Hiroshima Report 2026

Evaluation of Achievement in Nuclear Disarmament, Non-Proliferation and Nuclear Security in 2025

Hiroshima Organization for Global Peace (HOPe)

Hiroshima Prefecture

Center for Disarmament, Science and Technology
The Japan Institute of International Affairs

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Hiroshima Organization for Global Peace (HOPe)
TEL +81-82-209-1234 FAX +81-82-209-1235
Peace Promotion Project Team, Regional Policy Bureau, Hiroshima Prefectural Government,
10-52 Motomachi, Naka-ku, Hiroshima, 730-8511 Japan
https://www.pref.hiroshima.lg.jp/site/hiroshimaforpeace-en/
hope@hiroshimaforpeace.com

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Preface and Acknowledgements

The *Hiroshima Report 2026: Evaluation of Achievement in Nuclear Disarmament, Nuclear Non-Proliferation and Nuclear Security in 2025* (hereinafter referred to as *Hiroshima Report 2026*) is the outcome of the "Hiroshima Report Publication Project,"[1] commissioned by the Hiroshima Organization for Global Peace (HOPe). The project was carried out by the Center for Disarmament, Science and Technology (CDAST) of the Japan Institute of International Affairs (JIIA). The report documents the evolution of measures and proposals related to nuclear disarmament, non-proliferation and nuclear security implemented in 2025. It is published in both Japanese and English.

The *Hiroshima Report* was first published in 2012 as a project aimed at continuously monitoring and evaluating the implementation of the outcomes of the 2010 NPT Review Conference. However, since its inception, the path toward nuclear abolition has remained unclear, and the international environment surrounding nuclear weapons has become increasingly severe.

We are now at a critical juncture that concerns the very *raison d'être* of the international nuclear non-proliferation regime. The 11th NPT Review Conference is scheduled to be held for four weeks from April 27, 2026. However, the last two Review Conferences (2015 and 2022) failed to adopt a final document due to differences in positions on nuclear disarmament and conflicts over regional security issues, including those in the Middle East. Given this history, the upcoming conference represents an extremely important opportunity that will determine the effectiveness and credibility of the NPT regime.

Meanwhile, amid the deterioration of the international security environment triggered by Russia's invasion of Ukraine, divisions among States Parties have deepened, and concerns about the risk of nuclear weapons use have further intensified. In addition, China's rapid nuclear buildup and intensifying tensions among nuclear-armed states are undermining the foundations of arms control. In particular, dialogue on arms control between the United States and Russia stagnated throughout 2025, and with the expiration of the New Strategic Arms Reduction Treaty (New START) in February 2026, the absence of a nuclear arms control framework—a crucial pillar of nuclear disarmament—has become a reality. Under such severe circumstances, if the upcoming conference fails to produce concrete outcomes, the confidence of the international community in the NPT regime could be seriously eroded. It is precisely amid this profound sense of crisis that the 2026 Review Conference is set to convene.

This institutional stagnation and the deterioration of the security environment are also clearly reflected in national policy trends. Developments related to nuclear disarmament and non-proliferation continue to move in the opposite direction. The five nuclear-weapon states under the NPT and other nuclear-armed states regard nuclear weapons as an indispensable element of national security, advancing the modernization of their nuclear forces and strengthening

[1] This project has been conducted as part of the "Hiroshima for Global Peace" Plan launched by Hiroshima Prefecture in 2011.

nuclear deterrence. North Korea has declared that it will not relinquish its status as a nuclear-armed state and continues its nuclear development. Meanwhile, the Iranian nuclear issue remains unresolved, with no clear prospect of rebuilding the agreement, as uranium stockpiles and enrichment levels have continued to grow. As a result, the non-proliferation regime faces multiple, deeply serious challenges.

Furthermore, threats to nuclear security have become more complex and severe. The threats faced by Ukraine's nuclear facilities have clearly demonstrated the new risks posed by state actors. The issue of insider threats also remains critical and cannot be overlooked.

To advance efforts toward the abolition of nuclear weapons, it is essential to conduct objective and ongoing reviews of each country's efforts, clearly identifying both their current status and the challenges they face. From Hiroshima—the first city in human history to suffer the catastrophic use of nuclear weapons—there is profound significance in issuing a "Report" and an "Assessment" grounded in meticulous research and analysis. We hope that this report will stimulate discussion among policymakers and civil society, contribute to bolstering the NPT regime, and help advance international efforts toward a world without nuclear weapons.

The Research Committee was established to carry out this project, examining, analyzing, and evaluating each target country's efforts toward nuclear disarmament and other related measures, producing the "Report" and the "Evaluation." The committee held meetings to discuss and deliberate on the content and other related matters. The members of the Research Committee are as follows:

Chairperson and Project Coordinator
Nobumasa Akiyama (Director, CDAST, JIIA)

Research Members
Kazuko Hikawa (Professor, Nagasaki University)
Junko Horibe (Professor, Nagoya University of Foreign Studies)
Masahiro Kikuchi (CEO, Kikurin Institute of International Politics and Technology)
Mitsuru Kurosawa (Professor Emeritus, Osaka University)
Kazumi Mizumoto (Professor Emeritus, Hiroshima City University)
Michiru Nishida (Professor, Nagasaki University)
Masahiro Okuda (lead author of the "Nuclear Non-Proliferation" chapter)
Hiroshi Tamai (Executive Secretary, Mentor Subcommittee, Institute of Nuclear Materials Management (INMM) Japan Chapter)
Hirofumi Tosaki (Associate Professor, Hiroshima University)
Umi Ariga (Researcher, JIIA, lead author of the "Nuclear Security" chapter)
Timothée Albessard (Special Research Fellow, CDAST, JIIA, lead author of the "Nuclear Disarmament" chapter and project coordinator)

Valuable comments and suggestions on the "Report" draft were received from the distinguished scholars and practitioners listed below, both from Japan and abroad, who are at the forefront of the fields of nuclear disarmament, nuclear non-proliferation, and nuclear security:

Ambassador Nobuyasu Abe (Former UN Under-Secretary-General for Disarmament Affairs and former Commissioner of the Japan Atomic Energy Commission)
Mr. Mark Fitzpatrick (Former Executive Director of the Americas Office and head of the Non-Proliferation and Disarmament Program, International Institute for Strategic Studies)
Dr. Tanya Ogilvie-White (Senior Research Adviser, Asia Pacific Leadership Network)
Dr. Tatsujiro Suzuki (Visiting Professor, Nagasaki University, and President of Peace Depot)

The *Hiroshima Report 2026* has received contributions from experts in Japan and abroad on developments in nuclear disarmament and non-proliferation, as well as on future prospects and challenges.[2] We also gratefully acknowledge the dedicated editorial work of Mr. Kazuhisa Ikushima, Ms. Iku Nakamura, Mr. Sota Uemura, and Mr. Kazuki Yoshizawa in the preparation of this report.

[2] The views expressed in these contributions are those of the respective authors and do not necessarily reflect the positions of the Hiroshima Organization for Global Peace, the Hiroshima Prefecture, the Japan Institute of International Affairs, or the institutions with which the authors are affiliated.

Special Message

Reflections from the 63rd Pugwash Conference in Hiroshima

Prof. Karen Hallberg, Secretary General of the Pugwash Conferences on Science and World Affairs, Professor of Physics at the Balseiro Institute and Researcher at the Bariloche Atomic Center

Eighty years after the atomic bombings of Hiroshima and Nagasaki, the world once again finds itself at a decisive and perilous juncture. The global landscape is marked by heightened geopolitical tensions, the erosion of trust among major powers, the resurgence of conflict in several regions, and the weakening of fundamental norms that once helped to restrain nuclear dangers. Nuclear-armed states are modernizing and expanding their arsenals, and explicit threats of nuclear use—once unthinkable—are re-emerging in political discourse.

The 63rd Pugwash Conference on Science and World Affairs, held in Hiroshima in November 2025, brought scientists, diplomats, policy-makers and experts together from around the world, including countries in conflict, to confront these escalating dangers.[1] Meeting in Hiroshima was not only an act of remembrance; it was a reaffirmation of the moral and political imperative to ensure that nuclear weapons are never used again. Participants were acutely aware that the Doomsday Clock stood at 89 seconds to midnight—updated to 85 seconds on Jan 27, 2026, the closest in history—symbolizing the intensification of nuclear and other existential risks and the fragility of the international security environment.[2] The Conference echoed a conviction shared by generations of Hibakusha: the only sustainable guarantee against nuclear catastrophe is the complete elimination of nuclear weapons.

This goal, while principled and necessary, requires practical steps and courageous leadership along the way. As emphasized in the recent Declaration for the Prevention of Nuclear War issued by Nobel Laureates and nuclear policy experts, the world is entering "a new, complex, and dangerous nuclear arms race" with profound implications for global stability.[3] The declaration acknowledges that fear and deterrence have sometimes contributed to temporary stability, but relying indefinitely on fear is "a reckless gamble," one that will ultimately fail as long as nuclear weapons continue to exist. Without determined efforts to prevent nuclear war—including actions by states, scientists, and civil society—our luck will inevitably run out.

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1 "63rd Pugwash Conference in Hiroshima, '80 Years After the Atomic Bombing: Time for Peace, Dialogue and Nuclear Disarmament," Pugwash Community, Pugwash Conferences on Science and World Affairs, November 1, 2025, https://pugwash.org/2025/11/01/63rd-pugwash-conference-in-hiroshima-80-years-after-the-atomic-bombing-time-for-peace-dialogue-and-nuclear-disarmament/.

2 "Doomsday Clock," Bulletin of the Atomic Scientists, https://thebulletin.org/doomsday-clock/#nav_menu.

3 "The Nobel Laureate Assembly Declaration for the Prevention of Nuclear War," Nobel Laureate Assembly for the Prevention of Nuclear War, https://nobelassembly.org/declaration/.

The Hiroshima Declaration of the Pugwash Council similarly warns that the international order grounded in the UN Charter and international law is under mounting strain. Unilateral military actions, the weakening of arms control regimes, and the weaponization of emerging technologies all contribute to a dangerous deterioration of stability.[4] Particularly alarming are recent attacks on safeguarded nuclear facilities and the targeted killing of scientists and engineers, actions that undermine international law and weaken the protective norms that have long helped prevent nuclear escalation. As these norms erode, so too does the margin for error.

Against this backdrop, the path forward must rest on renewed dialogue and the reconstruction of trust—principles embedded in the founding ethos of the Pugwash Conferences since the 1955 Russell–Einstein Manifesto, which urged humanity to "remember your humanity and forget the rest."[5] Even in times of deep hostility, dialogue across divides has proven indispensable for achieving disarmament and preventing war. The expiration of the New START Treaty has heightened the urgency of renewed U.S.–Russia engagement and underscores the need to involve all nuclear-armed states, including China, in sustained, substantive discussions. No less important is the revitalization of multilateral forums such as the upcoming Non-Proliferation Treaty (NPT) Review Conference and the Meetings of States Parties to the Treaty on the Prohibition of Nuclear Weapons (TPNW), which provide opportunities to recommit to disarmament and strengthen verification, transparency, and risk-reduction measures.

Emerging technologies—including artificial intelligence, quantum technologies, and advanced biotechnology, among others—pose both grave risks and unprecedented challenges for nuclear stability. The Nobel Laureate declaration underscores the fallibility of AI and cautions that nuclear command-and-control systems must preserve meaningful human oversight. The Pugwash Council likewise calls for responsible governance of new technologies and urges scientists to provide evidence-based guidance on their implications for global security. As the boundaries between nuclear, cyber, and autonomous systems become increasingly intertwined, cooperative international oversight becomes essential.

Equally vital is the reaffirmation of long-standing agreements such as the Comprehensive Nuclear-Test-Ban Treaty and the Outer Space Treaty. The continuation of nuclear testing moratoria and prevention of the weaponization of outer space remain indispensable to global security. Likewise, zones free of nuclear and other weapons of mass destruction (WMDFZ)—already established in some regions—demonstrate that cooperative security frameworks can deliver meaningful progress when trust and dialogue prevail. The continued failure to establish a Weapons of Mass Destruction–Free Zone in the Middle East, despite clear UN and NPT mandates, underscores the urgent need for decisive political action. Eliminating reliance on nuclear weapons is both a moral duty and a strategic necessity. States should adopt No-First-

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[4] "80 Years After the Atomic Bombing: Time for Peace, Dialogue and Nuclear Disarmament," the Pugwash Council, Pugwash Conferences on Science and World Affairs, November 5, 2025, https://pugwash.org/wp-content/uploads/2025/11/hiroshima-declaration_pugwash-council_5nov-3.pdf.

[5] "The Russell-Einstein Manifesto," Pugwash Conferences on Science and World Affairs, July 9, 1955, https://pugwash.org/1955/07/09/statement-manifesto/.

Use policies, give unconditional Negative Security Assurances to non-nuclear-armed states, and strengthen frameworks of cooperative and common security.

The leadership of civil society, scientific communities, humanitarian organizations, and peace movements—has repeatedly shaped the trajectory of nuclear politics. The Nobel Peace Prizes awarded jointly to the Pugwash Conferences and Joseph Rotblat, Linus Pauling, Andrei Sakharov, Alva Myrdal and Alfonso García Robles, the International Campaign to Abolish Nuclear Weapons (ICAN), the International Physicians for the Prevention of Nuclear War (IPPNW), and to the Japan Confederation of A- and H-Bomb Sufferers Organizations (Nihon Hidankyo), among others, stand as a testament to the power of citizens and scientists to influence global norms and awaken the conscience of states. Their work reminds us that peace cannot rest on threats of annihilation. True peace requires multilateralism, respect for international law, justice, and a deep recognition of our shared humanity.

The message from Hiroshima and from the 63rd Pugwash Conference resonates with renewed urgency: “We affirm with conviction that nuclear weapons must never be used again, under any circumstances, since a nuclear war could destroy not only nations but the future of humankind itself. The bombings of Hiroshima and Nagasaki were not only tragedies of war but represent enduring moral ruptures in the conscience of humankind.” The choices made now will determine whether future generations inherit a world of escalating danger or one guided by reason, cooperation, and a commitment to human dignity.

Executive Summary: Nuclear Trends in 2025

In 2025, there was little progress in nuclear disarmament. Nuclear-armed states have not intensified their efforts to fulfill their disarmament commitments, while a substantial nuclear arms race has continued to unfold. Amid Russia's ongoing invasion of Ukraine and escalating regional tensions, the risks of nuclear weapons use has been growing. Nuclear issues concerning North Korea and Iran also remain unresolved, with no sign of progress. Despite these deeply concerning trends, efforts to prevent the further deterioration of the nuclear situation were unsuccessful. Divisions surrounding nuclear issues have deepened not only between nuclear-armed states and non-nuclear-weapons states (NNWS) but also, more critically, among nuclear-armed states themselves, making it harder to reach agreements on nuclear issues.

(1) Nuclear Disarmament

Amid the continued stagnation and regression in nuclear disarmament, various efforts and proposals were advanced to reverse these trends and reinvigorate the process. However, despite these initiatives, the deteriorating state of nuclear disarmament showed little improvement, as nuclear-armed states made minimal progress toward new agreements or the implementation of concrete disarmament measures.

The United States reached out to Russia and China to discuss potential nuclear arms control and reduction agreements, but no progress was made—including in negotiations toward a successor treaty to the New Strategic Arms Reduction Treaty (New START) between the United States and Russia.

Nuclear-armed states continue to underscore the importance of nuclear deterrence in their national security strategies while modernizing their nuclear forces. Particular attention has been focused on the rapid expansion of China's nuclear arsenal and the potential evolution of its nuclear strategy, especially concerning its no-first-use posture. NNWS allied with nuclear-armed states also continue to place significant emphasis on extended nuclear deterrence, which has drawn growing criticism from other NNWS.

The number of countries that have signed or ratified the Treaty on the Prohibition of Nuclear Weapons (TPNW)—which, among other provisions, prohibits the possession and use of nuclear weapons—continues to grow steadily. However, nuclear-armed states and their allies have maintained their position of refusing to sign the treaty.

Status of Nuclear Forces (estimates)

- While the total number of nuclear weapons has gradually declined to an estimated 12,241, the number of nuclear warheads in military stockpiles—excluding those retired—as well as those deployed with operational forces, is estimated to have increased.
- China has accelerated the expansion of its nuclear arsenal, with an estimated increase of

100 warheads in just one year. India, Pakistan and North Korea have also been gradually increasing their stockpiles of nuclear warheads over the past decade.

Commitment to Achieving a World without Nuclear Weapons

- No country openly opposes the goals of "the total elimination of nuclear weapons" and "a world without nuclear weapons." However, in 2025, nuclear-armed states made little progress in taking steady and concrete steps toward implementing and advancing nuclear disarmament to achieve these objectives. Consequently, many NNWS have intensified their criticism of this lack of progress.
- 147 countries, including the United Kingdom, voted in favor of the Japan-led UN General Assembly (UNGA) Resolution titled "Steps to building a common roadmap towards a world without nuclear weapons." However, China, Russia, North Korea and other states voted against it.

Humanitarian Consequences of Nuclear Weapons

- NNWS, particularly those belonging to the "humanitarian group," have continued to emphasize the humanitarian dimensions of nuclear weapons in various forums, including the Nuclear Non-Proliferation Treaty (NPT) Preparatory Committee (PrepCom) and the Third Meeting of States Parties of the TPNW.
- A resolution was adopted at the 2025 World Health Assembly to mandate the World Health Organization to update its previous reports on the effects of nuclear war on health, health services, and the environment.
- The Independent Scientific Panel on the Effects of Nuclear War, established in 2024, held its first meeting in September. The Panel will produce a comprehensive report and submit it to the UNGA in 2027.

