.

Conclusion

Countries of Southeast Asia are gradually considering a nuclear energy future. The Philippine experience demonstrates that building a nuclear security architecture is achievable despite ongoing challenges. As the Philippines expands its nuclear

ambitions, the region must recognise that national-level nuclear security issues cannot be considered in isolation.

The region's energy security and resilience against nuclear terrorism will ultimately depend on how effectively ASEAN states harmonise regulatory standards, strengthen border controls, and close governance gaps that malicious actors could exploit. At this juncture, nuclear security is no longer merely a technical concern; it has become a strategic issue for Southeast Asia's stability, economic development, and long-term safety.

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