



RESEARCH ARTICLE

The NPT in the Third Nuclear Age: Reassessing the Treaty's Relevance amid Emerging Realities

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The NPT, once considered a cornerstone of arms control and disarmament, is under increasing strain as the Third Nuclear Age dawns, characterized by technological developments, doctrinal changes, and renewed great-power competition among nuclear-weapon states. From a realist perspective, the paper aims to contend that the core commitment of NPT regarding disarmament pledges, cooperative security, and peaceful nuclear technology sharing as nuclear-weapon states pursue nuclear modernization amidst a relative power struggle. The credibility and effectiveness of NPT have been undermined in the Third Nuclear Age amid strategic mistrust, power asymmetries, and states' technological hedging. The NPT was negotiated and evolved into a discriminatory treaty, and the P5 countries have exhibited bias in their responses when any state has challenged the NPT provisions. Nevertheless, the P5 states have prioritized their national interests over treaty commitments. The deadlock in the NPT review conferences also highlights the growing strategic mistrust between nuclear haves and have-nots. In this context, this paper will adopt a qualitative approach, drawing on both primary and secondary data, to examine key state behaviors, particularly those of P5 countries, vis-à-vis their disarmament pledges and nuclear modernization. The paper uses a case study approach to assess the shift in commitment of nuclear-weapon states during the recent 12-day war in the Middle East. The paper aims to explore the relevance of the NPT in the New Nuclear Age as states witness technological shifts and growing strategic mistrust between P5.

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Introduction

The NPT was negotiated at the Eighteenth Disarmament Committee, a direct predecessor of the Conference on Disarmament (CD). The treaty was opened to signature in 1968 and entered into force in 1970.¹ It is considered an essential milestone in non-proliferation since the Cold War era. It played a vital role in the first nuclear age by preventing horizontal proliferation of nuclear weapons. As per this treaty, states party to the NPT committed not to acquire nuclear weapons in exchange for peaceful uses of nuclear technology. The treaty rests on three essential and interdependent pillars of non-proliferation, peaceful access to nuclear technology, and disarmament. Through its eleven articles, the treaty serves as a grand bargain between Nuclear Weapon States (NWS) and Non-Nuclear Weapon States (NNWS), with the latter agreeing not to acquire nuclear weapons and the former committing to pursue disarmament in good faith.² Moreover, all member states will access peaceful nuclear technology under safeguards. The states that tested nuclear weapons before January 1967 (the US, Russia, China, UK, and France) were defined as NWS, and all others as non-nuclear weapon states.³ The uneven implementation of the three interdependent pillars has led to perceptions of the regime's declining legitimacy in this new era. This also reflects the strategic priorities of powerful states. Like other international efforts towards arms control, the NPT has also faced major setbacks since its inception: it lacked a universal approach and did not address regional

¹ "NPT," The Nuclear Threat Initiative, July 19, 2025, <https://www.nti.org/education-center/treaties-and-regimes/treaty-on-the-non-proliferation-of-nuclear-weapons/>.

² "NPT," The Nuclear Threat Initiative.

³ "Treaty on the Non-Proliferation of Nuclear Weapons," United Nations Office for Disarmament Affairs, 2025, <https://disarmament.unoda.org/en/our-work/weapons-mass-destruction/nuundersafeguards.clear-weapons/treaty-non-proliferation-nuclear-weapons>.

security issues, but was designed to benefit a handful of states. Hence, in the new nuclear age, the credibility and effectiveness of the NPT are under increasing strain as regional rivalries and states' interests have gained priority over the commitment of member states. The world has entered into the Third Nuclear Age, where technological advancements, changing military doctrines, and great power competition are setting new trends and highlighting new challenges for arms control and disarmament efforts. The new era raises questions about the NPT's relevance amid these realities.

