



India's Position in the Shifting Nuclear Order

This editorial is based on "[Behind the making of the global nuclear \(dis\)order](#)" which was published in The Hindustan Times on 03/12/2024. The article brings into picture the unraveling of the global nuclear order, as key powers and ongoing conflicts like Russia-Ukraine and Israel-Hamas challenge arms control norms, with nuclear weapons used for geopolitical leverage. For India, this emerging disorder poses a complex strategic challenge in a volatile, multi-nuclear neighborhood.

For Prelims: [Global nuclear order](#), [Russia-Ukraine](#), [Israel-Hamas conflict](#), [Hypersonic glide vehicles](#), [Non-Proliferation of Nuclear Weapons](#), [Agni-V intercontinental ballistic missile](#), [Conference on Disarmament](#), [International Atomic Energy Agency](#), [International Atomic Energy Agency](#), [Kudankulam nuclear power plant](#), [Zaporizhzhia, Ukraine](#)

For Mains: India's Stance Regarding the Use of Nuclear Weapons, Threats that India Faces Due to Shift in Global Nuclear Order.

The [global nuclear order](#) is rapidly unraveling, with key powers like **Russia, China, the US, and emerging actors challenging long-standing norms** and arms control agreements. The [Russia-Ukraine](#) and [Israel-Hamas conflict](#) has dramatically exposed the fracturing of international nuclear restraint, with nuclear weapons being used as tools of geopolitical coercion and battlefield intimidation. For India, this emerging nuclear disorder presents a **particularly complex challenge**, with potential pressures on its strategic posture from an increasingly **volatile and multi-nuclear neighborhood**.

How Global Nuclear Order is Evolving?

- **Geopolitical Rivalries Reshaping the Nuclear Balance:** The intensification of U.S.-China strategic competition is **redefining nuclear postures globally**.
 - China's rapid nuclear buildup, including its development of [hypersonic glide vehicles](#), signifies a shift from a minimum deterrence strategy. This challenges the **U.S.'s deterrence capability in the Indo-Pacific**.
 - As of 2024 **China reportedly possesses 500+ operational nuclear warheads**.
 - U.S. military aid to Taiwan and enhanced **AUKUS cooperation** reflect counter-balancing efforts in the region.
- **Technological Disruptions Amplifying Strategic Instability:** Advancements in **Artificial Intelligence (AI)**, [cyberwarfare](#), and **space-based systems** have increased vulnerabilities in nuclear command and control.
 - Emerging technologies undermine traditional doctrines of [Mutually Assured Destruction \(MAD\)](#).
 - For example, **Elbit Systems, an Israeli defense technology company** with a significant presence in the UK, uses AI to develop advanced defense systems

- In June 2024, Slingshot Aerospace announced a partnership with **DARPA** to develop **Agatha, an AI-powered system designed to identify potentially dangerous space vehicles** within large satellite constellations.
- **Rise of Nuclear Arm Race:** The resurgence of the nuclear arms race is evident in the **fragmentation of the Non-Proliferation Treaty (NPT) framework**, with growing non-compliance and diminished credibility.
 - **Iran's nuclear enrichment activities** exceeding the Joint Comprehensive Plan of Action (JCPOA) limits have emboldened other nations to question the treaty's efficacy.
 - Regional tensions further exacerbate the issue, as the **Indo-Pak rivalry intensifies with Pakistan's tactical nuclear weapons** focus and India's development of the **Agni-V ICBM**, while **China's rapid buildup to 500 nuclear warheads surpasses both India's 172 and Pakistan's 170.**
- **Growing Cyber Threat to Nuclear Infrastructure:** Nuclear security concerns are rising due to the potential **to exploit weak cyber safeguards.**
 - Cyberattacks on nuclear infrastructure and proliferation of dual-use technologies increase the threat of nuclear terrorism.
 - In 2009, **Stuxnet malware** reportedly destroyed nearly **one-fifth of Iran's nuclear centrifuges** and was allegedly linked to the CIA and Mossad.
- **Erosion of Multilateral Arms Control and Disarmament Institutions:** Global arms control regimes are weakening as major powers undermine multilateral agreements.
 - The **Conference on Disarmament (CD) has been stalled for decades**, and the **Treaty on the Prohibition of Nuclear Weapons (TPNW)** is getting ignored by nuclear-armed states.
- **Integration of Civilian Nuclear Programs in Military Strategies:** The dual-use nature of nuclear technology is increasingly exploited.
 - Nations like **South Korea are enhancing civilian nuclear capabilities**, which could serve as latent deterrence mechanisms.
 - Also, **Japan** has announced its intention to develop and build next-generation nuclear power plants in a major shift from the country's **post-Fukushima disaster policy.**

What is India's Stance Regarding the Use of Nuclear Weapons?