TPNW

- By the end of 2025, a total of 74 countries had become States Parties to the TPNW.
- TPNW signatory and supporting states, along with the Scientific Advisory Group (SAG), are constructively preparing for the first Review Conference of the TPNW, scheduled for the end of 2026.
- Nuclear-armed states and their allies remain opposed to the TPNW. Japan ultimately decided not to participate as an observer in the Third Conference of the States Parties (CSP) held in 2025, despite earlier speculation that it might do so.

Reduction of Nuclear Weapons

- Since 2023, Russia has continued to suspend its participation in New START, refusing to provide data exchanges or allow on-site inspections. Although it claims to remain within the treaty's numerical limits, its actual compliance has not been verified.
- In 2025, no nuclear-armed state announced any new concrete plans or proposals for further reductions of nuclear weapons. The United States reached out to Russia and China to initiate bilateral arms control and reduction discussions. However, Russia declined, citing what it described as hostile U.S. policies and the need to include France and the United Kingdom in discussions, while stating that it would continue to comply

with New START provisions for one year after the treaty's expiration. China reiterated that it would not engage in such discussions unless the United States and Russia—the world's two largest nuclear powers—undertake further reductions in their nuclear arsenals.

- All nuclear-armed states continue to modernize their nuclear forces. Russia and North Korea have been actively developing and deploying various new delivery systems for nuclear warheads. China has also significantly expanded and enhanced its nuclear forces, both qualitatively and quantitatively. The United States estimates that China could be capable of deploying more than 1,000 operational nuclear warheads by 2030.

Diminishing the Role and Significance of Nuclear Weapons in National Security Strategies and Policies

- As Russia's invasion of Ukraine continues, it has repeatedly issued nuclear threats throughout 2025, heightening international concerns over the potential use of nuclear weapons.
- North Korea has stated that the role of its nuclear arsenal is both to deter war and to seize the initiative in the event of conflict, while highlighting that the development of its nuclear arsenal is irreversible. It has explicitly acknowledged the possibility of first use of nuclear weapons. Furthermore, North Korea continues to strengthen its nuclear forces from both strategic and tactical perspectives.
- There were no significant changes in the policies of nuclear-weapon states (NWS) or other nuclear-armed states regarding sole purpose, no-first-use, or negative security assurances (NSAs). In response to allegations that China's long-standing policies of minimum deterrence and no-first-use may be shifting, China has maintained that its nuclear policy and posture remain unchanged.
- France has expanded previous calls for European allies to participate in its nuclear deterrence exercises, while initiating a debate on the role of French nuclear deterrence in protecting European allies and the potential stationing of French nuclear weapons on their soil.
- Russia and Belarus have reaffirmed that tactical nuclear weapons have been deployed on Belarusian territory, although this claim has not been independently verified.
- The United Kingdom has announced that it will acquire nuclear-capable F-35A fighter jets and join NATO's dual-capable aircraft nuclear mission (DCA) in the context of extended nuclear deterrence.
- NATO member states such as Poland and the Baltic states have expressed their openness to hosting French or British nuclear weapons on their territories as part of nuclear-sharing arrangements.
- Japan and South Korea have been actively collaborating with the United States to strengthen their respective extended deterrence frameworks.
- Following the signing of a mutual defense agreement with Saudi Arabia, Pakistan's Defense Minister stated that his country's nuclear arsenal could be made available to Saudi Arabia if necessary, although no official statement has confirmed these remarks.
- Extended nuclear deterrence arrangements have faced particularly strong criticism at the 2025 NPT PrepCom, primarily from China, Russia, and NAM states.

De-alerting and Measures to Extend Decision Time for Nuclear Weapon Use

- There have been no changes in the policies of nuclear-armed states regarding the alert status of their nuclear forces. Russian and U.S. strategic nuclear forces are considered to remain on high alert.
- China has denied allegations that it has been placing any of its nuclear forces on higher alert.
- Pakistan has accused India of raising the operational readiness of its nuclear arsenal, an allegation rejected by India.

CTBT

- Among the 44 states listed in Annex 2 of the CTBT, whose ratification is required for the treaty to enter into force, six states (China, Egypt, Iran, Israel, Russia, and the United States) have signed but not ratified, while three (India, Pakistan, and North Korea) have not signed at all. As a result, the treaty has not yet entered into force.
- Except for North Korea, all countries that have declared possession of nuclear weapons maintain a moratorium on nuclear explosion tests.
- However, U.S. President Trump announced that the United States would immediately resume nuclear testing, accusing other states of carrying out such tests. In response, Russian President Putin ordered an assessment of whether a reciprocal response would be appropriate, adding that Russia would conduct a nuclear test if the United States did.
- North Korea has reportedly completed preparations for a nuclear explosion test; however, it did not carry out such a test in 2025.
- Some nuclear-armed states are believed to have conducted nuclear tests without explosions, including subcritical experiments and computer simulations.

FMCT

- At the 2025 session of the Conference on Disarmament (CD) in Geneva, states once again failed to commence negotiations on a Fissile Material Cut-Off Treaty (FMCT). Pakistan continues to strongly oppose a treaty that would only prohibit the future production of fissile material for military purposes.
- China, India, Israel, North Korea, and Pakistan have not yet declared a moratorium on the production of fissile material for nuclear weapons. It is believed that India, North Korea, and Pakistan continue to produce fissile material for military purposes. There are also concerns that China's advanced fast-breeder reactors and reprocessing facilities, although developed for civilian use, could be diverted for military purposes.
- The first ministerial meeting of the "Friends of the FMCT," a group launched by Japan in 2024, was held in New York. Member countries include Australia, Brazil, Canada, France, Germany, Japan, the Netherlands, the United Kingdom, the United States, and three other states.

Transparency Regarding Nuclear Forces, Fissile Material, and Nuclear Doctrines

- There has been no significant change in the transparency policies of nuclear-armed states.
- Although China emphasizes the importance of transparency in its intentions and

policies, it has not disclosed any information about the types or numbers of its nuclear forces.

- One of the recommendations of the International Group of Eminent Persons for a World Without Nuclear Weapons (IGEP), sponsored by Japan, called for China, France, and the United Kingdom to enhance transparency by engaging in discussion on their respective conceptions of minimum nuclear deterrence.

Nuclear Disarmament Verification

- The International Partnership for Nuclear Disarmament Verification (IPNDV) held a working meeting and identified potential areas for continued work, including transportation verification exercises, expanded use of national technical means, and applications of emerging technologies to strengthen verification confidence.
- Several working papers on nuclear disarmament verification were submitted throughout 2025, highlighting the importance of concrete verification measures to enhance mutual trust and guarantee irreversibility.

Irreversibility

- The United States and Russia are believed to be continuing the dismantlement or conversion of their respective strategic delivery systems, nuclear warheads, and surplus fissile material. However, neither country has provided detailed reports on the specific status of these efforts.
- Russia withdrew from the U.S.-Russian Plutonium Management and Disposition Agreement (PMDA), which requires both countries to dispose of 34 tons of weapons-grade plutonium no longer needed for military purposes.

Disarmament and Non-Proliferation Education and Cooperation with Civil Society

- At the NPT PrepCom, the importance of disarmament and non-proliferation education, diversity and inclusion (particularly gender), and the participation of civil society were emphasized.
- The "Youth Leader Fund for a World without Nuclear Weapons" established by Japan welcomed its second cohort of 100 participants, 50 of whom will be selected for a fully funded study tour to Japan, including visits to Hiroshima and Nagasaki.
- Some countries have begun to divest from, or prohibit lending to, organizations and companies involved in the production and development of nuclear weapons. An increasing number of companies are also independently adopting such policies.

Hiroshima and Nagasaki Peace Memorial Ceremonies

- Representatives from 120 countries attended the peace memorial ceremony in Hiroshima, while representatives from 94 countries attended the ceremony in Nagasaki. This year, Russia and Belarus were notified of the ceremony rather than formally invited, while Israel resumed its attendance after not being invited in 2024.

(2) Nuclear Non-Proliferation

As of December 2025, 191 countries have acceded to the Nuclear Non-Proliferation Treaty (NPT). However, three nuclear-armed states—India and Pakistan, which possess nuclear weapons, and Israel which has not denied possessing them—remain outside the treaty and are considered unlikely to join the treaty in the near future.

North Korea has insisted that it has no intention to renounce its nuclear weapons. Russia has continued its cooperation with North Korea, and there is various information regarding cooperation in nuclear and ballistic missile technologies.

In response to the U.S. withdrawal from the Joint Comprehensive Plan of Action (JCPOA) in 2018, Iran has consistently expanded its suspension of compliance with the nuclear restrictions outlined in the agreement. Iran has increased its production of enriched uranium, and its stockpile has grown significantly.

There are assessments that Iran's nuclear breakout time has been delayed. On the other hand, it has become increasingly difficult to verify nuclear facilities under the International Atomic Energy Agency's (IAEA's) safeguards.

The number of countries that have accepted the IAEA safeguards under the Additional Protocol has steadily increased. However, more than 30 countries have yet to sign them.

Acceptance and Compliance with the Nuclear Non-Proliferation Obligations

- No progress has been achieved in addressing the North Korean nuclear issue, despite the commencement of the 2nd Trump administration, which held a summit in its previous term and the South Korean new administration's policy toward North Korea. Pyongyang has insisted that it would never relinquish its status as a "nuclear-weapons state" and that it must rather strengthen it. Russia has asserted that North Korea's nuclear development is a means to ensure its security.
- Iran has expanded its stockpile of enriched uranium, including 20% and 60% highly enriched uranium (HEU). The total stockpile of its enriched uranium has increased by more than 3,200kg since 2024. Israel and the United States attacked Iran's enrichment facilities to prevent Iran's nuclear weapons possession. There are various evaluations that Iran's breakout time was delayed by those attacks; on the other hand, safeguards implementation and transparency on the Iranian enrichment program have been affected.
- Israel and the United States did not participate in the sixth Conference on Establishing a Middle East Region Free of Nuclear Weapons and Other Weapons of Mass Destruction (WMD).

IAEA Safeguards

- As of June 2025, 144 NPT NNWS have concluded the IAEA Additional Protocols. Some non-aligned countries, as well as Brazil, Iran, and Russia, argue that the conclusion of an Additional Protocol should be voluntary, not obligatory under the NPT.
- The IAEA had applied integrated safeguards to 71 NNWS by the end of 2024.

- Iran has continued to suspend verification and monitoring measures under the JCPOA, including the application of the Additional Protocol to the IAEA Safeguards Agreement. The IAEA reported that due to its inability, it has lost continuity of knowledge regarding the production and inventory of centrifuges and other equipment.
- The IAEA reported that it could not resolve the issues regarding the accuracy and completeness of declarations for four sites related to Iran's alleged past clandestine nuclear program. The IAEA Board of Governors' June 2025 resolution found that Iran's reporting on these activities was insufficient.
- Following the attacks by Israel and the United States in June, Iran enacted legislation suspending its cooperation with the IAEA. After the law took effect, discussions began between the IAEA and Iran on the resuming verification activities, and an initial agreement on measures was reached. However, Iran declared the termination of that agreement in response to the IAEA Board of Governors resolution in November.
- Australia, the United Kingdom, and the United States (AUKUS) and the IAEA started technical discussions on implementing IAEA safeguards for the nuclear fuel used in Australia's nuclear-powered submarines. Some countries, including China, expressed criticism and concerns on this issue.
- Russia's attack and occupation of nuclear facilities in Ukraine have compelled the IAEA to undertake challenging safeguard verification activities within Ukraine.

Implementing Appropriate Export Controls on Nuclear Related Items and Technologies

- Most members of the Nuclear Suppliers Group (NSG) implement solid export controls, including the establishment of legislative measures and other relevant national implementation systems. On the other hand, many countries, particularly developing countries, have been requested to strengthen their systems and implement export controls.
- Following the suspension of the UN Security Council North Korea Sanction Committee's Panel of Experts in 2024, the Multilateral Sanctions Monitoring Team (MSMT), established by like-minded countries, published reports on North Korea's cyber activities and cooperation with Russia.
- North Korea continues to procure funds through cryptocurrency theft and dispatching IT workers abroad, while also stealing technology via cyberattacks. Cooperation with Russia in ballistic missiles and nuclear fields has also been reported.
- The snapback mechanism, which reimposes restrictions and sanctions from past UN Security Council resolutions, has been activated, resuming nuclear non-proliferation-related sanctions against Iran.
- China has been criticized for its export of nuclear power reactors to Pakistan, which may constitute a violation of the NSG guideline.

Transparency in the Peaceful Use of Nuclear Energy

- Since 2018, China has not submitted its reports based on the Guidelines for the Management of Plutonium. While the United States did not publish its report in 2025, following its non-publication in 2024.

(3) Nuclear Security

Russia's occupation of the Zaporizhzhya Nuclear Power Plant continues, and there have been multiple attacks —particularly drone strikes— on the power grid that connects to other nuclear power plants in Ukraine. As a result of these incidents, nuclear safety and security in those facilities are at risk. In addition, in June 2025, Israel and the United States conducted strikes against Iranian nuclear facilities, raising serious concerns about the safety of safeguarded civilian nuclear infrastructure

The threat of cyber-attacks against nuclear facilities as well as sabotage involving drones continues to require close attention. While Artificial Intelligence (AI) is utilized for nuclear security, there are concerns about the risks that it poses to nuclear security.

Regarding the global inventory of weapons-usable nuclear material, progress has been made in efforts to minimize Highly Enriched Uranium (HEU). On the other hand, the stockpile of civilian separated plutonium has continued to increase.

Pakistan announced its intent to receive the International Physical Protection Advisory Service (IPPAS) mission during 2026.

Physical Protection of Nuclear Material and Facilities

- Regarding the global inventory of weapons-usable nuclear material, stocks of military-use separated plutonium in India, Israel, Pakistan and the United States have increased. As for the HEU, the total amount of HEU stockpiles decreased, although HEU for military use rose slightly.
- 20 out of the 27 countries surveyed still possess weapons-usable nuclear material that could be attractive to terrorists.

Accession to Nuclear Security and Safety-Related Conventions and their Application to Domestic Systems

- There were new ratifications for all nuclear security related conventions, except for the CPPNM.
- Regarding the implementation of "Nuclear Security Recommendations on the Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Rev.5)", some surveyed countries announced their efforts, such as introducing new measures and reviewing existing measures.

Efforts to Maintain and Improve the Highest Level of Nuclear Security

- On HEU minimization for civilian use, Japan has completed the conversion from HEU to HALEU at one facility and has reiterated its commitment to convert a second facility. The United States also converted 2.2 tons of HEU into HALEU.
- Pakistan has announced plans to accept an IPPAS mission in 2026.
- Regarding multilateral initiatives, activities were carried out by the G7, such as the Non-Proliferation Directors' Group. Meanwhile, the Global Initiative to Combat Nuclear Terrorism (GICNT), co-chaired by the United States and Russia, has paused all activities since 2022. In its stead, the United States launched the Global Forum to

Prevent Radiological and Nuclear Terrorism (Global FTPRNT) in 2024, although it remains unclear whether the initiative will be sustained in the longer term. Initiatives derived from the Nuclear Security Summit Process were also inactive, except for those related to insider threats.

Study, Analysis, and Evaluation

(1) Items

In the *Hiroshima Report 2026*, 78 items (41 for nuclear disarmament, 19 for nuclear non-proliferation and 18 for nuclear security) are identified for study, analysis and evaluation of the selected countries' performance, based primarily upon the following documents reflecting widely supported views on the issues of nuclear disarmament, non-proliferation and nuclear security:

- The Action Plan and recommendations pertaining to the implementation of the 1995 Middle East resolution contained in the Final Document adopted in the 2010 Nuclear Non-Proliferation Treaty (NPT) Review Conference;
- The final draft of the Final Document of the 2015 NPT Review Conference;
- The final draft of the Final Document of the 2022 NPT Review Conference;
- Documents adopted at the First Meeting of States Parties (1MSP) to the Treaty on the Prohibition of Nuclear Weapons (TPNW) in 2022;
- Documents adopted at the 2MSP to the TPNW in 2023;
- Documents adopted at the 3MSP to the TPNW in 2025;
- Seventy-six recommendations contained in the 2009 International Commission on Nuclear Non-Proliferation and Disarmament (ICNND) report titled *Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers*;
- Proposals sponsored or co-sponsored by Japan at the Preparatory Committees for the 2015 NPT Review Conference; and
- "Resolution towards the Abolition of Nuclear Weapons" launched by the Mayors for Peace in 2011.

Items were also chosen with the aim of providing a certain degree of objective measurements for evaluation.