The scale and complexity of the new nuclear age differ from those of previous ages, as the current nuclear landscape is characterized by multipolar rivalry, rapid technological diffusion, and strategic uncertainty. Dual-use technologies such as Artificial Intelligence (AI), hypersonic delivery systems, and cyber warfare have already blurred the lines between conventional and nuclear domains. These created ambiguity about intent, capability, and escalation pathways. For example, cyber operations can target nuclear command-and-control systems, AI can accelerate decision-making under crisis pressure, and hypersonic weapons can carry either conventional or nuclear payloads, making it difficult for adversaries to distinguish the nature of an attack in real time. This ambiguity increases the risk of misperception and inadvertent nuclear escalation even during conventional conflicts. The P5 states that the US, Russia, China, the UK, and France were allowed to retain their nuclear weapons in exchange for their commitment to complete disarmament. However, the promise has not yet been fulfilled. According to the Stockholm International Peace Research Institute (SIPRI) 2025 report, all P5 states are engaged in rapid modernization efforts due to intensifying great-power competition and regional rivalries in Europe, the Middle East, and the Asia-Pacific. The P5 modernization underscores the logic of power politics, in which states

prioritize relative advantage over collective restraint in an anarchic, unpredictable security environment.

The paper adopts a realist lens to explore the relevance of the NPT in today's multipolar environment and its limitations as a cooperative framework. According to the realist perspective in an anarchic international system, states are power-centric and will use arms control to serve their interests. Treaty obligations are sidelined in favor of national interests; consequently, the gap between disarmament pledges and P5 modernization is evident. This further aligns with realist assumptions about Great powers: they adhere to international norms only when they serve their interests, thereby leading to selective compliance by P5 countries with the NPT provisions. The repeated deadlocks at the NPT Review Conferences in reaching consensus also highlight divisions over core NPT commitments due to the erosion of trust among the NPT member states.⁴ Thereby raising questions about the legitimacy of the NPT. The paper also used the recent 12-Day War in the Middle East as a case study to assess existing nuclear norms. In the war, in which a non-NPT state, Israel, joined by an NPT state, the US, launched a military offensive by targeting nuclear sites to roll back Iran's nuclear program. The war highlights the limitations of the NPT and diminishes respect for the principle of nuclear restraint. Moreover, it reinforces the realist assumption that when countries do not adhere to norms, they perceive their strategic interests to be at stake.

State interests and relative gains continue to influence decision-making in the Third Nuclear Age. The assessment of the NPT in this age

⁴ Jayantha Dhanapala and Tariq Rauf, "Reflections on The Treaty on The Non-Proliferation of Nuclear Weapons," SIPRI, accessed December 1, 2025.

highlights its shortcomings and transparency issues in commitments made by the recognized NWS during the First Nuclear Age. The hypothesis is that the third nuclear age has further constrained the scope of the NPT provisions as technological advancements intensify great-power competition, thereby amplifying mistrust between states, leading to deadlock at the NPT review conferences and no progress towards Article VI of the treaty. The role of the NPT is diminishing due to its discriminatory practices.

Theoretical Framework: Realist Interpretation of the NPT

To understand the NPT through a realist lens is to analyze it as a strategic instrument designed by the NWS that is embedded in power politics. Scholars of classical realism, such as Hans J. Morgenthau, view national interest as the sole driver of international politics, with the struggle for power as the ultimate reality.⁵ In this regard, states' efforts towards arms control or non-proliferation have not resulted in a transformation of states' behavior towards cooperation. Still, it reflected the distribution of power between states. The treaty institutionalized an unequal nuclear order by preserving the NWS's strategic advantage between the haves and the have-nots. This gave a few an advantage while constraining the power of others. Hence, cooperation became conditional and instrumental, depending on the nature of the treaty. The core of the treaty aligned with the security interests of a few states while ignoring the regional threats of others.

The international system is anarchic, which compels states to maximize their power to ensure their survival and interests are secured. Once the

⁵ Hans J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace*, 5th ed. (New York: Alfred A. Knopf, 1978), pp. 4–15.