- **Peaceful Use of Nuclear Energy:** India strongly advocates for the **peaceful use of nuclear energy for power generation, medicine, and industry.** It emphasizes nuclear energy as a sustainable solution to meet its growing energy demands while reducing carbon emissions.
 - As of 2023, India operates 22 nuclear reactors with a total capacity of 6,780 MW.
 - India is a **signatory to the Convention on Nuclear Safety.**
- **Commitment to No First Use (NFU) Policy:** India adheres to a **No First Use policy**, ensuring that nuclear weapons are only used as a deterrent and in retaliation to a nuclear attack.
 - **India's 2003 Nuclear Doctrine reaffirmed the NFU policy**, although it left room for changes in response to evolving threats.
 - India's nuclear weapons program is aimed at maintaining credible minimum deterrence, **ensuring strategic stability.**
- **Strategic Autonomy in Non-Proliferation:** India is **not a signatory to the Nuclear Non-Proliferation Treaty (NPT)** but aligns with its goals while rejecting its discriminatory nature.
 - India was **granted a waiver by the Nuclear Suppliers Group (NSG) in 2008**, allowing it to **engage in nuclear commerce** despite being a non-NPT signatory.
 - India has signed civil nuclear cooperation agreements with **France, the United States, Russia, Namibia, Canada, Argentina, Kazakhstan etc.**
- **Active Role in Global Non-Proliferation Initiatives:** India supports non-proliferation efforts through strong domestic safeguards and international collaboration.
 - It has committed to the **International Atomic Energy Agency (IAEA) safeguards** for its civilian nuclear facilities.
 - India voluntarily placed some civilian nuclear facilities under IAEA safeguards.
- **Balancing Civilian and Strategic Needs:** India maintains a careful balance between its **civilian nuclear energy program and its strategic nuclear arsenal.**
 - India's indigenous **three-stage nuclear power program leverages thorium reserves**, emphasizing self-reliance in civilian nuclear energy.
 - Strategic facilities like **Bhabha Atomic Research Centre (BARC)** underscore India's

emphasis on indigenous development.

- **Emerging Role in Climate Goals:** India increasingly **views nuclear energy as critical to achieving its climate commitments under the [Paris Agreement](#)**.
 - It plans to expand its nuclear energy portfolio as part of its net-zero emissions goal by 2070.
 - **Nuclear power contributes about 3% of India's electricity generation** but is projected to grow significantly in the next decade.

What Threats that India Faces Due to Shift in Global Nuclear Order?

- **Erosion of Global Arms Control Agreements:** The collapse of key arms control treaties, like **suspension of [NewSTART](#)**, creates an environment of nuclear proliferation and arms races, impacting India's security landscape.
 - The lack of global norms increases **risks of regional arms build-up**
 - **India's non-membership in the NSG**, due to Chinese opposition, limits its access to advanced nuclear technology for civilian use.
- **Tactical Nuclear Threats in Conventional Conflicts: Pakistan's doctrine of "Full Spectrum Deterrence"** and its deployment of tactical nuclear weapons heighten risks of escalation during conventional conflicts.
 - The possibility of nuclear use in a localized war undermines regional stability.
- **Increased Vulnerability Due to Emerging Technologies:** Advancements in hypersonic missiles, cyberwarfare, and AI-driven targeting systems increase India's vulnerability.
 - Cyberattacks on critical infrastructure, such as the reported malware at India's **[Kudankulam nuclear power plant in 2019](#)**, underscore vulnerabilities.
- **Shifting Alliances in a Multipolar World:** Emerging alliances like the China-Russia strategic partnership and nuclear technology exchanges with Pakistan could destabilize India's regional security.
 - These partnerships **could lead to shared technologies or coordinated policies against India**.
 - **Russia's deployment of nuclear-capable Iskander-M missiles in Belarus** mirrors similar Russian support to Pakistan for nuclear cooperation in the past.
- **Pressure on India's NFU Policy:** India's No First Use (NFU) policy faces challenges as evolving threats from adversaries necessitate recalibration.
 - Tactical nuclear deployments by **Pakistan and China's assertiveness may force India to reconsider its defensive posture**.
- **Economic and Environmental Risks from Nuclear Developments:** Shifts in global nuclear energy policies, coupled with India's ambitious nuclear energy expansion, pose economic and environmental challenges.
 - Nuclear accidents in conflict zones (e.g., **[Zaporizhzhia in Ukraine](#)**) highlight risks of nuclear fallout affecting neighboring regions.

What Steps Can India Take to Address the Growing Nuclear Threat?