1. Nuclear Disarmament

(1) Status of Nuclear Forces (estimates)
(2) Commitment to Achieving a World without Nuclear Weapons
  A) Voting behavior on UN General Assembly (UNGA) resolutions on nuclear disarmament proposals by Japan, New Agenda Coalition (NAC) and Non-Aligned Movement (NAM)
  B) Announcement of significant policies and important activities
  C) Actions that run counter to nuclear disarmament
(3) Humanitarian Consequences of Nuclear Weapons
  A) Voting behavior on UNGA resolutions
  B) Participations in joint statements and international conferences
  C) Victim assistance and environmental remediation
(4) Treaty on the Prohibition of Nuclear Weapons (TPNW)

A) Signatures and ratifications
B) Voting behavior on UNGA resolutions on the TPNW
C) Voting behavior on legally binding UNGA resolutions on the prohibition of nuclear weapons

(5) Reduction of Nuclear Weapons
A) Reduction of nuclear weapons
B) Concrete steps toward further nuclear disarmament
C) Trends in the strengthening and modernization of nuclear weapons capabilities

(6) Diminishing the Role and Significance of Nuclear Weapons in National Security Strategies and Policies
A) Current status of the roles and significance of nuclear weapons
B) No first use and sole purpose
C) Negative security assurances
D) Voting behavior on UNGA resolutions on legally binding security assurances for NNWS
E) Signature and ratification of nuclear-weapon-free zone treaty protocols
F) Extended nuclear deterrence
G) Nuclear risk reduction
H) Actions that increase nuclear risk

(7) De-alerting and Measures to Extend Decision Time for Nuclear Weapon Use

(8) CTBT
A) Signatures and ratifications
B) Moratoria on nuclear test explosions pending the CTBT's entry into force
C) Voting behavior on the UNGA resolution on the CTBT
D) Cooperation with the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) Preparatory Commission
E) Contribution to the development of the CTBT's verification systems
F) Nuclear testing

(9) FMCT
A) Efforts to initiate negotiations on an FMCT
B) Voting behavior on the UNGA resolution on an FMCT
C) Moratoria on the production of fissile material for nuclear weapons
D) Contribution to the development of verification measures

(10) Transparency Regarding Nuclear Forces, Fissile Material, and Nuclear Doctrines

(11) Nuclear Disarmament Verification
A) Acceptance and implementation of nuclear disarmament verification
B) Engagement in research and development for nuclear disarmament verification measures
C) International Atomic Energy Agency (IAEA) inspections of fissile material declared as no longer required for military purposes

(12) Irreversibility
A) Implementing and planning the dismantlement of nuclear warheads and their delivery vehicles
B) Decommissioning and conversion of nuclear weapons-related facilities

C) Disposition and conversion to peaceful uses of fissile material declared excess for military purposes

(13) Disarmament and Non-Proliferation Education and Cooperation with Civil Society

(14) Hiroshima and Nagasaki Peace Memorial Ceremonies

2. Nuclear Non-Proliferation

(1) Acceptance and Compliance with Nuclear Non-Proliferation Obligations
   A) Accession to the NPT
   B) Compliance with Articles I and II of the NPT and the UN Security Council resolutions (UNSCRs) on non-proliferation
   C) Nuclear-Weapon-Free Zones
   D) Actions that run counter to nuclear non-proliferation

(2) IAEA Safeguards Applied to the NPT Non-Nuclear-Weapon States (NNWS)
   A) Signing and ratifying a Comprehensive Safeguards Agreement
   B) Signing and ratifying an Additional Protocol
   C) Implementation of the integrated safeguards
   D) Compliance with IAEA Safeguards Agreement

(3) IAEA Safeguards Applied to NWS and Non-Parties to the NPT
   A) Application of the IAEA safeguards (Voluntary Offer Agreement or INFCIRC/66) to their peaceful nuclear facilities
   B) Signing, ratifying, and implementing the Additional Protocol

(4) Cooperation with the IAEA
   A) Cooperation with the IAEA
   B) Behaviors impeding IAEA activities

(5) Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies
   A) Establishment and implementation of the national control systems
   B) Requiring the conclusion of the Additional Protocol for nuclear export
   C) Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues
   D) Participation in the Proliferation Security Initiative (PSI)
   E) Civil nuclear cooperation with non-parties to the NPT

(6) Transparency in the Peaceful Use of Nuclear Energy
   A) Reporting on the peaceful nuclear activities
   B) Reporting on plutonium management

3. Nuclear Security

(1) The Amount of Weapon-Usable Nuclear Material and Possession of Relevant Facilities
   A) The amount of weapon-usable nuclear material
   B) Possession of facilities that could cause serious radiological effects

(2) Status of Accession to Nuclear Security and Safety-Related Conventions and Their Application to Domestic Systems
   A) Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention

B) International Convention for the Suppression of Acts of Nuclear Terrorism
C) Convention on Nuclear Safety
D) Convention on Early Notification of a Nuclear Accident
E) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
F) Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency
G) Enactment of laws and establishment of regulations for the national implementation
H) INFCIRC/225/Rev.5

(3) Efforts to Maintain and Improve the Highest Level of Nuclear Security
A) Minimization of highly enriched uranium (HEU) in civilian use
B) Acceptance of international nuclear security review missions
C) Technology development— nuclear forensics
D) Capacity building and support activities
E) IAEA Nuclear Security Plan and Nuclear Security Fund
F) Participation in international efforts

(4) Responding to Nuclear Security Threats Posed by States
A) Commitment to international norms prohibiting attacks against nuclear facilities for peaceful uses, and strengthening of efforts
B) Armed attack against nuclear facilities

(2) Countries Surveyed in This Project

In the *Hiroshima Report 2026*, the performances of selected countries were surveyed, based on their nuclear significance and geographical distribution. The list includes members of the Non-Proliferation and Disarmament Initiative (NPDI), members of the New Agenda Coalition (NAC), and states parties to the Treaty on the Prohibition of Nuclear Weapons (TPNW).

The non-nuclear-weapon states (NNWS) surveyed were partially reassessed in the *Hiroshima Report 2023*. Regarding nuclear disarmament and nuclear non-proliferation, the number of countries surveyed is revised from 27 to 22 to enhance the survey and analysis of trends per country, taking into consideration the importance of these issues and the willingness to make proposals and implement them. In addition, regarding nuclear security, the surveyed NNWS are limited to 18 countries that are either actively engaged in nuclear activities or possess a certain amount of nuclear material, and thus potentially pose a high risk to nuclear security.[1]

The *Hiroshima Report 2026* surveys the following countries.

- Five nuclear-weapon states under the NPT (China, France, Russia, the United Kingdom and the United States)
- States nonparties to the NPT possessing or believed to possess nuclear weapons (India, Israel and Pakistan)

[1] The criteria for selecting countries for the survey are either having a certain level of nuclear activity or possessing at least 1 kg of highly enriched uranium (HEU). “A certain level of nuclear activity” includes having, or having planned in recent years, commercial nuclear reactors in operation or a spent fuel final disposal facility.

- Non-nuclear-weapon states under the NPT
  - Nuclear disarmament and non-proliferation: Australia, Austria, Brazil, Canada, Egypt, Germany, Indonesia, Iran, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Saudi Arabia, South Africa, Sweden, Switzerland, Syria and Türkiye
  - Nuclear security: Australia, Belgium, Brazil, Canada, Finland, Germany, Iran, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, Norway, South Africa, Sweden, Switzerland, Türkiye and the UAE
- Other (North Korea[2])

(3) Approach

This project focuses on the calendar year 2025. Reference materials primarily consist of open sources, such as speeches and working papers delivered at disarmament fora, as well as official documents published by governments and international organizations.

In the evaluation section, a set of objective criteria has been established to assess each country's performance. The Research Committee recognizes the inherent difficulties, limitations, and risks of "scoring" countries' performances. Nevertheless, the Committee considers that an indicative approach is useful for drawing attention to nuclear issues and stimulating debate on priorities and urgency.

The numerical values assigned within each category—nuclear disarmament, nuclear non-proliferation, and nuclear security—reflect the relative importance of each activity within that area, as determined by deliberation within the Research Committee. However, differences in overall score totals among the three categories do not necessarily indicate their relative significance; they primarily reflect the differing number of items surveyed. For example, the maximum score for nuclear disarmament (109) does not imply it is more important than nuclear non-proliferation (61) or nuclear security (38).

Regarding the "number of nuclear weapons" (in the nuclear disarmament section) and the "amount of fissile material usable for nuclear weapons" (in the nuclear security section), the assumption is that the greater the number of nuclear weapons or weapons-usable fissile material a country possesses, the greater the task of reducing them and ensuring their security. Nevertheless, the Committee acknowledges that numerical quantities are not the sole decisive factors. Other considerations—such as missile defense implications, chemical and biological weapons, conventional force imbalances, and psychological attachment to a minimum overt or covert nuclear capability—also influence nuclear disarmament, non-proliferation, and security. These factors were excluded from the evaluation criteria due to the difficulty of creating objective scales for their significance.

In response to suggestions and comments regarding the *Hiroshima Report 2013*, the Committee

[2] North Korea declared its suspension from the NPT in 1993 and formally withdrew in 2003, subsequently conducting nuclear tests in 2006, 2009, 2013, twice in 2016, and in 2017. However, the states parties have not reached a consensus on North Korea's official status under the NPT.

modified the evaluation criteria for the following items: the current roles and significance of nuclear weapons in national security strategies and policies, reliance on extended nuclear deterrence, and nuclear testing. Since the *Hiroshima Report 2014*, these items have been negatively graded when applicable.

Because it is not possible to mathematically compare factors across the different areas of disarmament, non-proliferation, and nuclear security, the evaluations should be interpreted as indicative of general performance rather than precise assessments of individual countries' performances.

The *Hiroshima Report 2026* maintains the structure and evaluation items of previous reports, with the addition of one item on the TPNW since the *Hiroshima Report 2018*. Beginning with the *Hiroshima Report 2019*, the Committee also added an evaluation item on whether countries attended the Hiroshima or Nagasaki Peace Memorial Ceremonies; prior to this, only attendance at the Hiroshima ceremony was evaluated. (The maximum score for this item remains three points.) Since the *Hiroshima Report 2020*, increases in the number of nuclear weapons held over the previous five years, as well as other activities deemed contrary to nuclear disarmament and non-proliferation but not covered by existing items, are also negatively graded when applicable. Since the *Hiroshima Report 2021*, the measurement scale for certain evaluation criteria related to nuclear non-proliferation and nuclear security has been slightly modified.

Furthermore, in the *Hiroshima Report 2023*, evaluation items and criteria were revised to reflect changes in the nuclear landscape, including developments from the 2022 NPT RevCon and the first meeting of States Parties to the TPNW. Details of these revisions are provided in "Evaluation Points and Criteria" in Part II.

Since the *Hiroshima Report 2024*, the Research Committee introduced new evaluation criteria concerning: voting behavior on the UNGA resolution on victim assistance and environmental remediation, and whether nuclear-armed states have designated all civilian nuclear facilities under IAEA safeguards.

Part I: Report

Surveying Trends of Nuclear Disarmament,
Non-Proliferation and Nuclear Security in 2025

Column 1

Youth Bridge Generations to Build Global Peace

Michelle Gyles-McDonnough

This year 2025 marks the 80th anniversary of the tragic atomic bombing of Hiroshima. I had the opportunity to commemorate this historic moment in Hiroshima and engage with young people on their experiences living in the aftermath and positive actions for nuclear disarmament, non-proliferation and peace. The visit highlighted the importance of learning from history; the value of never giving up your goals; and the need for continuing dialogue.

People from Hiroshima and Nagasaki – particularly hibakusha – have long advocated for the world to recognize the grave humanitarian consequences of nuclear weapons. For their contributions to peace, Nihon Hidankyo, the confederation of hibakusha organizations, was awarded the Nobel Peace Prize in 2024. In Hiroshima, I saw first-hand the steadfast dedication of these citizens who play a crucial role in advancing the abolition of nuclear weapons, and who continue to inspire young people everywhere to join the movement against nuclear arms.

Yet, today, we are still far from sustainable peace. Armed conflicts continue to pose significant threats and take the lives of tens of thousands of innocent people around the world. Nuclear-armed countries threaten to use tactical nuclear weapons, and, just in June 2025, nuclear facilities in Iran were attacked through military action. We also see that some United Nations member states are reconsidering nuclear deterrence, i.e., the threat of retaliatory nuclear strikes to prevent other states from using nuclear weapons, despite its considerable humanitarian risks. All of these keep nuclear disarmament a top priority for the United Nations.

The United Nations Institute for Training and Research (UNITAR) was established in 1963 with the mission to enhance diplomats' capacity to effectively engage in multilateral diplomacy and foster international cooperation, particularly in peace and security. Today, we aim to empower individuals and institutions through learning and advisory services for peace, security, and sustainable development.

In Hiroshima, UNITAR has been working closely with the Government of Hiroshima Prefecture to foster a culture of peace, particularly among the youth and young diplomats. The UNITAR Youth Ambassador Programme, launched in 2010 for high school students in Hiroshima, empowers young people to lead nuclear disarmament and peacebuilding efforts, springing from their experiences of growing up in Hiroshima. Youth Ambassadors who have completed the programme have since participated in conferences on the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), conveying powerful messages for peace from Hiroshima.

UNITAR Youth Ambassadors at the Dialogue for Global Peace 2025

This year, our 26 newest Hiroshima Youth Ambassadors developed proposals to achieve, by

2050, a world free of nuclear weapons, and foster trust and lasting peace. They presented their ideas at the "**Youth Dialogue Event for Global Peace 2025**", fittingly held on 6 August 2025 in Hiroshima. Their proposals addressed three key areas: peace education, sharing the stories of hibakusha, and understanding international law and the functions of the United Nations.

As I listened to the Youth Ambassadors, I was inspired by their ideas to prevent a repetition of the tragedies of Hiroshima and Nagasaki. They were especially passionate about continuing the work of hibakusha – as their numbers diminish due to advancing age – and spreading their testimonies, including through creating AI archives of hibakusha testimonies to preserve and disseminate their experiences and messages widely. The other proposals were just as compelling, such as reforming the United Nations Security Council to ensure equitable decision-making, conducting AI simulations of nuclear wars, and presenting peace messages through songs, art and drama.

At the Youth Dialogue, the Youth Ambassadors also engaged with local activists, hibakusha and world leaders for nuclear disarmament, seeking answers and insights. Growing up in Hiroshima, the Youth Ambassadors have studied peace since they were first graders, as peace education is integrated into the school curriculum. The young people openly brought their questions about peace to the floor. "We are a minority in the world advocating nuclear abolition", said one Youth Ambassador. Contrasting that position with some world leaders who look to nuclear deterrence for greater security, they called into question whether nuclear deterrence can truly bring peace.

Ultimately, the event highlighted the driving power of young people from Hiroshima and Nagasaki in carrying forward the memories and lessons across generations and around the globe. Peace is not a given; we must build and nurture it through negotiation and trust. To that end, UNITAR remains committed to empowering the emerging generation of peacebuilders and strengthening dialogue in Hiroshima and beyond. Together, we can move toward a future of lasting peace.

UN Assistant Secretary General and UNITAR Executive Director

Column 2

Passing on the Experience of the Atomic Bombing at the 81st Anniversary and Beyond

Luli van der Does

As we mark 81 years since the atomic bombings and survivors are reaching advanced age, we face three critical questions about how best to pass on the legacy and reality of the bombings to the next generation, while respecting their perspectives. First, in what specific ways can sharing the atomic bomb experience offer practical support or insight to the younger generation, especially considering the current challenges to disarmament, non-proliferation, and nuclear abolition in a volatile global context? Second, what concrete strategies can address the challenges of recruiting successors and ensuring young people's continued commitment to world peace? Third, given the rapid advancement of AI, how can we most effectively utilise these technologies to convey the realities and legacies of the atomic bombings to foster universal peace?

Passing on the A-bomb Experience for the Next Generation

What significance does inheriting the memory of the A-bomb experience hold for the next generation? Since the end of World War II, the values of a diverse, mutually beneficial, and free society have developed primarily in the West. Now, these values are faltering with the rise of a self-centred, exclusive, and protectionist culture. Competition between major powers is intensifying, and the liberal international order is faltering. The invasion of Ukraine, ongoing conflict in the Gaza Strip, civil wars in Yemen and Syria, and continued instability in Afghanistan, Sudan, Congo, Myanmar, and Iran exacerbate regional crises. In addition, as of January 2026, tensions are rising over the United States' intervention in Venezuela and its relations with NATO member countries regarding Greenland's sovereignty.

If humanitarian crises and protracted multiple regional conflicts continue, and the international economy becomes increasingly unstable, the situation will likely develop into a large-scale war involving multiple countries, directly affecting the younger generation. In fact, at the 2025 NPT Preparatory Committee, increased tension was felt among the nuclear-armed states within the Treaty's complex framework, and amid concerns about signs of nuclear arms expansion and proliferation, the traditional approach of appealing to domestic and foreign policymakers for nuclear abolition is becoming harder to impact. Yet, conversely, in the digital era of instant online information sharing, it is the younger generation who can take the initiative in shifting public opinion. Digital platforms offer the potential to disseminate knowledge about the threat and inhumanity of nuclear weapons, fostering public consensus toward agreements on nuclear non-proliferation and disarmament. In this context, the memories of atomic bomb survivors can serve as a trusted information source and a foundation for informed decision-making, prompting prudent choices for action in light of the current international environment.

Cultivating the Sustainable Culture of Mentoring Successors

Passing down the memory of the atomic bomb experience to the next generation hinges on feasibility and a sense of personal involvement. Successors will be fostered in a culture that recognises the atomic bomb experience as a reality tied to one's own future rather than as an old tale or an abstract concept. Young people will need the knowledge to envision the kind of world they will live in and to make decisions about their future. They must develop critical thinking skills by understanding the constantly shifting political, economic, social, and cultural relationships between nations and groups, free from bias; analysing the contexts and processes behind their own decisions and those of others; cultivating awareness of issues; learning about the risks of unreliable information sources, which cloud judgment, and how to address them.

Building on this foundation, it is vital to understand the human consequences of the atomic bomb explosions through the personal accounts: what atomic bomb survivors experienced under the atomic 'mushroom' cloud on that day and how they survived the chaos of the reconstruction period. Young people need to find their own answers to the crucial questions: If nuclear weapons were used, how would it impact their own living environment, and how would they apply their knowledge and skills in such circumstances? Finding their own personal answers will help integrate "peace consciousness" with practical "skills and competencies" to foster cohorts of next-generation peace makers.

Furthermore, even among those who are interested in peace, many lack an environment that encourages sustained action, and many struggle to leverage their knowledge and experience in peace activities as strengths when seeking employment. To support these young people transitioning from students to working young adults, the public administration is urged to continuously engage with local companies and organisations to build systems that create, utilise, and evaluate "peace skills and competencies" as part of corporate social responsibility and culture. Simultaneously, efforts must be made among the intermediate generation, including second-generation survivors, to embed the transmission of atomic bomb experiences within local communities.

