Committee: IAEA

Agenda Item: Addressing the Challenges of Nuclear Energy Development in Politically Unstable Regions

Student Officer: Ceyda Şekerler & Derin Şener - Deputy Chair

Introduction

Nuclear energy is an immensely powerful, low-carbon, and long-term resource, and since its discovery in 1951, it has been used worldwide for energy production. However, as nuclear energy possesses numerous risks, its correct usage relies on a combination of high political stability, strong institutions, and strict government regulations. Otherwise, as observed throughout history, collateral destruction occurs, damaging the nation's energy security, risking the lives of workers, and rendering its surroundings uninhabitable. Politically unstable regions often lack critical requirements for safe nuclear energy production, including consistent political leadership, strong regulatory frameworks, and reliable security systems. Thus, atomic development in these regions becomes a security, safety, and humanitarian risk. This issue gains importance as global demand for clean and renewable energy rises, as nations look for alternatives to fossil fuels. The advancement of technology has succeeded in reducing the overall, quite extensive, cost of nuclear energy infrastructure and production, establishing the opportunity for developing countries with unstable governments to adopt nuclear energy. Furthermore, intensified political competition has decreased the reliability of nuclear energy programs of leading countries, including the United States of America, Russia, and China. Addressing this issue, therefore, carries great urgency.

Definition of Key Terms

Nuclear Energy: A form of energy released from the nucleus, the core of atoms, made up of protons and neutrons

Political Stability: A stable political object is defined as one that possesses the capacity to prevent its own forced non-survival.

Nuclear Security: The prevention and detection of and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear materials, other radioactive substances or their associated facilities

Nuclear Proliferation: The spread of nuclear weapons, nuclear weapons technology, or fissile material to countries that do not already possess them

Dual-use: Refers to a specific set of nuclear materials after WWII that could be used for both military (weapons) and civilian (energy) purposes.

General Overview of the Issue

The challenge of development in unstable regions has many sides. The challenge is a meeting point where growing energy hopes meet a changing security situation. Despite the risk, unstable countries push for energy. These countries want energy self-reliance from the fossil fuel markets. They also feel the pressure from other countries to meet climate targets and seek the status that comes with advanced technology. A major danger lies in the gap between the requirements of nuclear infrastructure and the governing capacity of an unstable state. Safe nuclear programs require funded, strong regulators. In many regions, regulators often become victims of cronyism, deep corruption, or chronic underfunding. When regimes prioritize power production or political image over safety rules, they cut corners in construction, maintenance, and operator training. Political turmoil commonly causes brain drain, which makes qualified scientists leave the country. This leaves facilities run by under-qualified personnel, raising the risk of accidents that stem from error or technical failure.

Beyond these safety concerns, unstable regions often host non-state armed groups and terrorist organizations. Such groups create nuclear security risks. The risk grows when valuable nuclear materials are placed in unstable areas, making them high-value targets for sabotage. A sabotage attack on a reactor's cooling system or containment structure could release dangerous amounts of radiation, which could be used as a terror weapon. Unstable environments with weak rule of law also raise the risk of insider threats and assaults aimed at stealing radioactive materials. Although obtaining enough fissile material for a crude nuclear weapon is technically difficult, stealing widely used medical or industrial radioactive isotopes to create a "dirty bomb" (radiological dispersal device) remains a highly plausible scenario in states with compromised security apparatuses.

The global geopolitical landscape makes this problem even harder. The landscape is shaped by competition among suppliers: mainly Russia, China, and Western nations. Nuclear suppliers seek to sell their technology to the developing world. This competition can lead to a race to the bottom in safety rules. Supplier nations, eager for contracts or geopolitical influence, may downplay risks when dealing with governments or offer deals without demanding changes in how the receiving country manages safety and governance. The international community also faces the persistent problem of proliferation. Nuclear energy infrastructure, especially uranium enrichment, is inherently dual-use and can be diverted to produce weapons-grade material. A regime facing threats or external rivals may secretly convert a peaceful energy program into weapons development as an insurance policy for regime survival. Unstable political environments reduce the ability of monitoring bodies like the IAEA to maintain consistent access to nuclear materials or preserve continuity of knowledge about those materials, making oversight far more difficult.