survival mode is triggered, states seek to maximize their control over their adversaries. Hence, obligations created by these states cannot override anarchy, the absence of central authority or international police, as Kenneth Waltz suggests states operate.⁶ Therefore, the behavior of states in this anarchic environment indicates that nuclear governance efforts have limited effects: they codify rules favorable to powerful states, yet despite their commitments, these rules remain questionable.⁷ States comply with governance systems as long as their national interests and security are not jeopardized. The Third Nuclear Age, with multipolarity at play, is reshaping the dynamics of power, thereby exacerbating the trust deficit between states. Even the states that made some bilateral efforts, like the US and the Union of Soviet Socialist Republic (USSR), in the first nuclear age, to rationalize their nuclear arsenals, are now heading towards an arms race again. The arms competition is also limiting their efforts towards global nuclear governance.⁸ Therefore, even in the third nuclear age, the NWS continued to exhibit a persistent reluctance, consistent with their obligations under Article VI of the treaty. Hence, realists criticize institutionalists' claims that regimes enhance trust or change states' preferences. A prominent realist, John Mearsheimer,⁹ argues that great powers are always ready to maximize their relative power vis-à-vis others. Hence, the P5 states have developed the NPT framework in a way that locks their strategic superiority. This has led to the success of the NPT in limiting horizontal proliferation. At the same time, the SIPRI 2025

⁶ Kenneth N. Waltz, *Theory of International Politics* (Reading, MA: Addison-Wesley, 1979), pp. 88–101.

⁷ Kenneth N. Waltz, “The Spread of Nuclear Weapons: More May Be Better,” *Adelphi Papers* No. 171 (London: International Institute for Strategic Studies, 1981), pp. 1–27.

⁸ George H. Quester, *Nuclear First Strike: Consequences of a Broken Taboo* (Baltimore: Johns Hopkins University Press, 2006), pp. 67–89.

⁹ John J. Mearsheimer, *The Tragedy of Great Power Politics*, updated ed. (New York: W. W. Norton & Company, 2014), pp. 21–22.

Yearbook and reports from other organizations on vertical proliferation indicate selective enforcement by these states.¹⁰

In the context of cooperative security, while treaties aim to promote cooperation by sharing peaceful nuclear technology with states that abide by non-proliferation commitments, cooperation also occurs within an anarchic system characterized by mistrust and competition. As Thomas Schelling argued, arms control manages rivalry through bargaining and signaling.¹¹ Hence, cooperation through the NPT has not eliminated competition but regulated it. The NPT has also established mechanisms for information sharing and nuclear safety safeguards. It also reinforces asymmetries that have compelled some to develop nuclear weapons outside its framework. Hence, an unequal nuclear order is established under anarchy, which has not led to disarmament.¹²

Case Study: The “12 Days War” and Attacks on Nuclear Facilities

The 12-day War aimed at rolling back suspicion about Iran’s nuclear program in June 2025 is the continuation of long-term hostility between Iran and Israel. Israel, as a de facto nuclear-weapon state in the Middle East, has tried to curtail Iran’s ability to acquire nuclear weapons for many years. The recent headlines on uranium enrichment by Iran and apprehensions raised by the International Atomic Energy Agency (IAEA) through its reports have caused alarm bells in both Israel and the US,

¹⁰ “Nuclear Risks Grow as New Arms Race Looms-New SIPRI Yearbook out Now,” SIPRI, June 16, 2025, <https://www.sipri.org/media/press-release/2025/nuclear-risks-grow-new-arms-race-looms-new-sipri-yearbook-out-now>.

¹¹ Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), pp. 22–28.

¹² Scott D. Sagan, “Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb,” *International Security*, Vol. 21, No. 3 (Winter 1996–97), pp. 54–86.

considering it a direct threat to their security interests in the region. The US unilateral withdrawal from the Joint Comprehensive Plan of Action (JCOPA) also gave Iran space to enrich uranium. However, as an NPT member, Iran's program was subject to the IAEA's safeguards and verification. Amid these assessments of the possibility and capability of Iran to acquire nuclear weapon technology in a short time, Israel launched Operation Rising Lion, conducting air strikes through missiles and drones, killing leaders, nuclear scientists, and attacking military and nuclear sites.¹³ The attack on military strikes is against international norms as it poses a direct impact on nuclear safety, security, and safeguards.

The precedent of an attack erodes trust in multilateral mechanisms like the NPT to secure state interests, exposes their rogue and political nature, and also weakens NWS compliance. The signals received after the attacks and the IAEA's post-attack response convey a direct message to NPT members: the world is governed not by rules but by power, and powerful states will do as they wish, regardless of established mechanisms. The declared NWS under the NPT will also not be held accountable for violations of international law.¹⁴ The UN Charter and the Agency's Statute.¹⁵ It also shows the weaknesses of treaties and related institutions designed to implement them.