This entails establishing a practical "transmission" that reliably connects survivors with younger generations through the active generation. Rather than leaving the act of balancing the memory transmission of the atomic bomb experiences with daily social life solely to young people, the generation that bridges survivors and the next generation should take the lead. They should actively foster a culture of peace and engage in memory transmission activities both in the workplace and within their community, preparing an environment ready to welcome the next generation and enable them to succeed. When young peacebuilders can secure a livelihood through work and establish a foothold in their communities, they can then take on the responsibility of passing on the atomic bomb experience.

AI and Passing on the Memory of the Atomic Bomb Experience

Memories of the atomic bombing have traditionally been passed down through "places" such as ruins and memorial parks, "objects" such as exhibition materials, "testimonies" such as

survivors' accounts and drawings, and "art", including music, visual arts, theatre, and literary works. However, the atomic bomb experience itself has been considered impossible to recreate due to its unprecedented destructive force. Yet, with the advancement of digital technology, audiovisual methods of memory transmission have rapidly evolved. Diverse technologies, such as computer graphics (CG), virtual reality (VR), augmented reality (AR), and generative artificial intelligence (GenAI), are employed to recreate "realistic" images of the bombing and survivors' impressions. For generations familiar with these tools, especially for those with no direct experience or knowledge of the atomic bombings, these methods are highly effective entry points to spark interest.

At the same time, the internet is flooded with seemingly credible misinformation about nuclear weapons, created using complex technology. Products such as toy nuclear launch buttons are commercially available, and nuclear strike simulation games have emerged. Research indicates that some online games where players become nuclear weapon possessors, select parameters such as weapons, geographical and meteorological conditions, and destructive capabilities to attack specific regions, and test the scale of casualties and damage, attract substantial global traffic. These games are reportedly available to Japanese users for just a few thousand yen.[1]

We bear the responsibility to inherit the memories of real people who lived through diverse experiences of atomic bombings. AI-based technologies can generate a wide range of expressions that extend beyond the original testimonies, shaped by the interpretations, technical skills, and imaginations of their creators and users. Users may choose which questions to ask survivors, what they want them to say, and which scenes they want to see. Conversely, memories of the bombings that should be heard for the sake of peace may go unselected and be forgotten as a result.

When using AI to transmit memory, it is desirable to combine it with records closer to the original sources, such as museum exhibits, audio/video recordings, and written testimonies, both before and after the AI interaction. Furthermore, we must aim to combine these efforts with live dialogue with atomic bomb survivors and their trusted successors. In time, we will no longer be able to hear the testimonies directly from the atomic bomb survivors, and ensuring and guaranteeing the reliability of information concerning atomic bomb experiences will become an even more critical challenge in the future. The atomic-bombed cities must establish their identity as places that cultivate trust, both in name and fact, serving as global hubs for conveying the reality of the atomic bombings and passing on the experiences of survivors.

What Must Be Passed on

The survivors have worked tirelessly to establish a "nuclear taboo" to ensure that there are "no more victims of atomic bombings." They have endured tragic deaths, cruel scars, and, even for those who survived, prolonged physical and mental suffering. Discrimination and other socioeconomic issues are also realities of the atomic bombing. These indescribable memories can only be truly understood by the survivors themselves, and each recollection accompanies

[1] Luli van der Does, "*AI and the Inheritance of Atomic Bomb Experience Memories: An Attempt Staking Collective Survival*" (The 80th Annual Meeting of the Physical Society of Japan (2025), Physics and Society: Towards the Pugwash Conference 2025 in Hiroshima, Hiroshima, September 18, 2025).

excruciating pain. Yet the sole reason they must pass this on to future generations is to protect any and every life. While nuclear abolition remains unachieved, the effectiveness of the nuclear taboo is demonstrated by the fact that no nuclear war has occurred in the past 80 years.

As long as nuclear weapons exist and humanity does not renounce war, the tragedies of Hiroshima and Nagasaki could be repeated. As mentioned earlier, the deterioration of the international situation and the erosion of international moral standards regarding nuclear weapon use are gradually undermining the nuclear taboo. Furthermore, with the advancement of autonomous AI-enabled weapons, the risk that younger generations could become victims of nuclear weapons is increasing. The theory of nuclear deterrence—that the threat of retaliation against a hypothetical enemy prevents nuclear attack—also relies on the nuclear taboo. Without global recognition of nuclear weapons as objects of terror, capable of delivering inhumane and catastrophic consequences, there will be no restraint on nuclear arms expansion or use. This "horror" is not merely abstract knowledge; it is felt viscerally. History explains the formation of nations and groups, and records preserve past facts. But memory is how individuals understand things in light of their own experiences, using it to inform future decisions; it evolves as people grow. And memory knows no borders. That is precisely why it is essential to humanity's survival that more citizens inherit the trustworthy memories of the atomic bomb experience, preserved and nurtured by the bombed cities, into their daily lives.

The great task of Hiroshima and Nagasaki lies ahead.

Director of The Centre for Peace, Hiroshima University

Column 3

Stepping Back from the Nuclear Precipice

Wilfred Wan

The global non-proliferation and disarmament regime centred on the Nuclear Non-Proliferation Treaty (NPT) is at a crossroads. The 2026 Treaty Review Conference will take place in a deteriorated strategic context marked by competitive and adversarial relations among a number of nuclear-armed and nuclear-allied states. Against this backdrop, key actors have chosen to increase their reliance on nuclear weapons, including in their security strategies. Experts believe that the global nuclear stockpile—an estimated 12,241 nuclear weapons—will soon rise, reversing longstanding declines dating from the last days of the Cold War.[1] All of the nine nuclear-armed states are undertaking extensive modernization efforts, raising the potential for arms racing. In selected non-nuclear-weapon states, domestic voices have called for enhancing extended deterrence arrangements, and even to consider the pursuit of indigenous nuclear weapons capabilities. In addition, technological developments, including with cyber, outer space, and artificial intelligence capabilities, are impacting the circumstances in which nuclear weapons may be considered for use.[2]

Given the state of affairs, attention on steps to reduce the immediate risk of nuclear use has emerged on the agenda of a number of state-led initiatives and across multilateral fora. A 2025 working paper from the multilateral initiative on Reducing the Risk of Nuclear Conflict, which includes nuclear-armed France, the UK, and the US, proposed that nuclear-weapon states commit to addressing "risks arising from miscalculation, misperception, miscommunication or accident"; including through dialogue to enhance predictability, and the implementation of "effective crisis prevention and management tools and mechanisms".[3] The focus on inadvertent escalation reflects a pragmatic approach that can provide a foundation for rebuilding trust and confidence among nuclear-armed rivals or adversaries. Crisis prevention and management does not necessitate immediate changes to national security priorities and certainly does not entail restraint to capabilities themselves, instead centring on reestablishing minimal levels of predictability and control.

There is understandable scepticism as to whether even modest action is possible, as to date demonstrable progress in reducing risk, in the form of concrete, practical, and measurable action, remains largely absent. Even nuclear-armed states that have committed to risk reduction principles have not taken much concrete action, unilaterally or among like-minded states. Arguably the most prominent new risk reduction step the US took under the Biden

1 Hans Kristensen et al., "Status of World Nuclear Forces," Federation of American Scientists, March 26, 2025, https://fas.org/initiative/status-world-nuclear-forces/.

2 Natasha E. Bajema and John Gower, *Nuclear Decision-Making and Risk Reduction in an Era of Technological Complexity* (Council on Strategic Risk, 2022).

3 NPT/CONF.2026/PC.III/WP.41.

administration was with the implementation of a 'failsafe' review that considered the security of nuclear command, control, and communications systems. This can be replicated by the other nuclear-armed states. Progress elsewhere, including at bilateral and multilateral levels, has come modestly, largely in the area of crisis prevention and management. For instance, China and the US restored military to military communications in 2024 and convened a crisis communications working group; China and France agreed on new inter-theatre cooperation and the establishment of dialogue mechanism in the South China Sea. These also reflect positive signs, and a model for pursuit of theatre-based dialogue.

At the same time, the fundamentals of the risk landscape have not been addressed. The narrow focus on crisis prevention and management dangerously overlooks the myriad drivers contributing to the occurrence of crises in the first place. Continuing in this manner could mean that the risk reduction approach becomes a "false promise for those seeking durable, shared solutions to the nuclear predicament."[4] The lack of attention on intentional escalation scenarios is particularly striking. Additionally, few states have considered concrete ways to reduce the salience of nuclear weapons in security strategies, including conventional alternatives. Examining potential risks intrinsic to deterrence and strategic ambiguity, and considering how these may expand as deterrence evolves, has been a conversation restricted to the process of the Treaty of the Prohibition of Nuclear Weapons, rather than the NPT initiatives explicitly looking at risk reduction, including under the NPT.

While risk reduction has never been presented as a panacea, its effectiveness will be measured by its ability to reflect the full reality of use scenarios and to anticipate future ones. To meet this standard, they will need to broach the mistrust that has contributed to the strategic context underlying the risk landscape. They will need to make exchanging on the national security priorities and threat perceptions that inform sustained geopolitical tension and rivalry, sparked the vestiges of arms racing, and increased the value placed on nuclear weapons while lowering thresholds for use. They have to consider how condemning attacks on rules-based order and international law, such as the Israeli and the US bombing of Iranian nuclear facilities, can mitigate damage and preserve the legitimacy of NPT and related processes, including risk reduction initiatives. Overall, risk reduction approaches have confined themselves to restoring deterrence and strategic stability, without questioning the achievability of these in a changed world marked by the presence of more relevant strategic capabilities.

Nuclear risk is intrinsic to the existence of nuclear weapons. To fulfil the promise of risk reduction, to ensure the legitimacy of state initiatives and ensure continued buy-in from non-nuclear-weapon states in particular, nuclear-armed states and other key actors will have to comprehensively consider and address the role that nuclear weapons play in the contemporary era. In the process, they might be able to reinvigorate nuclear disarmament: the most effective form of reducing nuclear risk.

Weapons Mass Destruction Programme Director of the Stockholm International Peace Research Institute

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[4] Benoît Pelopidas and Kjølv Egeland, "The false promise of nuclear risk reduction," *International Affairs* 100, no. 1 (2024): 345–60, https://doi.org/10.1093/ia/iiad290.

Column 4

Passing on the Reality of the Atomic Bombing to the Next Generation: Through the Production and Release of the Film “Nagasaki: In the Shadow of the Flash”

Jumpei Matsumoto

In August 2025, the film “Nagasaki: In the Shadow of the Flash” was released. It depicts the rescue efforts of nurses and others who aided atomic bomb survivors in Nagasaki immediately after the bombing. The story is based on *In the Shadow of the Flash: Memoirs of Red Cross Nurses Who Rescued Atomic Bomb Survivors*, a collection of testimonies published in 1980 by the Nagasaki Prefectural Branch of the Japanese Red Cross Society. The film premiered in Nagasaki Prefecture on July 25 and was subsequently screened at more than 180 theaters nationwide. Although some areas weren’t covered, the film reached far and wide. As the director, I was involved from the planning and production stages through to promotion and release. This experience prompted some reflections on the theme, which I wish to share here.

In a word, I feel the situation can be described as one of "polarization". First, I must admit that the number of viewers who came to see this film, centered on the atomic bomb, was fewer than I had expected. Among them, elderly people seemed to be more present, and the extremely enthusiastic feedback we received indicates that there was certainly strong interest within this demographic. Younger generations, however, were notably underrepresented, and their attendance was sparse. This suggests that a division has emerged between those who care and those who do not. On the other hand, media coverage and exposure, including interviews with me, seemed extensive. Considering the overall buzz surrounding the 80th anniversary of the end of the war, the atomic bomb was undeniably a major public theme. Yet judging from theater attendance, I found myself questioning whether the atomic bombing truly resonates with individuals on a personal level.

The problem here is that although the atomic bomb is widely recognized as an important issue, it has not reached individuals on a personal level. A divide between enthusiastic people and indifferent ones has deepened. Despite the ample opportunities for communication through news coverage and other media, it seems difficult for even the most sincere and dedicated efforts to reach those who remain indifferent. Moreover, even within this enthusiasm, somewhat radical ideas can be observed. Considering both excess and deficiency, it seems that one of the causes lies in the lack of reflection on the previous war in postwar Japanese education.

Yet I also felt strongly the immense influence of the atomic bomb survivors’ activism. Without even citing the 2024 Nobel Peace Prize, it is clear that their voices have guided the world and helped prevent the reuse of nuclear weapons. Why are their voices so powerful? Reflecting on it, perhaps this is because their voices are "voices accompanied by pain". Exposing the

wounds inflicted on their bodies and minds, the survivors have taken the risk to speak out. And it is also true that the generations that follow must continue to shoulder the responsibility of amplifying those survivors' voices and ensuring that they reach every corner of society. Looking back, what struck me the most while filming this work was the overwhelming passion and dedication shown by the staff and cast. It came from the theme of the atomic bomb itself. It suggests that anyone who attempts to confront the pain directly, regardless of their prior knowledge or level of interest, will be deeply moved. The fact that many audiences shed tears in theaters reflects this same reality.

But the number of survivors is dwindling, and soon they too will be gone from this world. Yet look around—aren't "voices accompanied by pain" still being raised all over the world today? If we dismiss the atomic bombings as mere history, then surely we must first listen to the voices of our neighbors. And if we try to listen to those voices, the voices of the survivors themselves will surely strike us even more deeply. The pain of our neighbors today—in Ukraine, Gaza, Sudan, Myanmar, and elsewhere—is connected to the pain of the atomic bomb survivors. To love those who live right beside us is to hate war and nuclear weapons. Even now, cries of pain can be heard. I wish to nurture and pass on a respectful attitude toward life.

Director of the Film "Nagasaki: In the Shadow of the Flash"

Column 5

How Should the Next Generation Understand and Pass on the Reality of the Atomic Bombing?

Kokoro Nishiyama

"The road has already been taken; one is where one is; and on the roads of time, one can neither turn back, nor go over the same road twice"

These words by the French philosopher Alain (Émile-Auguste Chartier) suggest that although human beings may try to re-examine the road they have traveled and search for a side path, that road has already been walked, and where we now stand is our present place in the world. His words resonate with humanity's journey regarding nuclear weapons. In the twentieth century, we invented and used nuclear arms and continued to expand them under the name of nuclear deterrence. Even while knowing the devastation in Hiroshima and Nagasaki, the world kept searching for a "detour." Yet we have in fact already walked the road on which nuclear weapons "might be used": nuclear testing, the Cuban Missile Crisis, and the heightened nuclear risks associated with Russia's invasion of Ukraine. By what seems almost like chance, we now stand in a world where not a single nuclear weapon has been used in war since 1945. How can we continue to choose the path of "never using nuclear weapons again"? How should the next generation confront and carry forward the reality of the atomic bombings? How should we carry forward the voices of Hibakusha? From this present moment of heightened nuclear risk, it is the responsibility of the younger generation to carve out a new road toward peace.

I first came to know about the atomic bomb as a sixth-grade student during a school trip to the Nagasaki Atomic Bomb Museum. It was my first encounter with the reality of death, and I could not avert my eyes. "Why do nuclear weapons still exist today?" With that question in my heart, I told my mother that I wanted to attend school in Nagasaki (perhaps the greatest wish of my life). I spent five years there during junior and senior high school. When Nagasaki marked the 70th anniversary of the bombing, one phrase was often heard: "Do not let memories fade." With the 80th anniversary now behind us, and as I continue my studies once again in Nagasaki, the advancing age of the hibakusha has brought into sharp relief the urgent question of how their memories are to be carried forward.

Dr. Masao Tomonaga, a hibakusha from Nagasaki, wrote the following in last year's *Hiroshima Report* in his message "What I Want to Tell the Next Generation of Young People: As long as this nuclear deterrence mentality persists, nuclear abolition will never be achieved. The power to change this lies only with the next generation of young people who will have a whole new way of thinking. If through the solidarity of the world's next generation, governments for a nuclear-free world can be realized."

I experienced precisely that solidarity through the many international conferences in which I participated this year. I learned together with youth from around the globe who shared the

same aspirations, and we drew closer to one another through dialogue that transcended national borders. At the Pugwash Conference in Hiroshima, a researcher from Iran said to us: “Young people from Japan, Russia, and India are speaking together about peace. This is what we call hope.” I also experienced in my own life what Mayor Shiro Suzuki of Nagasaki expressed in his Peace Declaration: “The first step is to know the other person. We must repeatedly conduct dialogue and little by little build up trust.”

I owe the opportunity to learn about the reality of the atomic bombings and build solidarity for the tireless efforts of hibakusha and all those who have bridged generations. I wish to express my deepest gratitude.

Let me end with another of Alain’s words: “The departed live on within us.”

As long as the teachings of those who have passed flow within us, they are by no means gone; they live vibrantly within us. To continue carrying within myself the voices of the hibakusha who dedicated their lives to peace—this, I believe, is the true form of inheritance for the next generation.

PhD Student, Nagasaki University Graduate School of Global Humanities and Social Sciences, and Visiting Researcher, Research Center for Nuclear Weapons Abolition (RECNA)

Column 6

How Should the Next Generation Understand and Pass on the Reality of the Atomic Bombing?

Misaki Fujiyama

At Shimint Hiroshima, on the site of the former Hiroshima Municipal Stadium, the permanent exhibition "Pride of Hiroshima" has been on display since April 2024. This exhibition inherits the concept presented at another exhibition during the 2023 G7 Hiroshima Summit—"let people around the world feel the trajectory of recovery, the shining present, and the future dreams of the people of Hiroshima." Through video, music, and other artistic means, it presents the story of Hiroshima's recovery through the perspective of business.