- **Strengthen and Modernize India's Nuclear Deterrence:** India must invest in modernizing its nuclear arsenal, including the **development of advanced delivery systems like hypersonic missiles and MIRV (Multiple Independently Targetable Reentry Vehicle) technologies**.
 - This will ensure a credible deterrent against evolving threats from China and Pakistan.
 - Enhance submarine-launched **ballistic missile (SLBM) systems** for survivable second-strike capability, leveraging the **INS Arihant-class**.
- **Improve Cybersecurity for Nuclear Infrastructure:** To mitigate risks of cyberattacks, India must **implement state-of-the-art cybersecurity protocols** and establish a dedicated agency to protect nuclear infrastructure from digital threats.
 - Regular audits, simulations, and collaborations with global cybersecurity agencies are essential
 - Learn from incidents like the Kudankulam malware attack (2019) and **integrate AI-driven monitoring systems**.
- **Reassess and Refine the No First Use (NFU) Policy:** While maintaining NFU as a cornerstone, India should introduce conditional flexibility to its nuclear doctrine to enhance strategic ambiguity and deter adversaries from exploiting its defensive posture.

- This refinement can deter limited nuclear use by Pakistan or China's assertive nuclear policies.
- **Clarify conditions for "massive retaliation" in response to non-nuclear threats** like biological or chemical attacks.
- **Accelerate Indigenous Development of Nuclear Technology:** India must prioritize self-reliance in nuclear energy by **fast-tracking its three-stage nuclear program**, emphasizing thorium-based reactors.
 - This reduces dependence on imports and ensures resilience amid global supply chain disruptions.
 - Scale up [Advanced Heavy Water Reactor \(AHWR\) projects](#) for thorium utilization.
 - Invest in R&D for **next-generation small modular reactors (SMRs)** to decentralize nuclear energy production.
- **Strengthen Nuclear Command and Control Systems:** India should upgrade its **nuclear command and control infrastructure** to ensure robust decision-making capabilities during crises.
 - This includes improving communication systems and ensuring the survivability of its leadership and critical assets.
 - Incorporate AI-based early-warning systems to reduce reaction times.
- **Advocate for Global Arms Control and Disarmament:** India must take the lead in advocating for a **new global framework on arms control to address emerging threats like hypersonic missiles and AI-driven weapon systems**.
 - This enhances India's diplomatic credibility and aligns with its commitment to nuclear disarmament
 - Revive **discussions on the Rajiv Gandhi Action Plan (1988)** for global nuclear disarmament.
 - Collaborate with **like-minded nations in forums like the G20** to build consensus on banning destabilizing technologies.
- **Leverage Quad and Other Regional Alliances for Strategic Advantage:** Through Quad and similar platforms, **India can address nuclear risks in the Indo-Pacific region by enhancing intelligence sharing**, joint military exercises, and maritime security.
 - Incorporate **nuclear-risk mitigation exercises in Quad's annual Malabar naval exercises**.
 - Partner with **Japan and Australia to strengthen nuclear supply chain security** in the region.
- **Promote Public Awareness and Transparency in Nuclear Policy:** India must educate its citizens about **nuclear safety and its strategic doctrine to ensure public confidence** and prevent panic during crises.
 - Transparency in policy enhances national cohesion and deters adversaries from exploiting misinformation.
 - Publish periodic **Waste Management and Nuclear Security Reports**.
- **Leverage Multilateral Diplomacy for Nuclear Security:** Actively engage with the **International Atomic Energy Agency (IAEA)** to enhance global nuclear safety and security standards, ensuring compliance and cooperation.
 - Advocate for **reforms in the Nuclear Suppliers Group (NSG)** to secure India's inclusion, **enabling access to advanced nuclear technologies and materials**.
 - Collaborate with international coalitions to address emerging challenges such as hypersonic missile proliferation and AI-driven nuclear systems.

Conclusion:

The unraveling global nuclear order poses significant challenges for India. To navigate this complex landscape, India must strengthen its **nuclear deterrence, modernize its arsenal, and invest in cybersecurity**. Simultaneously, India must engage in **diplomatic efforts to revive global arms control and advocate for a nuclear-weapon-free world**. By striking a balance between strategic autonomy and international cooperation, India can safeguard its security interests and contribute to a more stable and peaceful world.

Drishiti Mains Question:

Evaluate the emerging nuclear threats to India in the context of global security dynamics. What strategic measures should India adopt to mitigate these risks?

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. In India, why are some nuclear reactors kept under “IAEA safeguards” while others are not? (2020)

- (a) Some use uranium and others use thorium
- (b) Some use imported uranium and others use domestic supplies
- (c) Some are operated by foreign enterprises and others are operated by domestic enterprises
- (d) Some are State-owned and others are privately owned

Ans: (b)

Mains

Q. With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. (2018)

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