Israel itself maintains an ambiguous nuclear weapon program and has not been a party to the NPT, but an NPT nuclear-weapon state will join a

¹³ Darya Dolzikova and Matthew Savill, "Operation Rising Lion: The First 72 Hours," *RUSI*, June 16, 2025, <https://www.rusi.org/explore-our-research/publications/commentary/operation-rising-lion-first-72-hours>.

¹⁴ International Committee of the Red Cross "How Humanitarian Law Applies to Armed Conflict and Nuclear Power Plants," ICRC, September 2, 2022.

¹⁵ Tayyaba Khurshid, "Iran's Nuclear Sites under Fire: What It Means for Pakistan," *The Diplomat*, June 26, 2025, <https://thediplomat.com/2025/06/irans-nuclear-sites-under-fire-what-it-means-for-pakistan/>.

non-NPT state to halt its nuclear-weapon program of a declared non-nuclear NPT state.¹⁶ The attacks gave a message to other states that being part of these institutions and treaties does not guarantee security, but acquiring nuclear weapons as a means of deterrence will ensure your survival. The attacks further damaged the cooperation between the IAEA and Iran, as visits of inspectors to Iran's nuclear sites were also banned by a parliamentary resolution. This war was between a non-NPT state and an NPT state, where another NPT state joined Israel and targeted safeguarded facilities of Iran, which is considered a gross violation.

The established mechanism under Article XII.C of the IAEA Statute¹⁷, which entrusts the Agency with determining non-compliance and pursuing corrective measures before escalating matters to the United Nations Security Council, was effectively bypassed by the United States in the context of the 2025 conflict with Iran. Rather than allowing the IAEA to complete its technical and legal assessment and remedies under the Statute, the US politically and militarily supported and subsequently joined Israel's airstrikes against Iran's nuclear facilities at Fordow, Natanz, and Isfahan, even though these sites were under comprehensive safeguards. Washington justified these strikes based on its own threat assessments and strategic objectives aimed at neutralizing what it characterized as an "existential" threat posed by Iran's nuclear program, opting for direct military action over multilateral IAEA procedures. This action, undertaken under the pretext of self-defense and without prior IAEA determination of diversion of safeguarded material or formal breach of safeguards, undermined the Agency's legal authority, weakened its

¹⁶ Ali Zia Jaffery, "Israel's Strikes on Iran: A Big Blow to the NPT," *Pakistan Politico*, June 16, 2025, <https://pakistanpolitico.com/npt/>.

¹⁷ "STATUTE," International Atomic Energy Agency, <https://www.iaea.org/sites/default/files/statute.pdf>.

credibility as the custodian of international nuclear safety and compliance, and set a precedent for sidelining its established safeguards system.¹⁸

Similarly, proposals to establish a Middle East Nuclear-Weapon-Free Zone (MENWFZ) have been on the NPT agenda since the 1995 Review and Extension Conference, yet no substantive progress has been made. This stagnation is primarily due to two structural obstacles. First, Israel, which possesses a de facto nuclear arsenal and remains outside the NPT framework, has consistently resisted joining the zone, citing regional security concerns and the absence of comprehensive peace arrangements. Second, Iran, although an NPT non-nuclear-weapon state, has cultivated advanced nuclear capabilities and has been perceived by many states as willing to divert its peaceful nuclear program towards potential weapons-related activities, contributing to deep mistrust that has blocked consensus on establishing the MENWFZ. Hence, the attacks highlight that the current nuclear age has enhanced mistrust between states.

The Third Nuclear Age: Characteristics and Strategic Shifts

The debate over nuclear ages seeks to divide nuclear history into periods to capture the emerging threats and priorities of states in different periods. The ages are divided by shifts in strategic focus; states varied their policy responses to the changing environment, and the academic discourse developed during this phase. The global strategic landscape is changing, and a fundamental shift in the international nuclear order is evident.¹⁹ The evolving nuclear doctrines, technological innovation with non-strategic nuclear weapons (NSNW) playing a key role, and renewed great-power

¹⁸ “Communication from the Permanent Mission of the Islamic Republic of Iran to the Agency”, INFCIRC/1300-IAEA, June 2025.