By showcasing how Hiroshima—once said to be barren for 70 years after the atomic bombing—has recovered to a point where little trace of the devastation remains, and by tracing that process, the exhibition carries a message to people around the world whose cities are currently being destroyed and who are suffering: never give up on your dreams.

In managing the *Pride of Hiroshima* permanent exhibition, I am responsible for planning and operations, with a particular focus on student coordination. I encourage students not only to welcome visitors but also to collaborate with participating companies and local creators involved in the exhibition, empowering them to propose improvements for the exhibition. One initiative that emerged from this effort is a project to reproduce a 1949 Mazda brochure created for overseas markets shortly after the war. The brochure's cover bears the very words that gave this exhibition its name: "a pride of Hiroshima." The journey of this project is documented on Mazda's website, "a pride of Hiroshima! The Future and Peace Baton Passed Down from the 'Red' Three-Wheeled Truck,"[1] which launched on August 6, 2025—a date that marked exactly 80 years since the atomic bombing.

Beyond the exhibition itself, which visitors explore freely, we also conduct workshops during school trips. This initiative builds upon our flexible approach tailored to partners' needs—for example, increasing staff numbers or using quiz formats. It is a distinctive effort made possible only because it is carried out by members directly involved in this permanent exhibition. The team comprises corporate representatives, students, and creators from within the prefecture. Members also participate from Eikei University, from which I graduated. With extensive experience in project-based learning (PBL), the students are accustomed to gaining insights through dialogue. The creators contribute their design thinking, while the corporate side conveys history and pride in their work. Together, they encourage students on school trips to discover their own "pride of me." While this initiative requires a relatively large-scale effort

[1] MAZDA, "A Pride of Hiroshima! The Baton of Future and Peace Passed from the 'Red' Three-Wheeled Truck," August 6, 2025, https://www.mazda.com/ja/mazda-mirai-base/articles/20250806-pride-hiroshima/.

and involves costs, both demand and satisfaction levels are high. We are currently exploring the possibility of adapting it for corporate training programs in the future.

One thing I noticed while involved in this exhibition is that "trust in a company's sincerity fosters deep local pride."

Participating companies provided an enormous amount of materials for this exhibition—photos, pamphlets, company histories, and testimonials from alumni—that wouldn't be found elsewhere. As mentioned earlier, when students planned activities or asked questions, the companies responded sincerely to their passionate actions. For example, during a class at Eikei University, where most student members attend, one participating company revealed that a student's grandfather had worked for them during their recovery period and played a role connecting overseas with Hiroshima. This led to a presentation by the grandson and his grandfather. This gave us, as staff, an unparalleled opportunity to hear the living voices of history. The company willingly cooperated in this study session. The event, attended by the grandfather (a former employee), his wife, and daughter (the student's mother), moved us deeply. We witnessed a powerful moment as the grandfather and grandson spoke together in front of people of all generations, with their family looking on. It was a meaningful gathering where young employees also spoke about their future, their personal "Pride," and the pride of working for a company that carries Hiroshima's history. For this project, the company gathered materials featuring the grandfather from its vast archives and responded persistently and sincerely to the students' meetings and requests. As a follow-up to this event, the student reported that, touched by the company's sincerity and its history of reconstruction, they now aspire to work for a company within Hiroshima Prefecture.

As long as the memory of the atomic bomb's devastation endures, the history of Hiroshima's recovery will never fade. The history passed down by those who lived in Hiroshima—who rose again no matter the circumstances—will undoubtedly sustain and inspire us young people as we move forward in our lives. I, too, have encountered the sincerity of many companies, starting with Mazda, which serves as the secretariat for this exhibition's executive committee. It was not flashy hospitality, but rather the sincerity evident in daily actions and in moments of crisis that made me resolve to keep striving here in Hiroshima even after graduating from university.

So that future generations may have similar encounters, I want to keep thinking and taking actions here in Hiroshima—with Pride—about what I, and what we, can do now.

Representative of Li-mone and Student Director, Pride of Hiroshima Exhibition

Chapter 1

Nuclear Disarmament[1]

(1) Status of Nuclear Forces (estimates)

As of December 2025, eight countries have declared that they possess nuclear weapons. According to Article IX-3 of the Nuclear Non-Proliferation Treaty (NPT), "a nuclear-weapon State [NWS] is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967." China, France, Russia, the United Kingdom, and the United States meet this requirement and have acceded to the NPT as NWS as defined by the treaty. The three other countries that have tested nuclear weapons and declared possessing them are India, North Korea, and Pakistan. India and Pakistan have never been parties to the NPT. Israel, a non-NPT state, has maintained a policy of "nuclear ambiguity" by neither confirming nor denying having nuclear weapons, although it is widely believed that it possesses them. There is no conclusive evidence that Israel has conducted a nuclear explosive test. In 1993 and 2003, North Korea declared its withdrawal from the NPT and, subsequently, its acquisition of nuclear weapons. In this report, these four additional states that have publicly declared possession of or are believed to possess nuclear weapons are referred to as "other nuclear-armed states."

The total number of nuclear weapons worldwide, which peaked at approximately 70,000 during the Cold War, has been significantly reduced since the late 1980s. As of January 2025, estimates by the Stockholm International Peace Research Institute (SIPRI) indicate that 12,241 nuclear weapons, including those awaiting dismantlement, still exist globally.[2]

This figure represents a 1.32% reduction, or 164 fewer nuclear weapons, compared to 2024.[3] It also includes retired warheads. Excluding them, the number of operational nuclear warheads (military stockpiles) worldwide increased from 9,585 in the previous year to 9,614 as of January 2025, an increase of approximately 29 warheads. An estimated 3,912 of these were deployed on missiles or aircraft, about 8 more than in January 2024.[4]

The United States and Russia together hold about 90% of this total. In recent years, the pace of growth in China's estimated nuclear warhead arsenal has accelerated, marking the most significant expansion since the U.S.–Soviet nuclear buildup of the Cold War. SIPRI estimates that China's nuclear warhead count increased by approximately 100 between 2024 and 2025. It is also estimated that the number of nuclear warheads in India and Pakistan has gradually

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1 This chapter is authored by Timothée Albessard.

2 Stockholm International Peace Research Institute, *SIPRI Yearbook 2025: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2025), chapter 6.

3 The *SIPRI Yearbook 2025* revised the estimated number of nuclear weapons in the U.S. inventory from 5,044 (as reported in the *2024 Yearbook*) to 5,328. Consequently, the total global nuclear weapons estimate for 2024 has been updated from 12,121 to 12,405.

4 Ibid.

Table 1-1: Number of nuclear weapons—2014-2025

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
China	250	260	260	270	280	290	320	350	350	410	500	600
France	300	300	300	300	300	300	290	290	290	290	290	290
Russia	8,000	7,500	7,290	7,000	6,850	6,500	6,375	6,255	5,977	5,889	5,580	5,459
U.K.	225	215	215	215	215	200	195-215	225	225	225	225	225
U.S.	7,300	7,260	7,000	6,800	6,450	6,185	5,800	5,550	5,428	5,244	5,328	5,177
India	90-110	90-110	100-120	120-130	130-140	130-140	150	156	160	164	172	180
Pakistan	100-120	100-120	100-130	130-140	140-150	150-160	160	165	165	170	170	170
Israel	80	80	80	80	80	80-90	90	90	90	90	90	90
N. Korea[(a)]	(6-8)	(6-8)	(10)	(10-20)	(10-20)	(20-30)	(30-40)	(40-50)	20	30	50	50
Total[(b)]	16,350	15,850	15,395	14,935	14,465	13,865	13,400	13,080	12,705	12,512	12,405	12,241

(a) Respective estimates from 2014-2021 list the number of warheads which North Korea could potentially build with the amount of fissile material it has produced.
(b) Respective total amounts from 2014-2021 do not include the number of warheads which North Korea could potentially possess.

Sources: Stockholm International Peace Research Institute (SIPRI), *SIPRI Yearbook: Armaments, Disarmament and International Security* (Oxford: Oxford University Press).

increased by around 10 warheads per year over the past few years. In contrast, the arsenals of Russia and the United States declined by an estimated 121 and 151 warheads. The nuclear arsenals of France, Israel, North Korea, Pakistan, and the United Kingdom are assessed to have remained broadly unchanged during this period. Moreover, all nuclear-armed states are actively modernizing their arsenals and placing greater emphasis on the role of nuclear weapons in their national security strategies. In both qualitative and quantitative terms, the world has clearly entered a new phase of nuclear arms racing.

Of the nuclear weapon states, only France and the United Kingdom have announced their maximum number of nuclear weapons. In 2015, France announced that its maximum number of nuclear weapons was 300, that it did not possess any non-deployed nuclear weapons and that all of its nuclear weapons were deployed and operational.[5] In its *Integrated Review of Security, Defence, Development and Foreign Policy* published in March 2021, the United Kingdom announced that it would raise its nuclear warhead stockpile ceiling from not more than 225 to no more than 260.[6]

5 NPT/CONF.2015/10, March 12, 2015.

6 U.K. Cabinet Office, *Global Britain in a Competitive Age. The Integrated Review of Security, Defence, Development and Foreign Policy*, March 2021, p. 76, https://www.gov.uk/government/publications/global-britain-in-a-competitive-age-the-integrated-review-of-security-defence-development-and-foreign-policy.

Table 1-2: Status of nuclear forces (estimates, as of January 2025)

	Total nuclear stockpile	Breakdown				Nuclear warheads	Delivery vehicles
U.S.	5,177	Retired / Awaiting dismantlement 1,477					
		Operational 3,700	Non-deployed 1,930				
			Deployed 1,770	Non-strategic 200			
				Strategic 3,500	ICBM	800	400
					SLBM	1,920	280
					Strategic bombers	780	65
Russia	5,459	Retired / Awaiting dismantlement 1,150					
		Operational 4,309	Non-deployed 2,591				
			Deployed 1,718	Non-strategic 1,477			
				Strategic 2,832	ICBM	1,254	333
					SLBM	992	192
					Strategic bombers	586	67
U.K.	225		Deployed 120		SLBM	120	64
France	290		Deployed 280		SLBM	240	64
					Attack aircraft (including carrier based aircraft)	50	50
China	600				Land-based ballistic missile	376	712
					SLBM	72	72
					Attack aircraft	20	20
					Other stockpile	132	
India	180				Land-based missile	80	80
					Attack aircraft	48	48
					SLBM	24	24
					Other stockpile	28	
Pakistan	170				Land-based ballistic missile	126	126
					Attack aircraft	36	36
					Other stockpile	8	
Israel	90				Ballistic missile	50	50
					Attack aircraft	30	50
					Cruise missile	10	20
N. Korea	50						
World	12,241		(Deployed) (3,912)				

ICBM: Inter-Continental Ballistic Missile SLBM: Submarine Launched Ballistic Missile
Source: SIPRI, *SIPRI Yearbook 2025*, chapter 6.

(2) Commitment to Achieving a World without Nuclear Weapons

A) Approaches toward a world without nuclear weapons

According to the preamble of the NPT, states parties "[declare] their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to undertake effective measures in the direction of nuclear disarmament, [and urge] the co-operation of all States in the attainment of this objective." Article VI of the Treaty stipulates that "[e]ach of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control."

No country openly opposes the goal of the total elimination of nuclear weapons or the vision of a world without nuclear weapons. Commitment to nuclear disarmament has been reiterated in various fora, including the NPT review process and the United Nations General Assembly (UNGA). However, such a "commitment" does not necessarily mean that NWS and nuclear-armed states are actively pursuing the realization of a world without nuclear weapons. In the wake of the recent intensification of strategic competition, as well as Russia's invasion of Ukraine accompanied by nuclear intimidation since 2022, NWS have reemphasized the role of nuclear weapons in their national security. As a result, there have been few proactive efforts toward nuclear disarmament; instead, states were actively engaged in efforts to expand their nuclear arsenals.

Nuclear-weapon states

The NWS have expressed their continued commitment to the NPT and have stated that they will take a realistic, step-by-step approach to nuclear disarmament. In the context of the NPT, the five NWS have been cooperating to a certain extent on nuclear disarmament issues by holding regular meetings and issuing joint statements at the NPT Review Conference (RevCon) and Preparatory Committee (PrepCom) meetings. However, since Russia's full-scale invasion of Ukraine in February 2022, P5 meetings have temporarily stalled, and no such meeting has been reported in 2025, with the last known working group session reportedly held in Dubai in December 2024.[7] Furthermore, as with the 10th NPT RevCon in 2022 and the Second PrepCom for the 11th NPT Review Conference in 2024, the five NWS did not issue a joint statement at the Third NPT PrepCom in April-May 2025, demonstrating once again the seriousness of the rift among the NWS.

At the third NPT PrepCom, the NWS individually made the following statements about their approach to nuclear disarmament.

China stated that it "supports giving full play to the role of the NPT in serving peace and development in the new era, upholds the authority, effectiveness and universality of the NPT. China advocates a nuclear disarmament path in which one's own security and common

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[7] Ministry of Foreign Affairs of China, "China Chaired a P5 Meeting on Nuclear Doctrines," December 10, 2024, https://www.mfa.gov.cn/eng/wjb/zzjg_663340/jks_665232/jkxw_665234/202412/t20241210_11541 739.html.

security are indivisible and maintaining global strategic stability, upholds the inseparability of security rights and security obligation and establishing a fair and just nuclear non-proliferation regime."[8]

China further articulated its approach to nuclear disarmament in a white paper titled *China's Arms Control, Disarmament, and Nonproliferation in the New Era*, released on November 27—its first white paper on the subject since 2005: "China advocates that all nuclear-weapon states should make an unequivocal commitment not to seek permanent possession of nuclear weapons, and seek to conclude a legal instrument on the complete prohibition and thorough destruction of such weapons. Nuclear disarmament should be a just and reasonable process of gradual reduction towards a downward balance that maintains global strategic stability and undiminished security for all, and should be proceeded in a step-by-step manner. Countries possessing the largest nuclear arsenals should fulfill their special and primary responsibilities for nuclear disarmament and continue to make drastic and substantive reductions in their nuclear arsenals in a verifiable, irreversible and legally-binding manner, so as to create the conditions for complete and thorough nuclear disarmament. When conditions are ripe, all nuclear-weapon states should join the multilateral nuclear disarmament negotiation process."[9] Compared with the previous year's statements, which emphasized strategic risk reduction, China's white paper seemed to place greater rhetorical emphasis on nuclear abolition and disarmament.

France condemned Russia's invasion of Ukraine and its "irresponsible nuclear rhetoric and its posture of strategic intimidation, both of which run counter to the objectives of the Treaty. [...] France, which promotes a progressive, context-based approach, remains fully committed to creating the conditions for a world free of nuclear weapons, in full respect of the principle of undiminished security for all."[10]

Russia stated that "[t]he NPT has been and remains a cornerstone of the international security architecture. Over fifty years of the successful functioning of this Treaty demonstrate both its relevance for all its States parties and its utility." However, it also insisted that disarmament initiatives "fail to take into account the objective difference in the States' strategic situation and their economic, political, military and demographic potential. This prevents us from laying a solid groundwork for upgrading the regional security and global stability architecture and creating favourable environment for progressing in arms control, disarmament and non-proliferation. Any disarmament initiative and practical measures to implement it should be consistent with the politico-military and strategic context."[11]

The United Kingdom stated that "Russia has repeatedly shown itself to be an irresponsible nuclear weapons state, deploying irresponsible rhetoric and coercive nuclear signalling in

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8 "Statement by China," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

9 Ministry of Foreign Affairs of China, *China's Arms Control, Disarmament, and Nonproliferation in the New Era*, November 27, 2025, https://www.fmprc.gov.cn/mfa_eng/xw/wjbxw/202511/t20251127_11761653.html.

10 "Statement by France," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

11 "Statement by Russia," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

its illegal invasion of Ukraine. In return for military support from the DPRK [Democratic People's Republic of Korea] it is seeking to normalise Pyongyang's nuclear adventurism. [...] We have repeatedly cited our concerns about the rapid expansion of China's nuclear arsenal and called for greater transparency as to the nature and extent of China's nuclear deterrent. The UK is fully committed to the goal of a world without nuclear weapons. However, these realities are an obstacle to disarmament."[12]

The United States stated that "we are here to advance our collective security by strengthening the NPT, preventing the proliferation of nuclear weapons, and, yes, pursuing their ultimate elimination."[13] It also denounced the challenges faced by the NPT, such as the evidence that "China is rapidly and opaquely building up its nuclear arsenal, threatening global peace and stability. We assess that Beijing will exceed 1,000 nuclear warheads by the year 2030." It also condemned the fact that "Russia has developed novel nuclear weapons and improved dual-capable delivery systems, unlawfully purported to suspend the New START [Strategic Arms Reduction] Treaty, engaged in irresponsible nuclear rhetoric, and reneged on the security assurances it provided Ukraine." The United States recalled that "President Trump has spoken repeatedly about the enormous power of nuclear weapons and [is] working to ensure there is never a need for such weapons to be used again. He has made clear his desire to address the threat posed by Russia and China's nuclear arsenals.[14]

Nuclear-armed states outside the NPT have stated their commitment to nuclear disarmament and outlined their specific approaches at the UNGA, its First Committee, and other fora. For instance, India stated that "as a nuclear-weapon state [sic], our commitment to universal, non-discriminatory and verifiable nuclear disarmament remains undiminished. This goal can be achieved by a step-by-step process underwritten by a universal commitment and an agreed multilateral framework that is global and non-discriminatory."[15] Pakistan stated that it "remains committed to the goal of a nuclear-weapon-free world – achieved in a universal, verifiable, and non-discriminatory manner."[16]

While mentioning nuclear disarmament, North Korea did not express any commitment to that effect: "Unless the nuclear threat to us coming from outside is terminated, and as long as there exist the imperialist forces that use the nukes for the means of existence of their tyranny, we will never allow an interruption on our road of bolstering up our military capabilities to safeguard the security of our state and the wellbeing of our people both at present and in the future, but continue to move forward to maintain the edge of our overwhelming strength. […] In order to realize complete abolition of the nuclear weapons, the biggest nuclear weapon states

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12 "Statement by the United Kingdom," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

13 "Statement by the United States," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

14 "Statement by the United States," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

15 "Statement by India," General Debate, First Committee, UNGA, October 15, 2025.