Timeline of Important Events

Date:	Event:
7 June 1981	Israel bombs Iraq's Osirak nuclear reactor
10 April 1994 - 12 December 2002	North Korea blocks IAEA inspections
9 October 2006 - Present	DPRK conducts nuclear tests, illustrating the danger of nuclear development in unstable states
14 July 2015	JCPOA (Joint Comprehensive Plan of Action) expands IAEA access to Iran's nuclear program
24 February 2022 - Present	The war in Ukraine threatens nuclear facilities, including Zaporizhzhia

Related Documents

Nuclear Safety, Security and Safeguards in Ukraine – Summary Report by the Director General, February 2022–February 2023

Report by the Director General to the Board of Governors, GOV/2022/52, on Nuclear Safety, Security and Safeguards in Ukraine

Report by the Director General to the Board of Governors, GOV/2022/66, on Nuclear Safety, Security and Safeguards in Ukraine

"Nuclear Safety, Security and Safeguards in Ukraine": Report by the Director General, 24 February–28 April 2022 (UN-digitallibrary record)

IAEA Director General Statement to United Nations Security Council — 25 January 2024

Past Solution Attempts

Over the years, the IAEA has strengthened its safeguards and inspection mechanisms to address the risks posed by politically unstable regions. Special inspections, continuous monitoring, and remote surveillance have been implemented in countries like Iran and North Korea, where governance challenges increase the risk of nuclear material diversion. The thought process behind these measures was to prevent nuclear proliferation and ensure nuclear energy programs remain peaceful, even when domestic political instability could otherwise compromise oversight. This means that technical monitoring is effective only if the host state cooperates; in North Korea, inspections were limited or blocked, showing that safeguards alone cannot fully prevent nuclear risk in highly unstable regions.

Another approach has been regional nuclear security assistance and technical support programs. Through initiatives such as the IAEA's Nuclear Security Training and Supporting Centres, unstable states have received help in developing robust regulatory frameworks, improving personnel training, and upgrading physical security at nuclear facilities. For example, Libya benefited from post-conflict nuclear material recovery programs which reduced the risk of unauthorized use or accidents in an unstable environment.

International legal and political frameworks have also played a key role. The Nuclear Non-Proliferation Treaty (NPT), IAEA safeguards agreements, and UN Security Council resolutions have been employed to enforce compliance and regulate nuclear energy development in regions with weak governance. These frameworks create a binding structure to ensure that nuclear programs adhere to safety and non-proliferation standards, also in volatile political conditions.

Emergency preparedness and contingency and direct material planning have been critical in mitigating risks to both populations and nuclear infrastructure. IAEA guidelines and host country protocols have established strategies for crisis response, including evacuation procedures, remote monitoring, and coordination with neighboring states. A recent example is the ongoing monitoring and protective measures at the Zaporizhzhia nuclear power plant during the war in Ukraine, demonstrating how emergency planning can reduce potential harm in conflict zones.

Diplomatic agreements and direct material control measures have been utilized to manage nuclear risks in unstable regions. The 2015 JCPOA with Iran clearly illustrates how diplomacy, combined with expanded IAEA access, can maintain safe nuclear energy development while limiting proliferation risks. Similarly, programs that repatriate uranium or highly enriched nuclear material from unstable states (such as Libya and former Soviet countries) have helped prevent theft, sabotage, or misuse, highlighting the importance of both political and technical interventions in addressing challenges.

Possible Solutions

Addressing the challenges of nuclear energy development in politically unstable regions requires a multidimensional approach grounded in political stability, regulatory reliability, technical safety, and international cooperation. Historically, nuclear programs have struggled in regions experiencing governance upheaval, conflict, or institutional weakness, showing that long-term progress depends on building durable structures rather than temporary fixes.