¹⁹ Andrew Futter et al., *The Global Third Nuclear Age* (Routledge, 2025), pp. 11-12.

competition between the US and Russia. The US and China have changed the power dynamics. The first nuclear age was characterized by bipolarity, with the US and the Soviet Union competing for spheres of influence. The nuclear order was shaped by a basic deterrence framework based on Mutually Assured Destruction (MAD).

The Second Nuclear Age began in the post-Cold War era, when proliferation concerns grew despite momentum in arms control efforts. The focus shifted to non-proliferation after 1991, when the debate on rogue states and nuclear terrorism dominated the literature. The regional issue of India-Pakistan nuclearization, along with North Korea and Iran's nuclear programs, was also a prominent debate. Hence, the policy shift was notably towards counterproliferation and nuclear reduction. Unlike the first two nuclear ages, the third nuclear age is more complex as the world is witnessing the erosion of established restraints. Nuclear modernization is underway amid technological competition, and traditional frameworks of stability and predictability are being sidelined more than ever. The defining feature of this era is the rapid advancement of emerging and disruptive technologies (ETDs). Now, Cyber weapons, AI militarization, hypersonic glide vehicles, and space assets are linked with nuclear command, control, and communication (NC3), and early warning systems (EWS). According to James Acton, director of the Nuclear Policy Program and senior associate at the Carnegie Endowment, the introduction of AI and cyber capabilities introduces new risks of miscalculation and inadvertent escalation.²⁰ Decision-making times are compressed by the introduction of hypersonic weapons, which are known

²⁰ James M. Acton, "Escalation through Entanglement: How the Vulnerability of Command-And-Control Systems Raises the Risks of an Inadvertent Nuclear War," *International Security*, Vol. 43, No. 1 (August 2018), pp. 56–99.

for their speed, maneuverability, and ability to evade missile defense systems. The line between conventional and nuclear domains is already blurred by the dual-use nature of these systems, increasing complexity and risk.

With technological change and growing contestation, states are also changing their nuclear doctrines in destabilizing ways. The adjustments made by nuclear-weapon states in their policies have introduced ambiguity about nuclear use beyond nuclear contingencies. Amid the Russia-Ukraine War, Russia also changed its nuclear doctrine, which stated that a nuclear response can be made to a conventional attack that threatens its sovereignty and territorial integrity.²¹ The US has also expanded its response options by introducing low-yield nuclear capabilities, thereby blurring the distinction between conventional and nuclear weapons. The growing emphasis on dual-capable systems and the militarization of cyber, space, and AI have rendered crisis stability ineffective.²² The shifting doctrines have lowered the threshold to use nuclear weapons and expanded the scenarios in which nuclear weapons can be used. These changes have undermined security, as deterrence relies on shared understanding. Signaling has become ambiguous and multidimensional; the risk of miscalculation and unwanted escalation has increased.²³

Another critical dimension is the renewed great-power competition that characterizes the Third Nuclear Age. The strategic rivalry between the US, Russia, and China has sidelined the arms control logic established in the first nuclear age. The bilateral arms control mechanisms, such as the

²¹ Daryl G. Kimball, "Russia Revises Nuclear Use Doctrine," Arms Control Association, December 2024, <https://www.armscontrol.org/act/2024-12/news/russia-revises-nuclear-use-doctrine>.

²² Vipin Narang, *Nuclear Strategy in the Modern Era* (Princeton University Press, 2015).

²³ Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960), pp. 187–203.

Intermediate-range Nuclear Forces (INF) Treaty, have eroded since the US withdrawal in 2019, raising uncertainty about the future of arms control between the US and Russia.²⁴ Moreover, the US-China competition has introduced a triangular nuclear dynamic that existing frameworks do not address. When the US expressed keen interest in involving China in arms control negotiations, Beijing declined, citing the significant disparity between the two states' arsenals. Chinese Foreign Ministry spokeswoman Hua Chunying made it clear in his remarks that “Beijing hadn’t changed its previous stance that it was not going to join the talks. We noticed that the United States has been dragging China into the issue...whenever it is raised,” with the intention of deflecting from its responsibility.²⁵ The Cold War model of bilateral balance has been defied amid the US and Russia’s deterrence postures, and modernization plans by other nuclear-weapon states, generating instability.²⁶

The contemporary strategic landscape has profound implications for nuclear stability and arms control, as the current nuclear age is increasingly defined not by adherence to the NPT commitments but by managing rivalry among major powers and mitigating catastrophic risks. This shift is evident in the erosion of traditional arms control frameworks, including the collapse of the INF Treaty, the suspension of the New START implementation, and the absence of any successor arrangements,

²⁴ Amy J. Nelson, “The Death of the INF Treaty Has Lessons for Arms Control,” *Bulletin of the Atomic Scientists*, November 4, 2019, <https://thebulletin.org/2019/11/the-death-of-the-inf-treaty-has-lessons-for-arms-control/>.