16 "Statement by Pakistan," Thematic Debate on Nuclear Weapons, First Committee, UNGA, October 21, 2025.

should duly take the lead in nuclear disarmament."[17]

Non-nuclear-weapon states

The majority of non-nuclear-weapon states (NNWS) expressed their concerns about the worsening international security environment, including the situation in Ukraine, the Israel-Gaza conflict, U.S.-China competition, and North Korea's nuclear development, all of which were seen to hinder progress in the implementation of the NPT. They have also criticized the stagnation and regression of nuclear disarmament and called for the revitalization of disarmament efforts toward a world without nuclear weapons.

Among NNWS that do not rely on extended nuclear deterrence, the New Agenda Coalition (NAC: Brazil, Egypt, Ireland, Mexico, New Zealand, and South Africa) stated at the 2025 NPT PrepCom that "[t]here is widespread frustration over the persistent lack of progress on disarmament, nuclear risks are at unprecedented levels and global trust in the NPT´s effectiveness is eroding. The failure of nuclear-weapon States to fulfill their disarmament obligation and their commitments, in accordance with Article VI and as agreed in 1995, 2000 and 2010, is driving a growing sense of disillusionment with the NPT amongst non-nuclear weapon States."[18]

South Africa expressed its disappointment regarding "the apparent lack of urgency and seriousness with which nuclear disarmament, specifically has been approached in the NPT context. This state of affairs places the Treaty, as well as its review process, under increasing pressure and falls far short of expectations."[19] Brazil voiced similar concerns in even stronger terms: "[t]he biggest problem with the NPT is the absence of disarmament. To accept this situation as normal amounts to abandoning the very purpose of the treaty, namely to achieve a world free of nuclear weapons."[20]

Similarly, many NNWS were highly critical of the current state of nuclear disarmament. For instance, the member states of the Non-Aligned Movement (NAM) reiterated their "deep concern over the greatest threat to peace and security posed by the continued existence of nuclear weapons and related military doctrines, modernization of nuclear forces, and development of more effective and newer, including low-yield nuclear warheads as well as other policies and practices that run contrary to the principles and objectives of the Treaty such as the continued and evolving nuclear weapons sharing arrangements and extended deterrence. The Group strongly calls for an immediate end to this trend that in fact is a new nuclear-arms race and thus a clear violation of Article VI of the Treaty."[21]

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17 "Statement by the Democratic People's Republic of Korea," General Debate, First Committee, UNGA, October 16, 2025.

18 "Statement by the NAC," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

19 "Statement by South Africa," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

20 "Statement by Brazil," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

21 "Statement by Uganda on Behalf of the NAM," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

Regarding the Treaty on the Prohibition of Nuclear Weapons (TPNW) and its contribution to nuclear disarmament, Austria stated that "[t]he TPNW demonstrates sincere commitment to and support for the nuclear disarmament and non-proliferation regime. It constitutes an investment into multilateralism, international law and international peace and security. By reinforcing both disarmament and non-proliferation pillars of the NPT, it strengthens the global nuclear regime. Austria calls on all states to join the TPNW and to engage sincerely with its arguments and underlying facts."[22] Kazakhstan supported similar views, adding that "[t]he emergence and strengthening of the TPNW should be perceived as a wake-up call for the nuclear-weapon States. Kazakhstan remains concerned by the failure of two consecutive Review Conferences to reach consensus and, as a result, the evident lack of any tangible and collectively agreed measures on disarmament."[23]

Among the NNWS allied with the United States and that rely on extended nuclear deterrence, Japan cited the Nobel Peace Prize awarded to the Confederation of A- and H-Bomb Sufferers Organizations (Nihon Hidankyo) and echoed the *hibakusha*'s calls for a world without nuclear weapons, arguing at the PrepCom that "[t]he NPT architecture must respond to those earnest wishes of people around the world. It is our shared responsibility and moral imperative to find common ground, step by step, among States Parties."[24] It is also worth noting as an important indication of commitment that Foreign Minister Iwaya personally attended the meeting, at which he expressed a sense of crisis regarding the current state of the NPT regime: "Our predecessors created the NPT as a framework of international cooperation to never repeat the devastation and sacrifices of the past war. We must, at all costs, maintain and strengthen this framework. Next year's Review Conference exists for this very purpose. Japan will make its utmost effort to maintain the NPT and improve its functioning, while enhancing transparency and accountability."[25] Japan also referenced the recommendations made by the International Group of Eminent Persons for a World without Nuclear Weapons (IGEP) as "an eloquent example of how engaging in sincere dialogue and constructive discussion can create a wisdom, even in this increasingly divided world. We should, as NPT States Parties, return to that origin of the NPT and find out what we can agree on."[26] These recommendations were submitted to the PrepCom as a working paper[27] and presented at a dedicated side event.[28]

Australia reaffirmed the centrality of the NPT and stated that "[w]e must remain united in pursuing concrete steps that underpin progress towards disarmament, such as the entry into force of the Comprehensive Nuclear-Test-Ban Treaty; commencing negotiations for a Fissile

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22 "Statement by Austria," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

23 "Statement by Kazakhstan," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

24 "Statement by Japan," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

25 Ibid.

26 Ibid.

27 NPT/CONF.2026/PC.III/WP.33, April 15, 2025.

28 UN Web TV, "International Group of Eminent Persons for a World without Nuclear Weapons (NPT PrepCom Side Event)", April 28, 2025, https://webtv.un.org/en/asset/k1t/k1thhcn9gj#:~:text=On%20April%2028%2C%202025%2C%20from%2013%3A15%20to%2014%3A30,Persons%20for%20a%20World%20without%20Nuclear%20Weapons%20%28IGEP%29%22.

Material Cut-Off Treaty [FMCT]; developing robust techniques for verifying disarmament commitments."[29]

Underscoring the limited prospects for a major breakthrough in nuclear disarmament as well as its concerns regarding the outcome of the review process, Norway state that the "PrepCom should recommend that RevCon start by picking the lowest-hanging fruit of them all: a simple reaffirmation of previous commitments. It would be to state the obvious, because these commitments did of course not come with an expiry date. It would nevertheless provide some useful starting points and a positive impulse to our work in these tense times."[30]

B) Voting behavior on UNGA resolutions on nuclear disarmament proposals by Japan, NAC and NAM

In 2025, the UNGA once again adopted the following three resolutions: "Steps to building a common roadmap towards a world without nuclear weapons"[31] proposed by Japan and others; "Towards a nuclear-weapon-free world: accelerating the implementation of nuclear disarmament commitments"[32] proposed by the New Agenda Coalition (NAC); and "Nuclear Disarmament"[33] proposed by NAM members, including Kazakhstan. The voting behavior of the countries examined in this project on this resolution is as follows:

- "Steps to building a common roadmap towards a world without nuclear weapons"—147 in favor (Australia, Canada, Germany, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, Norway, Poland, Saudi Arabia, Sweden, Switzerland, Türkiye, the United Kingdom, and others); 5 against (China, Iran, North Korea, Russia, and other); 26 abstentions (Austria, Brazil, Egypt, France, India, Indonesia, Israel, New Zealand, Pakistan, South Africa, the United States, and others). Syria did not vote. Compared with 2024, the number of votes in favor declined by 5, while votes against declined by 1 and abstentions by 2. The number of non-voting states rose from 7 to 15.
- "Towards a nuclear-weapon-free world: accelerating the implementation of nuclear disarmament commitments"—130 in favor (Austria, Brazil, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, Saudi Arabia, South Africa, Switzerland, and others); 39 against (Canada, France, Germany, India, Israel, South Korea, North Korea, the Netherlands, Norway, Poland, Russia, Sweden, Türkiye, the United Kingdom, the United States, and others); 12 abstentions (Australia, China, Japan, Pakistan, and others). Syria did not vote. Compared with 2024, the number of votes in favor declined by 7, while votes against increased by 4 and abstentions declined by 3. The number of non-voting states rose from 6 to 12.
- "Nuclear disarmament"—114 in favor (Brazil, China, Egypt, Indonesia, Iran, Kazakhstan, Mexico, Saudi Arabia, and others); 44 against (Australia, Canada, France, Germany, Israel, South Korea, the Netherlands, Norway, Poland, Russia, Sweden,

[29] "Statement by Australia," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

[30] "Statement by Norway," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

[31] A/RES/80/48, December 1, 2025.

[32] A/RES/80/39, December 1, 2025.

[33] A/RES/80/24, December 1, 2025.

Switzerland, Türkiye, the United Kingdom, the United States and others); 19 abstentions (Austria, India, Japan, North Korea, New Zealand, Pakistan, South Africa and others). Syria did not vote. Compared with 2024, the number of votes in favor declined by 6, while votes against increased by 1 and abstentions declined by 1. The number of non-voting states rose from 10 to 16.

The resolution submitted by Japan and adopted by the UNGA was almost identical to that adopted in 2024. A notable addition, however, was a call—bearing China in mind—for "good-faith negotiations on a future nuclear arms control framework by the three States with the largest nuclear arsenals to restrain their nuclear arsenals." This marked the first time that the resolution sponsored by Japan alluded to China in language urging nuclear disarmament negotiations. Moreover, as in 2024, the resolution expressed deep concerns about the devastating and inhuman consequences of the use of nuclear weapons and encouraged leaders and young people to visit Hiroshima and Nagasaki. It also referenced the TPNW, stating that Japan "acknowledg[es]" its entry into force and the convening of the first, second and third meetings of the Conference of the Parties to the TPNW.

Table 1-3: Voting behavior on selected UNGA resolutions in 2025

	Steps to building a common roadmap towards a world without nuclear weapons	Towards a nuclear weapon-free world	Nuclear disarmament	TPNW	Follow-up to the advisory opinion of the ICJ	Convention on the Prohibition of the Use of Nuclear Weapons	Humanitarian consequences	Ethical imperatives
China	×	△	○	×	○	○	△	△
France	△	×	×	×	×	×	×	×
Russia	×	×	×	×	×	△	×	×
U.K.	○	×	×	×	×	×	×	×
U.S.	△*)	×	×	×	×	×	×	×
India	△	×	△	×	△	○	○	△
Israel	△	×	×	×	×	×	×	×
Pakistan	△	△	△	×	△	△	△	△
Australia	○	△	×	△	×	×	△	×
Austria	△	○	△	○	○	×	○	○
Brazil	△	○	○	○	○	○*)	○	○
Canada	○	×	×	×	△	×	△	×
Egypt	△	○	○	○	○	○	○	○
Germany	○	×	×	×	×	×	△	×
Indonesia	△	○	○	○	○	○	○	○
Iran	×	○	○	○	○	○	○	○
Japan	○	△	△	×	△	△	○	△
Kazakhstan	○	○	○	○	○	○	○	○
South Korea	○	×	×	×	×	×	△	×

	Steps to building a common roadmap towards a world without nuclear weapons	Towards a nuclear weapon-free world	Nuclear disarmament	TPNW	Follow-up to the advisory opinion of the ICJ	Convention on the Prohibition of the Use of Nuclear Weapons	Humanitarian consequences	Ethical imperatives
Mexico	○	○	○	○	○	○	○	○
Netherlands	○	×	×	×	△	×	△	×
New Zealand	△	○	△	○	○	×	○	○
Norway	○	×	×	×	△	×	△	×
Poland	○	×	×	×	×	×	×	×
Saudi Arabia	○	○	○	△	○	○	○	○
South Africa	△	○	△	○	○	○	○	○
Sweden	○	×	×	×	×	×	△	×
Switzerland	○	○	×	△	○	×	○	△
Syria	? *)	? *)	? *)	?	? *)	? *)	? *)	? *)
Türkiye	○	×	×	×	×	×	△	×
North Korea	×	×	△	×	△	△	△	△

[○ : In favor, × : Against, △ : Abstention, ? : No vote]

*) Changing voting behavior in 2025 compared with the previous year.

(3) Humanitarian Consequences of Nuclear Weapons

A) Main arguments

In 2025, two major developments stood out with respect to the humanitarian consequences of nuclear weapons and deserve to be highlighted.

First, on May 26, the World Health Assembly adopted a resolution on the "Effects of Nuclear War on Public Health" during its 78th session. This resolution was proposed by Kazakhstan, New Zealand, and other states. "Recalling the ultimate goal of complete elimination of nuclear weapons and that the elimination of nuclear weapons is a high priority for international peace and security,"[34] the resolution mandates the World Health Organization (WHO) to update its 1983, 1987, and 1993 reports on the effects of nuclear war on health, health services, and the environment. The WHO Director-General will report back to the World Health Assembly by 2029. The voting behavior of countries surveyed in this project on this resolution is as follows:

- 86 in favor (Australia, Austria, Brazil, Egypt, Indonesia, Iran, Japan, Kazakhstan, South Korea, Mexico, New Zealand, Saudi Arabia, South Africa, Switzerland, and others); 14 against (France, Germany, North Korea, Poland, Russia, the United Kingdom, and others); 28 abstentions (Canada, China, India, Israel, the Netherlands, Norway, Pakistan, Sweden, Türkiye, and others). Syria and the United States did not vote.

Second, on October 21, the Chair of the Independent Scientific Panel on the Effects of Nuclear

[34] A78/A/CONF./1, May 19, 2025.

War, established in December 2024 by General Assembly Resolution 79/238, provided an overview of the Panel's first plenary meeting, held on September 4-5.[35] The Panel has been tasked with examining "the physical effects and societal consequences of a nuclear war on a local, regional and planetary scale, inter alia, the climatic, environmental and radiological effects, and their impacts on public health, global socioeconomic systems, agriculture and ecosystems, in the days, weeks and decades following a nuclear war." The Panel will produce a comprehensive report and submit it to the UNGA in 2027. It consists of 21 scientific experts participating in their personal capacity and appointed by the UN Secretary-General. Some members of the Panel are affiliated with institutions from several of the countries surveyed in this report, including both NWS and NNWS, such as the Brazilian Nuclear Energy Commission, the China Academy of Engineering Physics, and the U.S. Los Alamos National Laboratory. One member is also affiliated with the TPNW Scientific Advisory Group.[36]

At the NPT PrepCom in 2025, a number of NNWS referred to the humanitarian consequences of nuclear weapons. For instance, the NAM countries submitted a working paper on nuclear disarmament in which they stated that "any use or threat of use of nuclear weapons would be a crime against humanity and a violation of the principles of the Charter of the United Nations and international law, in particular international humanitarian law. The Group further believes that the mere possession of nuclear weapons is inconsistent with the principles of international humanitarian law."[37] NAM countries also expressed the wish to "see stronger language on humanitarian consequences, compliance with international humanitarian law and the prevention of nuclear war or any use or threat of use of nuclear weapons."[38]

The NAC stated that "[t]he humanitarian consequences of nuclear weapons use and testing must remain central to our deliberations. Scientific consensus has only reinforced what Hibakusha and communities affected by nuclear testing have long known: any use of nuclear weapons would be catastrophic. The impacts would include, inter alia, long-term harm to human health, environmental destruction, collapse of food systems, economic dislocation, and possibly even the breakdown of human civilization. In this regard, NAC recalls our joint support for last year's UNGA resolution on the effects of nuclear war and the need for scientific research. We welcome the pending establishment of an international panel and look forward to its contributions."[39]

TPNW states parties and signatory states delivered a joint statement in which they affirmed that "[t]he catastrophic humanitarian consequences and risks associated with nuclear weapons underpin the moral and ethical imperatives for nuclear disarmament and the urgency of achieving and maintaining a nuclear-weapon free world, which, among other drivers, inspired

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35 UN General Assembly, "Briefing by Prof. Ana María Cetto, Chair of the independent Scientific Panel on the Effects of Nuclear War," Thematic Debate, First Committee, October 21, 2025.

36 United Nations, "Secretary-General Announces Members of Independent Scientific Panel on Effects of Nuclear War," July 18, 2025, https://press.un.org/en/2025/dc3900.doc.htm.

37 NPT/CONF.2026/PC.III/WP.22. April 1, 2025.

38 "General Reflection by the NAM on the Chair's Paper," Third PrepCom for the 11th NPT RevCon, May 8, 2025.

39 "Statement by the NAC," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

the creation of the TPNW and guide its implementation. We the States Parties and Signatory States to the TPNW reaffirm our grave concern about the catastrophic humanitarian and environmental consequences of nuclear weapons which transcend national borders, pose grave implications for human survival and well-being and would be incompatible with the right to life."[40]

At the 2025 UNGA, as in the previous year, countries primarily from the Humanitarian Group submitted a resolution titled "Humanitarian consequences of nuclear weapons."[41] The resolution, inter alia, "[s]tresses that the catastrophic effects of a nuclear weapon detonation […] cannot be adequately addressed" and calls for the prevention of the use of nuclear weapons and the achievement of nuclear disarmament. The voting behavior of countries examined in this project is as follows:

- 135 in favor (Austria, Brazil, Egypt, India, Indonesia, Iran, Japan, Kazakhstan, Mexico, New Zealand, Saudi Arabia, South Africa, Switzerland, and others); 11 against (France, Israel, Poland, Russia, the United Kingdom, the United States, and others); 33 abstentions (Australia, Canada, China, Germany, North Korea, South Korea, the Netherlands, Norway, Pakistan, Sweden, Türkiye, and others). Syria did not vote. Compared with 2024, the number of votes in favor declined by 7, while votes against remained unchanged and abstentions declined by 1. The number of non-voting states rose from 6 to 14.