From a political perspective, stabilizing the environment surrounding nuclear programs has proven essential. Political instability often reduces transparency, disrupts communication with oversight agencies, and also heightens the risk of nuclear öaterial diversion. Confidence-building mechanisms, strengthened diplomatic channels, and expanded access for international inspectors have been shown to increase predictability and reduce misinformation during periods of tension. Evidence from previous agreements demonstrates that sustained international engagement can reinforce non-proliferation norms and encourage safer program development, although such outcomes depend heavily on the continuity of political commitments.

In terms of regulatory development, many politically unstable regions lack independent, well-resourced nuclear regulatory activities. Successful cases of nuclear energy adoption consistently involve strong regulatory bodies with clear mandates and continuşty across political cycles. Capacity building programs (such as long-term partnerships, regulatory training initiatives, institutional support) have historically improved regulatory resilience. Ensuring that regulatory systems can withstand political change ia key factor in preventing safety lapse or oversight failures.

The technical dimension also plays a central role. Nuclear facilities require stable infrastructure, including reliable electricity grids, emergency systems, cybersecurity frameworks, and physical protection measures. In unstable regions, disruptions to basic infrastructure significantly increase the risk of accidents or security breaches. Past efforts to improve technical reliability have included the installation of redundant power supplies, upgrades to physical protection systems, deployment of remote monitoring technology, and strengthened cybersecurity protocols. These measures reduce vulnerability but cannot fully compensate for weaknesses caused by ongoing instability.

Economically, many unstable regions pursue nuclear energy to achieve energy security or reduce dependence on external sources. However, limited financial mechanisms have been used to stabilize nuclear projects under uncertain conditions. Evidence suggests that linking financial support to transparent safety benchmarks increases the likelihood of maintaining high safety standards despite political fluctuations.

A significant challenge arises from security risks, as nuclear facilities in unstable regions may be exposed to sabotage terrorism, or military conflict. Incidents in conflict zones have demonstrated how nuclear installations can become strategic targets creating severe safety and security threats. Approaches to reduce such risks have included enhanced physical protection, international monitoring missions, and the development of norms discouraging attacks on civilian nuclear infrastructure. These strategies aim to limit the possibility of intentional harm although their effectiveness depends on broader convict dynamics.

Emergency preparedness and cross-border are essential for mitigating transnational risks. Nuclear accidents or safety breaches in unstable regions have the potential to affect neighboring countries through environmental or economic pathways. Improved early-warning mechanisms, regional communication channels, coordinated emergency response systems, and shared environmental monitoring have been identified as critical tools. Historical examples show that regional cooperation increases collective resilience by ensuring that all affected states have access to timely information and coordinated response options.

Overall, potential solutions must integrate political stabilization, regulatory development, technical safeguards, economic support mechanisms, and security measures. Experience shows that progress in one area is insufficient without reinforcement from the others. The most sustainable approaches address both the immediate risks posed by instability and the long-term institutional foundations required for safe nuclear energy development.

Useful Links

The Peaceful Use of Nuclear Energy: The Contribution of the IAEA — a foundational statement by the International Atomic Energy Agency (IAEA) on its role in promoting peaceful nuclear applications https://www.iaea.org/newscenter/statements/peaceful-use-nuclear-energy-contribution-iaea?utm_source

IAEA Nuclear Energy Series — a series of detailed technical and policy reports covering nuclear-energy topics such as safety, security, and safeguards https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1598_web.pdf?utm_source

IAEA Factsheet: Nuclear Security Series — summarises the IAEA's nuclear security framework and guiding principles for securing nuclear materials and facilities https://www.iaea.org/sites/default/files/23/02/factsheet_nuclear-security-series.pdf?utm_source

"Nuclear Safety, Security and Safeguards in Ukraine": Report by the Director General) — provides the IAEA's official findings and view on nuclear safety and risk-management in wartime Ukraine https://www.sipri.org/sites/default/files/2023-03/rpp_2303_ukraine_intl_security_0.pdf?utm_source

"Chornobyl Radiation Spikes Are Not Due to Military Vehicles Disturbing Soil" — a scientific article (on arXiv) which investigates and challenges claims about radiation increases in the Chernobyl Exclusion Zone following military vehicle movement https://arxiv.org/abs/2204.03157?utm_source

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