²⁵ *Radio Free Europe*, “China Again Declines to Join Arms-Control Talks with U.S., Russia,” June 10, 2025, <https://www.rferl.org/a/china-again-declines-to-join-arms-control-talks-with-u-s-russia/30663036.html>.

²⁶ Nina Tannenwald, “Emerging Risks and Declining Norms in the Age of Technological Innovation and Changing Nuclear Doctrines,” *American Academy of Arts and Sciences*, 2016.

all driven by worsening US–Russia strategic competition.²⁷ At the same time, emerging technologies such as hypersonic glide vehicles, missile defense, cyber operations, and AI are being integrated into nuclear postures without being regulated by existing treaty frameworks, thereby increasing uncertainty and escalation risks.²⁸ Moreover, the US–China strategic rivalry has redirected attention toward informal risk-reduction measures and crisis communication mechanisms rather than legally binding disarmament obligations, as China remains outside bilateral arms control structures.²⁹ These developments illustrate that nuclear stability today is pursued primarily through competitive deterrence management and ad hoc risk-reduction efforts rather than through the treaty-based disarmament logic embedded in the NPT, reflecting a defining feature of the third nuclear age.³⁰ The current order has become more volatile and unpredictable, with stability fragile and crisis escalation challenging to control. This also affects multilateral efforts, such as the NPT, making them ineffective or less likely to be implemented. New technologies and sophisticated weapons, along with strong surveillance tools enabled by AI integration, cyber weapons, and modern missiles, put the security of NWS and NNWS in jeopardy. The P5 states are unwilling to cooperate or enter into dialogue to change the dynamics of this age, rendering treaties such

²⁷ Frank A Rose, “The End of an Era? The INF Treaty, New START, and the Future of Strategic Stability,” *Brookings*, February 12, 2019, <https://www.brookings.edu/articles/the-end-of-an-era-the-inf-treaty-new-start-and-the-future-of-strategic-stability/>.

²⁸ James M. Acton, “Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War,” Carnegie Endowment for International Peace, 2018, <https://carnegieendowment.org/posts/2019/04/escalation-through-entanglement-how-the-vulnerability-of-command-and-control-systems-raises-the-risks-of-an-inadvertent-nuclear-war?lang=en>.

²⁹ Fiona S Cunningham and M Taylor Fravel, “Assuring Assured Retaliation: China’s Nuclear Posture and U.S.-China Strategic Stability,” *International Security*, Vol. 40, No. 2 (October 1, 2015), pp. 7–50, <https://direct.mit.edu/isec/article-abstract/40/2/7/12274/Assuring-Assured-Retaliation-China-s-Nuclear?redirectedFrom=fulltext>.

³⁰ Vipin Narang and Scott D Sagan, *The Fragile Balance of Terror* (Cornell University Press, 2023), pp. 1–9, https://d119vjm4apzmdm.cloudfront.net/open-access/pdfs/9781501767036.pdf?utm_source=chatgpt.com.

as the NPT irrelevant. Hence, the current challenges of technological advancements cannot be ruled out. The flux in international order may unravel the entire system, including the NPT, in the future.

Reality of NPT Commitments

The non-proliferation of nuclear weapons is enshrined in Articles 1 and 2, which place legally binding commitments between NWS and NNWS. The NWS commits not to transfer nuclear technology, and the NNWS show their promise not to acquire it. The pillar supported by the verification mechanism and political pressure has been enforced most actively. The compliance, though asymmetrical, has limited horizontal proliferation. Moreover, Article VI remains the most contested pillar, as NWS must pursue disarmament in good faith. Although overall stockpiles have declined since the Cold War, nuclear forces have undergone qualitative modernization. Surprisingly, there is no clear trajectory towards disarmament amid great power competition. No country among the P5 has demonstrated resolve to fulfill its arms control commitments, undermining the objective spirit of Article VI of the NPT.³¹