Furthermore, the voting behavior on the resolution entitled "Ethical imperatives for a nuclear-weapon-free world,"[42] which emphasized the inherent immorality of nuclear weapons and the need for their elimination and was led by countries from the Humanitarian Group, was as follows:

- 129 in favor (Austria, Brazil, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, Saudi Arabia, South Africa, and others); 41 against (Australia, Canada, France, Germany, Israel, South Korea, the Netherlands, Norway, Poland, Russia, Sweden, Türkiye, the United Kingdom, the United States, and others), 14 abstentions (China, India, Japan, North Korea, Pakistan, Switzerland and others). Syria did not vote. Compared with 2024, the number of votes in favor declined by 8, while votes against increased by 2 and abstentions increased by 4. The number of non-voting states rose from 7 to 14.

None of the NWS mentioned the humanitarian consequences of nuclear weapons. At the PrepCom, among the NNWS allied with the United States and relying on extended nuclear

[40] "Joint Statement by TPNW States Parties and Signatory States," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

[41] A/RES/80/50, December 1, 2025.

[42] A/RES/80/51, December 1, 2025.

deterrence, only Canada,[43] Japan,[44] and Norway[45] made brief references to the "catastrophic" nature of the humanitarian and environmental consequences of their use.

B) Victim assistance and environmental remediation

Assistance to victims of nuclear weapons-related activities, including their use, testing and production, and remediation of the contaminated environment are also important from the perspective of the humanitarian consequences of nuclear weapons. Article 6 of the TPNW stipulates provision of assistance to victims affected by the use or testing of nuclear weapons, as well as the implementation of necessary and appropriate measures towards the environmental remediation of contaminated areas. There are also some cases that some countries which have not signed or ratified the TPNW have addressed on an individual basis.

At the NPT PrepCom in 2025, the representative of Kiribati, on behalf of Kazakhstan, Mexico, and other countries, delivered a "Joint Statement Addressing the Legacy of Nuclear Weapons" calling for "further research to be conducted to increase understanding of the multi-facetted humanitarian and environmental consequences of nuclear weapons use and better assist in related help and remediation efforts, including to second and third generation victims" and for the inclusion of "an agenda item on nuclear legacy, such as victim assistance and environmental remediation at the Review Conference and during the next review cycle."[46]

During the third meeting of the states parties to the TPNW (3MSP), held from March 3 to 7, Kazakhstan delivered a statement advocating "the establishment of mechanisms to assist victims, rehabilitate affected areas, and ensure accountability for nuclear harm. Those who have suffered the consequences of nuclear testing must not be forgotten. Based on positive examples in other disarmament treaties, one of such possible and fitting solutions would be the establishment of an International Trust Fund."[47]

In its final report, the 3MSP decided to pursue further discussions under the informal working group on victim assistance, environmental remediation, and international cooperation and assistance, to establish such a trust fund dedicated to "victim assistance and environmental remediation from the consequences of nuclear use and testing."[48] Additionally, it was decided that the co-chairs of the informal working group would submit a report containing recommendations for the fund's guidelines, provisions, and terms of reference no later than four months prior to the 2026 TPNW Review Conference, with the objective of establishing the fund at that meeting if feasible.

At the 2025 UNGA, a resolution titled "Modalities of the 2026 meeting on victim assistance

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43 "Statement by Canada," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

44 "Statement by Japan," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

45 "Statement by Norway," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

46 "Joint Statement Addressing the Legacy of Nuclear Weapons," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

47 "Statement by Kazakhstan," Third Meeting of States Parties to the TPNW, March 4, 2025.

48 TPNW/MSP/2025/CRP.3, March 7, 2025.

and environmental remediation,"[49] submitted by Austria, Kazakhstan, New Zealand, and other states, was adopted. Although this track of discussions on victim assistance and environmental remediation within the UNGA is led by the same states—most notably Kazakhstan and Kiribati—as those spearheading the process under the TPNW framework, it constitutes a distinct and separate process. The resolution stated that a one-day meeting on victim assistance and environmental remediation will be held in early 2026 at the UN Headquarters, with participation of civil society, academia, relevant UN agencies, scientists, and "representatives of communities affected by the use, production and testing of nuclear weapons." The voting behavior of the countries examined in this project on this resolution is as follows:

- 170 in favor (Australia, Austria, Brazil, Canada, Egypt, Germany, Indonesia, Iran, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Saudi Arabia, South Africa, Sweden, Switzerland, Türkiye, and others); 4 against (France, North Korea, Russia, the United Kingdom); 5 abstentions (China, India, Israel, Pakistan, the United States). Syria did not vote.

In addition, the following developments regarding victim assistance and environmental remediation were reported in 2025:

- On June 17, the cross-party committee appointed by the French National Assembly to investigate radiation exposure among residents of French Polynesia—resulting from the 193 nuclear tests conducted there by France between 1966 and 1996—released its findings. The report held the French government and the Pacific Experimentation Center accountable, criticizing them for failing to adequately inform residents and personnel about the risks associated with radiation exposure. The committee called on the French government to issue a formal apology and to broaden the list of diseases eligible for compensation, while also removing the millisievert threshold currently required to qualify for such compensation.[50]
- On July 4, the "H.R.1 – Big Beautiful Bill Act" signed into law by President Trump revived the Radiation Exposure Compensation Act (RECA). This program, first enacted in 1990 to compensate Americans exposed to radiations resulting from nuclear testing during World War Two and uranium mining during the Cold War, had expired in June 2024. The new legislation extends the program through December 31, 2028, and "extend[s] and expand[s] eligibility for residents exposed to and sickened by contamination in multiple states and raises the cap on their potential compensation to $100,000. It also covers uranium mine workers and allows residents in certain communities living near nuclear waste and production sites to be eligible for RECA compensation."[51]

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[49] A/RES/80/56, December 1, 2025.

[50] "Parliamentary Report Urges Paris to Apologise for French Polynesia Nuclear Tests," *France 24*, June 17, 2025, https://www.france24.com/en/europe/20250617-parliamentary-report-urges-paris-to-apologise-for-french-polynesia-nuclear-tests.

[51] "President Trump Signs Off on the Big Beautiful Bill – What's in Store for Nuclear?," *Energy Communities Alliance*, July 7, 2025, https://www.energyca.org/eca-updates/2025/7/7/president-trump-signs-off-on-the-big-beautiful-bill-whats-in-store-for-nuclear.

(4) Treaty on the Prohibition of Nuclear Weapons (TPNW)

A) Signatures and ratifications

The TPNW was adopted on September 20, 2017. Following ratification by a 50th state on October 24, 2020, the TPNW entered into force on January 22, 2021, in accordance with Article 15. The number of states that have signed and/or ratified the TPNW has continued to grow, albeit at a relatively slow pace. In 2025, Ghana ratified the treaty, and Kyrgyzstan became a signatory. As of the end of 2025, a total of 95 states had signed the TPNW. Of these, 74 states have ratified it and are thus parties to the treaty, while a further 25 states remain signatories that have not yet completed ratification. Among the countries examined in this study, Austria, Indonesia, Kazakhstan, Mexico, New Zealand, and South Africa have ratified the treaty, whereas Brazil has signed but has not yet ratified it.

B) Meeting of states parties

The Third Meeting of States Parties (3MSP) was held from March 3 to 7, 2025, at the UN Headquarters in New York under the presidency of Kazakhstan.

The meeting's final declaration highlighted its "profound historical significance, taking place in this 80th year after nuclear weapons were first tested and used."[52] It also stated that Parties "remain alarmed at international developments, which include increased rhetoric on the proliferation of nuclear weapons, intensifying reliance on nuclear deterrence in security doctrines, and the ongoing possession of nuclear weapons. Attempts to perpetuate the retention of nuclear weapons have a negative impact on non-proliferation and progress towards nuclear disarmament. Nuclear deterrence is posited on the very existence of nuclear risk, which threatens the survival of all. Any use of nuclear weapons, whether intentional or accidental, would have catastrophic humanitarian consequences. [...] Nuclear weapons are a threat to the security, and ultimately the existence, of all states, irrespective of whether they possess nuclear weapons, subscribe to nuclear deterrence or firmly oppose it."

The declaration therefore urged "all States to cooperate in strengthening the disarmament and non-proliferation architecture as a whole, by upholding and strengthening the NPT, the cornerstone of the nuclear disarmament and non-proliferation regime." It also welcomed the establishment by the UNGA of an independent Scientific Panel on the Effects of Nuclear War, urged the international community to address emerging technologies in the nuclear domain, and called on NWS to "maintain meaningful human control over nuclear weapons and their delivery systems in the context of the development of artificial intelligence technology in the military field", as these trends "could undermine the TPNW's object and purpose."

An additional outcome of the 3MSP was the release of a report for the consultative process on security concerns led by Austria, which argues that the continued existence of nuclear weapons and the reliance of some states on nuclear deterrence policies constitute a fundamental security concern for the international community as a whole, particularly for the majority of non-

[52] TPNW/MSP/2025/CRP.4, March 7, 2025.

nuclear-weapon states.[53] The report highlights the humanitarian, environmental, and health consequences of nuclear weapons, including their disproportionate impacts on vulnerable communities, and frames nuclear disarmament not only as a security imperative but also as a matter of addressing historical and ongoing injustice. It identifies nuclear deterrence itself as the root cause of escalating nuclear risks, pointing to factors such as rising geopolitical tensions, increased threats of nuclear use, the growing prominence of nuclear weapons in military doctrines, the qualitative modernization and quantitative expansion of arsenals, declining transparency, and emerging risks associated with new technologies such as artificial intelligence and cyber operations. On this basis, the report questions the assumption that nuclear weapons can be relied upon to deter their use and concludes that nuclear disarmament is a rational and realistic security response, calling for an urgent paradigm shift away from nuclear deterrence.

The 3MSP decided to hold the first TPNW Review Conference from November 30 to December 4, 2026, at the UN headquarters in New York, with South Africa serving as its president.

C) Arguments by states parties and signatory states

Countries supporting the TPNW have advocated its importance at the 2025 NPT PrepCom, particularly regarding the humanitarian consequences of nuclear weapons, their legal prohibition, and effective measures to implement NPT Article VI. For instance, Indonesia contended that "[t]he TPNW affirms and complements the NPT in addressing the deep concern on the catastrophic humanitarian impacts of nuclear weapons. It established a legal framework for delegitimizing nuclear weapons and increased moral barriers to the threat of nuclear weapons."[54]

TPNW supporting countries have also argued that the treaty is complementary to the NPT. States parties and signatory states to the TPNW jointly stated: "The TPNW is fully complementary to the NPT. The TPNW's provisions provide further impetus to nuclear disarmament and create a legal framework that helps implement Article VI of the NPT as an effective measure to achieve a nuclear-weapon-free world. As fully committed states parties to the NPT, the cornerstone of the nuclear disarmament and non-proliferation regime, we reaffirm to fully implement our obligations and commitments under the NPT and under all other complementary treaties, such as the Comprehensive Nuclear-Test-Ban Treaty (CTBT), and regional treaties establishing nuclear-weapon free-zones, in addition to the TPNW itself."[55]

During the 3MSP, several states underlined what they regard as the TPNW's unique importance. Three main points were particularly underscored: non-discrimination, action, and a conception of common security not based on the threat of mass destruction. For instance, Brazil stated that "the TPNW is both nondiscriminatory and built on an unequivocal legal

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53 TPNW/MSP/2025/7, February 7, 2025.

54 "Statement by Indonesia," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

55 "Joint Statement by TPNW States Parties and Signatory States," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

commitment to complete nuclear disarmament. Its timely adoption came to fill an unacceptable gap in the disarmament and non-proliferation regime."[56] Regarding action, Mexico stated that "while other disarmament forums remain paralyzed, the TPNW continues to strengthen itself as a pillar of the global disarmament and non-proliferation architecture. This is a forum focused on diplomatic dialogue and, above all, action."[57] Finally, Austria declared that "against the overall disconcerting backdrop in international relations and on the nuclear weapons issue in particular, the TPNW is an indispensable ray of hope. It is the one international development and framework that points to an understanding of security not based on the threat of mass destruction. The TPNW is not a silver bullet for today's or future security challenges, but nuclear weapons and nuclear deterrence are neither."[58]

At the 2025 UNGA, a resolution titled "Treaty on the Prohibition of Nuclear Weapons"[59] was adopted, calling upon all states that have not yet done so to sign, ratify, accept, approve or accede to the treaty at the earliest possible date. The voting behavior of the countries examined in this project on this resolution was as follows:

- 119 in favor (Austria, Brazil, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, South Africa, and others); 45 against (Canada, China, France, Germany, India, Israel, Japan, North Korea, South Korea, the Netherlands, Norway, Pakistan, Poland, Russia, Sweden, Türkiye, the United Kingdom, the United States and others); 12 abstentions (Australia, Saudi Arabia, Switzerland and others). Syria did not vote. Compared with 2024, the number of votes in favor declined by 8, while votes against rose by 1 and abstentions declined by 1. The number of non-voting states rose from 9 to 17.

Regarding the legal prohibition of nuclear weapons, the 2025 UNGA adopted two resolutions, titled "Follow-up to the advisory opinion of the International Court of Justice on the legality of the threat or use of nuclear weapons"[60] and "Convention on the prohibition of the use of nuclear weapons."[61] The voting behaviors of the countries examined were as follows:

- "Follow-up to the advisory opinion of the International Court of Justice on the legality of the threat or use of nuclear weapons"—127 in favor (Austria, Brazil, China, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, Saudi Arabia, South Africa, Switzerland, and others); 35 against (Australia, France, Germany, Israel, South Korea, Poland, Russia, Sweden, Türkiye, the United Kingdom, the United States, and others); 16 abstentions (Canada, India, Japan, North Korea, the Netherlands, Norway, Pakistan, and others). Syria did not vote. Compared with 2024, the number of votes in favor declined by 8, while votes against remained unchanged and abstentions rose by 1. The number of non-voting states rose from 8 to 15.
- "Convention on the prohibition of the use of nuclear weapons"—116 in favor (Brazil,

[56] "Statement by Brazil," Third Meeting of States Parties to the TPNW, March 4, 2025.

[57] "Statement by Mexico," Third Meeting of States Parties to the TPNW, March 3, 2025.

[58] "Statement by Austria," Third Meeting of States Parties to the TPNW, March 4, 2025.

[59] A/RES/80/54, December 1, 2025.

[60] A/RES/80/33, December 1, 2025.

[61] A/RES/80/59, December 1, 2025.

China, Egypt, India, Indonesia, Iran, Kazakhstan, Mexico, Saudi Arabia, South Africa, and others); 50 against (Australia, Austria, Canada, France, Germany, Israel, South Korea, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, Türkiye, the United Kingdom, the United States, and others); 11 abstentions (Japan, North Korea, Pakistan, Russia, and others). Syria did not vote. Compared with 2024, the number of votes in favor declined by 5, while votes against and abstentions increased by 1. The number of non-voting states rose from 11 to 16.

D) Countries that have not signed the TPNW

NWS reiterated their refusal to sign the TPNW. They maintained that the TPNW has not attained the status of customary international law concerning the prohibition of nuclear weapons. They also asserted that the treaty does not create any legal obligations for states that have not signed the treaty. While NWS did not directly criticize the TPNW at the NPT PrepCom, some of them expressed veiled or indirect criticism.

For instance, France stated that "defending the primacy and centrality of the NPT as the cornerstone of the international security architecture is our guiding principle. In this respect, the NPT, based on a progressive approach that takes into account the strategic context, is the only viable instrument to advance our shared objectives of nuclear disarmament and non-proliferation."[62]

Russia also stated that "any ideas of a 'short cut' to 'nuclear zero' through immediate and unconditional renunciation and outlawing of nuclear weapons are unworkable and counter-productive. So are any attempts to set artificial deadlines for disarmament, especially in the current highly turbulent and unpredictable international environment. Such ideas fail to take into account the politico-military and strategic realities, disregard the security interests of nuclear-weapon States, run counter to the principle of undiminished security and are set outside the context of general and complete disarmament."[63]

Among the countries surveyed that have not signed the TPNW, Australia, Egypt, Saudi Arabia, and Switzerland participated in the Third Meeting of States Parties as observers. Germany did not participate as an observer, stating that "[t]he Treaty on the Prohibition of Nuclear Weapons dates back to a time before the Russian war of aggression against Ukraine. […] The intention and ambition of the treaty no longer reflect the current reality in security policy."[64]

Although the Japanese government examined precedents of countries that had attended past treaty meetings as observers and considered possible responses by Japan, it did not participate in the meeting. Then-Foreign Minister Iwaya explained Japan's position in considerable detail.[65]

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62 "Statement by France," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

63 "Statement by Russia," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

64 "Germany Skips UN Conference on Banning Nuclear Weapons in New York," *DPA International*, March 4, 2025, https://www.dpa-international.com/politics/urn:newsml:dpa.com:20090101:250304-99-113511/.

65 Ministry of Foreign Affairs of Japan, "Press Conference by Foreign Minister IWAYA Takeshi," February 18, 2025, https://www.mofa.go.jp/press/kaiken/kaikenwe_000001_00144.html.