Another point of disagreement is that Article IV protects the right to use nuclear energy for peaceful purposes. Although the NPT guarantees the “inalienable right” of non-nuclear-weapon states to develop and use nuclear energy for peaceful purposes, many NNWS contend that this right is constrained in practice by restrictive export controls, politically influenced licensing decisions, and technology denial regimes imposed by supplier states. In particular, the Nuclear Suppliers Group (NSG) has

³¹ Shannon Kile, “Nuclear Arms Control and Non-Proliferation,” SIPRI, accessed December 1, 2025, <https://www.sipri.org/sites/default/files/YB07%20477%2012.pdf>.

introduced guidelines that go beyond the formal requirements of the NPT, limiting access to sensitive nuclear technologies even for states under the IAEA safeguards. Scholars argue that these restrictions are applied selectively and often reflect geopolitical preferences rather than objective non-proliferation criteria, as demonstrated by the exceptional treatment granted to India through the 2008 NSG waiver despite its non-NPT status, while other states, such as Iran, have faced extensive restrictions despite being NPT members.³² Such asymmetries have reinforced perceptions of discrimination within the non-proliferation regime and have weakened trust between nuclear-weapon states and non-nuclear-weapon states, thereby undermining the normative balance between non-proliferation and peaceful-use commitments envisioned under Article IV of the Treaty.

Discussion and Findings

The NPT has reinforced an unequal distribution of nuclear power through its selective enforcement mechanism, in which nuclear haves are exempt from the enforcement of their disarmament commitments. Hence, realist assumptions about how robust design and interpretation of the rules are to maximize control over others appeared to hold for the NPT. The mistrust between states also explains why the P5 countries, despite their commitment, could not materialize disarmament goals. This is also important in the new nuclear age, where multipolarity and a widening trust deficit exist among states. P5 states are increasingly relying on deterrence in this new age due to growing mistrust among competitors.³³ The mistrust and strategic competition arising from the third nuclear age have therefore

³² Siddharth Ramana, "The Nuclear Suppliers Group Waiver," *BASIC*, September 29, 2008, <https://basicint.org/publications/siddharth-ramana/2010/nuclear-suppliers-group-waiver> .

³³ Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), pp. 221–240.

led all P5 states to modernize, as perceptions of relative disadvantage, fear of technological surprise, and weakening arms control regimes compel them to modernize to maintain strategic parity and deterrence credibility. Modernization involves upgrading warheads, diversifying delivery systems, improving the resilience of command-and-control systems, and reinvigorating their nuclear doctrines. As great powers cannot afford complacency, P5 behavior is well explained by the realist framework.

To offset the uncertainty of each other's intentions, states are adopting a strategy of technological hedging. States are investing in advanced technologies, acquiring dual-capable delivery systems, missile defenses, cyber weapons, and AI-based systems to enhance their capabilities. The incorporation of these technologies has preserved strategic flexibility and prepared states for worst-case scenarios without abandoning arms control commitments. These advancements have some consequences as they compress decision-making time and blur the distinction between conventional and nuclear domains. When advanced technologies are incorporated into nuclear systems, ambiguity increases along with the risk of miscalculation, as many of these technologies are dual-use and challenging to interpret in real time. For example, cyber interference in nuclear command-and-control systems, AI-assisted early-warning tools, hypersonic delivery systems, and dual-capable missiles can obscure intentions, shorten reaction times, and heighten the danger of inadvertent escalation

Hence, cooperation among the P5 states seems possible but limited. Disarmament pledges and arms control commitments are effective when they align with the strategic interests of major powers and help manage their rivalry. However, these efforts cannot eliminate mistrust and

competition between states. In the Third Nuclear Age, cooperative security seems less likely, as major powers such as the US and Russia, and the US and China, have competitive relationships, trust is eroding, and arms control efforts are sidelined, as has been observed in the case of the INF treaty. Thus, arms control can now be seen as a pathway towards risk reduction rather than an effort towards disarmament.³⁴ These structural tensions have become more prevalent at the NPT Review Conferences. Disagreements over the Middle East's WMD-free zone and the lack of progress on disarmament were significant factors in the 2015 Review Conference's collapse without a consensus document.³⁵ Similarly, disagreements over terminology regarding Ukraine and growing discontent with the pace of nuclear disarmament led to the 2022 Review Conference reaching an impasse.³⁶ These setbacks indicate a decline in trust in the review process as a reliable mechanism for accountability.

The Relevance of the NPT in the Third Nuclear Age

The Third Nuclear Age, characterized by power contestation and technological innovation, renders the debates at the NPT more relevant, as the broader arms control architecture of the First Nuclear Age has eroded rapidly. The present and future of the NPT remain contested, as renewed competition makes prospects for reform minimal. The P5 states will be having new debates on the table regarding ETDs and their regulation, but will more likely neglect their commitments. Moreover, they will violate

³⁴ Barry Buzan and Eric Herring, *The Arms Dynamic in World Politics* (Boulder, CO: Lynne Rienner, 1998), pp. 79–101.

³⁵ United Nations, "2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons," UN, 2015, <https://www.un.org/en/conf/npt/2015/>.

³⁶ United Nations, "Treaty on the Non-Proliferation of Nuclear Weapons - Tenth Review Conference (2022)," UN, 2022, <https://meetings.unoda.org/npt-revcon/treaty-non-proliferation-nuclear-weapons-tenth-review-conference-2022>.

the core tenets of the NPT when their national interests are at stake. Here, it is essential to acknowledge the role of middle powers and NNWS as they play a crucial role in shaping the future of the treaty. The persistent advocacy by these powers has led to normative shifts, such as the emergence of the Treaty on the Prohibition of Nuclear Weapons (TPNW). These efforts will play a limited role, but they will sustain debate and discourse. The non-compliance by NWS cannot be changed. While the treaty remains relevant in the third nuclear age, the discriminatory principles and a state's ability to sidestep the treaty in its own interest have made its implementation more difficult.

The multipolarity and technological sophistication may lead states to cooperate selectively without committing to the universal obligations enshrined by the NPT, thereby undermining their relative power positions. Regional arrangements or issue-based mechanisms might get prominence in contemporary strategic realities. The NPT's trajectory in the third nuclear age is characterized by tensions between the erosion of treaty norms and its institutional resilience. Normatively, the selective enforcement, the discriminatory nature, and the persistent deadlock on disarmament commitments have weakened its credibility. The NPT exists and will continue to exist as the central pillar of the nuclear non-proliferation regime, but as a minimal framework through which member states will try to manage the unstable nuclear order. Therefore, the NPT is seen by many NNWS as discriminatory, institutionalizing a permanent separation between nuclear "haves" and "have-nots." This perception has driven alternative programs like TPNW. Such fragmentation raises grave concerns about the NPT regime's long-term viability from a realist perspective, as it reflects discontent with an order that prioritizes strategic stability for major powers over normative equality.

Conclusion

The analysis indicates that the mistrust among member states has increased substantially in the Third Nuclear Age. This has weakened avenues of cooperation for arms control, non-proliferation, and disarmament. The shift in power balances and the advancement and sophistication of weapon systems in a multipolar environment have made the security dilemma more prominent and the arms race a salient feature of the current age. While the NPT might remain relevant in a way that prevents horizontal proliferation in this age to some extent, in its current form, it is not enough to regulate states in their modernization plans, make the P5 states accountable for their disarmament pledges, stop states from quitting the NPT, and adhere to its commitment if the environment suggests otherwise. The NPT arms reduction mechanism is currently not working.³⁷ The realities of the Third Nuclear Age make the NPT more relevant, as member states increasingly debate how to govern the current nuclear age. At the same time, mistrust and competition have increased at this age. States are unable to reach a consensus. Thus, the NPT must keep pace with emerging challenges in safeguards and export controls. The new difficulties also highlight new opportunities for dialogue. The NWS should also present a roadmap that shows good faith towards global disarmament.

³⁷ Alicia Sanders-Zakre and Daryl Kimball, “The Necessity of a Meaningful Action Plan on Article VI of the NPT: Events and Remarks, NGO Statement for Presentation at the 10th NPT Review Conference, Arms Control Association, August 5, 2022, <https://www.armscontrol.org/events/2022-08/necessity-meaningful-action-plan-article-vi-npt>