Japan recognizes the TPNW as "an important treaty that could be regarded as a final passage to a 'world without nuclear weapons'." However, because Japan advocates advancing nuclear disarmament with the involvement of the NWS, "pursuing international nuclear disarmament efforts under the NPT remains more desirable." Moreover, because "Japan faces the most severe and complex security environment since the end of World War II" and "qualitative and quantitative nuclear armament is advancing in Japan's periphery," Japan regards extended nuclear deterrence as "indispensable for protecting the lives and property of Japanese citizens as well as the independence and peace of Japan." Since the TPNW comprehensively prohibits nuclear weapons, "Japan's observer participation in the Meeting of States Parties to the TPNW could send a wrong message about Japan's policy on nuclear deterrence and risk undermining our efforts to ensure our own peace and security." He concluded that "Japan will continue to fully advance realistic and practical efforts toward a 'world without nuclear weapons'."

(5) Reduction of Nuclear Weapons

A) New START Treaty

The New Strategic Arms Reduction Treaty (New START) between Russia and the United States entered into force in February 2011 and was extended for five years in February 2021. On-site inspections under New START's verification regime have been suspended since March 2020 due to the Covid-19 pandemic. Following Russia's full-scale invasion of Ukraine in February 2022, Moscow criticized U.S. sanctions and other factors in August 2022, claiming that they hindered its ability to conduct on-site inspections in the United States. The United States refuted Russia's claims and called for dialogue to resume on-site inspections. On February 28, 2023, Russia suspended its participation in the treaty, citing allegedly "hostile Western actions," while affirming that it would continue to "strictly comply" with the Treaty's limits on deployed strategic warheads and delivery vehicles, as well as with their obligation to notify the U.S. of intercontinental-ballistic missile (ICBM) and submarine-launched ballistic missile (SLBM) test launches.[66]

On January 17, 2025, the U.S. State Department reported the following in its annual report to Congress on the implementation of New START:

> The United States cannot certify the Russian Federation to be in compliance with the terms of the New START Treaty. Following previous Russian violations and the Russian Federation's purported suspension of the Treaty as of February 28, 2023, Russia continued to violate several New START Treaty provisions in 2024. Since 2022, Russia has failed to comply with its obligations to facilitate U.S. inspection activities on Russian territory and to convene sessions of the Bilateral Consultative Commission (BCC). Additionally, in the wake of its legally invalid purported suspension of the New START Treaty starting in February 2023, Russia further violated the Treaty by failing to comply with its obligations to provide Treaty-required notifications and data updates, as well as its obligations related

[66] "New Start Treaty," Nuclear Threat Initiative, October 2024, https://www.nti.org/education-center/treaties-and-regimes/treaty-between-the-united-states-of-america-and-the-russian-federation-on-measures-for-the-further-reduction-and-limitation-of-strategic-offensive-arms/.

> to the exchange of telemetric information. [...] The United States is unable to make a determination that the Russian Federation remained in compliance throughout 2024 with its obligation to limit its deployed warheads on delivery vehicles subject to the New START Treaty to 1,550, due to Russia's proximity to the limit as of its last update and failure to fulfill its obligations with respect to the Treaty's verification regime. The United States assesses with high confidence that Russia did not engage in any large-scale activity above the Treaty limits in 2024. However, Russia was probably close to the deployed warhead limit during much of the year and may have exceeded the deployed warhead limit by a small number during portions of 2024. Therefore, this constitutes a serious compliance concern.[67]

Even though the Treaty's five-year extension is set to expire on February 5, 2026, the United States and Russia have not engaged in concrete discussions on its potential replacement. On February 19, dozens of U.S. Democratic lawmakers urged the Secretary of State to start such negotiations, with no response.[68]

The Russian stance on resuming negotiations with the United States has fluctuated throughout the year, with conflicting positions expressed at different levels. On January 24, Kremlin spokesman Dmitry Peskov said that "Russia considers it necessary to resume disarmament negotiations as soon as possible, especially since the legal framework in the area of arms control has been significantly undermined, and not through the fault of the Russian Federation."[69] However, on April 8, he said that beginning such talks would be "very difficult to imagine" due to a lack of mutual trust.[70] On April 24, Russian Security Council Secretary Sergey Shoigu said that Russia was ready to "resume dialogue on strategic stability issues". However, he added that the successor treaty to New START will need to take into account "the arsenals not only of the US, but also of the other NATO [North Atlantic Treaty Organization] nuclear states, namely the United Kingdom and France."[71] This demand remains central in Russia's position regarding the resumption of negotiations for a successor to New START.

On July 25, President Trump said he would like to maintain the limits on U.S. and Russian strategic nuclear weapons set in New START: "That's not an agreement you want expiring.

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67 U.S. Department of State, "2024 Report to Congress on Implementation of the New START Treaty," January 17, 2025, https://2021-2025.state.gov/2024-report-to-congress-on-implementation-of-the-new-start-treaty/.

68 Timothy Gardner, "Democratic Lawmakers Urge Rubio to Renew New START Nuclear Pact with Russia," *Reuters*, February 20, 2025, https://www.reuters.com/world/us/democratic-lawmakers-urge-rubio-renew-new-start-nuclear-pact-with-russia-2025-02-19/?mkt_tok=ODEzLVhZVS00MjIAAAGYxD2qmMJXJbOhuwvBn2myn56Z4si0WK0V0B7xso0FkhIwVTNMU8WmZ6K708gk_GZOkI5zv0rYA1HiFi0uxGrZas9KfjfpWyD-wcWOminhNOyv.

69 Csongor Körömi, "Kremlin Wants to Resume Arms Control Talks with US 'As Soon As Possible'," *Politico*, January 24, 2025, https://www.politico.eu/article/kremlin-russia-resume-arms-control-talk-united-states-dmitry-peskov/.

70 Guy Faulconbridge and Dmitry Antonov, "Russia Says the Future of Nuclear Arms Control with US and Others Looks Bleak for Now," *Reuters*, April 8, 2025, https://www.reuters.com/world/kremlin-says-it-is-hard-imagine-talks-with-us-new-nuclear-arms-reduction-treaty-2025-04-08/.

71 "Russia Ready to Debate New Strategic Stability Treaty with US – Top Security Official," *TASS*, April 24, 2025, https://tass.com/politics/1948621.

We're starting to work on that. When you take off nuclear restrictions, that's a big problem."[72]

On September 22, President Putin claimed that Russia would continue to comply with New START provisions for one year after the treaty's expiration in February 2026, "if the United States does the same and makes no moves that undermine or violate the existing balance of deterrent capabilities."[73] On October 6, President Trump said that extending New START by one year "sound[ed] like a good idea," although no concrete bilateral discussions on the matter were made public.[74] On December 10, Russian Security Council Secretary Sergei Shoigu said that Russia was still awaiting a formal U.S. response to President Putin's proposal that both countries voluntarily observe the treaty limits for one year after its expiration.[75]

During the 2025 NPT PrepCom, 24 states (including Austria, Indonesia, Kazakhstan, Mexico, New Zealand, Norway, South Africa, and Switzerland) submitted a joint statement calling for "the urgent commencement of negotiations for a successor agreement" and for "a return to full and mutual compliance with the limits set by the Treaty until such time as a successor pact is concluded in order to secure the achievements of the New START Treaty before its expiry and to achieve further progress on the limits on and reductions of deployed strategic nuclear arsenals."[76] The statement added that the implementation and the reconduction of New START "is in the interest of the NPT."

While the status of their strategic nuclear delivery vehicles and warheads under New START had been periodically updated on the U.S. Department of State's website, the United States ceased to provide its updated data as of March 1, 2023, as a result of Russia's suspension of the treaty's implementation. The last available data, released in May 2023, only included the number of U.S. strategic forces.[77]

B) Concrete steps toward further nuclear disarmament

Throughout 2025, NWS and other nuclear-armed states failed to advance any new proposals for concrete measures to reduce their nuclear arsenals.

U.S. President Donald Trump has called for disarmament negotiations with China and Russia on several occasions. For instance, on January 23, he said that the United States "want[s] to

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72 "Trump Says He Wants to Maintain Nuclear Limits with Russia," *Reuters*, July 26, 2025, https://www.reuters.com/business/aerospace-defense/trump-says-he-wants-maintain-nuclear-limits-with-russia-2025-07-25/.

73 "Russia Prepared for Threats, New START Treaty: Putin Speaks to Security Council," *TASS*, September 22, 2025, https://tass.com/politics/2019735.

74 "Trump on Putin Proposal: 'Sounds Like a Good Idea to Me'," *Newser*, October 6, 2025, https://www.ne wser.com/story/376398/trump-backs-putins-plan-for-extended-nuclear-arms-treaty.html.

75 Guy Faulconbridge and Lucy Papachristou, "Russia Says It Awaits an Answer from the US on New START as Nuclear Treaty Ticks Down," *Reuters*, December 10, 2025, https://www.reuters.com/world/china/russia-says-it-awaits-an-answer-us-new-start-nuclear-treaty-ticks-down-2025-12-10/.

76 "Joint Statement New START," Closing Session, Third PrepCom for the 11th NPT RevCon, May 9, 2025.

77 U.S. Department of State, "New START Treaty Aggregate Number of Strategic Offensive Arms," May 13, 2023, https://www.state.gov/new-start-treaty-aggregate-numbers-of-strategic-offensive-arms-5/.

Table 1-4: Russian and U.S. strategic nuclear delivery vehicles and warheads under New START

	U.S.			Russia		
	Deployed strategic nuclear warheads	Deployed strategic nuclear vehicles	Deployed/non-deployed strategic delivery vehicles/ launchers	Deployed strategic nuclear warheads	Deployed strategic nuclear vehicles	Deployed/non-deployed strategic delivery vehicles/ launchers
Aggregate limits	1,550	700	800	1,550	700	800
Mar. 2012	1,737	812	1,040	1,492	494	881
Sep. 2012	1,722	806	1,034	1,499	491	884
Mar. 2013	1,654	792	1,028	1,480	492	900
Sep. 2013	1,688	809	1,015	1,400	473	894
Mar. 2014	1,585	778	952	1,512	498	906
Sep. 2014	1,642	794	912	1,643	528	911
Mar. 2015	1,597	785	898	1,582	515	890
Sep. 2015	1,538	762	898	1,648	526	877
Mar. 2016	1,481	741	878	1,735	521	856
Sep. 2016	1,367	681	848	1,796	508	847
Mar. 2017	1,411	673	820	1,765	523	816
Sep. 2017	1,393	660	800	1,561	501	790
Feb. 2018	1,350	652	800	1,444	527	779
Sep. 2018	1,398	659	800	1,420	517	775
Mar. 2019	1,365	656	800	1,461	524	760
Sep. 2019	1,376	668	800	1,426	513	757
Mar. 2020	1,372	655	800	1,326	485	754
Sep. 2020	1,457	675	800	1,447	510	764
Mar. 2021	1,357	651	800	1,456	517	767
Sep. 2021	1,389	665	800	1,458	527	742
Mar. 2022	1,515	686	800	1,474	526	761
Sep. 2022	1,420	659	800	1,549	540	759
Mar. 2023	1,419	662	800	---	---	---

Due to the treaty's counting rules, the number of warheads cited above does not accurately reflect the actual nuclear forces of either country. Under New START, each heavy bomber is counted as one delivery system and one nuclear warhead, even though a bomber can carry between 6 and 20 warheads. Additionally, according to the treaty's counting provisions, the number of warheads attributed to ICBMs and SLBMs corresponds to the number of reentry vehicles mounted on deployed ICBMs and SLBMs.

Sources: U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms of the United States and the Russian Federation, February 2011 – September 2020," Fact Sheet, March 5, 2021, https://www.state.gov/new-start-treaty-aggregate-numbers-of-strategic-offensive-arms-of-the-united-states-and-the-russian-federation-february-2011-september-2020/; U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," https://www.state.gov/.

denuclearize, and I think that's very possible."[78] On February 14, mentioning the prospect of a trilateral meeting with his Chinese and Russian counterparts, he said: "Let's cut our military budget in half. […] There's no reason for us to be building brand-new nuclear weapons; we already have so many."[79] On March 6, still calling for discussions on denuclearization with China and Russia, he said that "it would be great if we could all denuclearize because the power of nuclear weapons is crazy."[80]

The United States reiterated these calls during the NPT PrepCom, with particular emphasis on China: "The United States calls on China to act responsibly and engage in these discussions. If China is serious about its NPT commitments, the world should not have to wait until China's nuclear program reaches a set number for China to engage seriously in arms control discussions."[81]

On August 26, President Trump stated that "denuclearization is a very – it's a big aim, but Russia is willing to do it, and I think China is going to be willing to do it too. We can't let nuclear weapons proliferate. We have to stop nuclear weapons. The power is too great."[82] On November 5, he stated during a speech that the United States was "maybe working on a plan to denuclearize" with China and Russia, without providing further details.[83]

While stating that "dialogue between Russia and the United States on arms control is crucial, especially concerning strategic stability,"[84] Russia consistently puts forward two preconditions, as mentioned above: the cessation of "hostile policies" towards Russia and the inclusion of France and the United Kingdom in any future agreement, as expressed by Deputy Foreign Minister Sergei Ryabkov on February 10: "The U.S. is proposing a three-way talks format, and we want a five-way format. We are going round in circles."[85] Russia reaffirmed its stance during the NPT PrepCom: "Disarmament processes would need to involve all the states that have military nuclear capabilities, first and foremost, all NATO countries possessing nuclear weapons."[86] Russia has indeed repeatedly called for the inclusion of French and British nuclear

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78 Xiaodon Liang, "Trump Says U.S. Is Open to Nuclear Talks," *Arms Control Association*, March 2025, https://www.armscontrol.org/act/2025-03/news/trump-says-us-open-nuclear-talks.

79 Zeke Miller and Michelle Price, "Trump Wants Denuclearization Talks with Russia and China, Hopes for Defense Spending Cuts," *AP News*, February 14, 2025, https://apnews.com/article/trump-china-russia-nuclear-bbc1c75920297f1e5ba5556d084da4de.

80 "Russia Says It's Open to Broad Nuclear Talks With Trump," *RFE/RL*, March 7, 2025, https://www.rferl.org/a/putin-trump-china-nuclear-talks-arms-control-weapons/33339859.html.

81 "Statement by the United States," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

82 "Trump Renews Push for Denuclearization Talks with Russia and China," *Reuters*, August 26, 2025, http s://www.reuters.com/world/china/trump-renews-push-denuclearization-talks-with-russia-china-2025-08-26/.

83 "Trump Says He May Be Working on Plan to Denuclearize With Russia and China," *Reuters*, November 6, 2025, https://www.reuters.com/world/china/trump-says-he-may-be-working-plan-denuclearize-with-russia-china-2025-11-05/.

84 "Russia-US Dialogue on Arms Control Is Essential – Kremlin," *TASS*, March 7, 2025, https://tass.com/politics/1923949.

85 Liang, op. cit.

86 "Statement by Russia and Belarus," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

arsenals in disarmament negotiations, as Kremlin spokesman Dmitry Peskov stated on September 29.[87]

China has repeatedly rejected calls to join arms control discussions, insisting that its participation in a nuclear weapons reduction process was premature. On February 14, Foreign Ministry spokesman Guo Jiakun stated that "the U.S. and Russia combined own over 90 percent of the world's nuclear weapons. Nuclear disarmament must follow the basic principle of 'maintaining global strategic stability' and 'undiminished security for all'. Sitting on the world's biggest nuclear arsenals, the U.S. and Russia should earnestly fulfill their special and primary responsibility for nuclear disarmament, further make drastic and substantive cuts to their nuclear arsenals, and create necessary conditions for other nuclear-weapon states to join in the nuclear disarmament process."[88]

China reiterated this position during the NPT PrepCom, adding that Russia and the United States should first "resume implementation of the New START Treaty and discuss follow-up arrangements."[89] Following President Trump's call for "denuclearization" talks on August 26, Foreign Ministry Spokesperson Guo Jiakun stated that "China's nuclear strength is by no means on the same level with that of the U.S. Our nuclear policy and strategic security environment are also completely different. It's neither reasonable nor realistic to ask China to join the nuclear disarmament negotiations with the U.S. and Russia."[90] Due to these ongoing disagreements over the necessary conditions for such discussions, these fragmented exchanges failed to produce any substantial initiative on nuclear disarmament among the NWS.

C) Trends in the strengthening and modernization of nuclear weapons capabilities

While NWS have reiterated their commitments to promoting nuclear disarmament, they have continued to modernize and/or strengthen their nuclear weapons capabilities. At the NPT PrepCom, many NNWS expressed strong concerns about the trend toward the strengthening and modernization of nuclear forces. For instance, the NAM countries stated that "[t]he Group reiterates its deep concern over the greatest threat to peace and security posed by the continued existence of nuclear weapons and related military doctrines, modernization of nuclear forces, and development of more effective and newer, including low-yield nuclear warheads as well as other policies and practices that run contrary to the principles and objectives of the Treaty such as the continued and evolving nuclear weapons sharing arrangements and extended deterrence. The Group strongly calls for an immediate end to this trend that in fact is a new nuclear-arms

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87 "Kremlin Says British and French Arsenals Must Ultimately Be Part of Nuclear Disarmament Talks," *Reuters*, September 29, 2025, https://www.reuters.com/world/kremlin-says-british-french-arsenals-must-ultimately-be-part-nuclear-disarmament-2025-09-29/.

88 Ministry of Foreign Affairs of China, "Foreign Ministry Spokesperson Guo Jiakun's Regular Press Conference on February 14, 2025," February 14, 2025, https://www.fmprc.gov.cn/eng/xw/fyrbt/lxjzh/2025 02/ t20250214_11555376.html.

89 "Statement by China," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

90 Ministry of Foreign Affairs of China, "Foreign Ministry Spokesperson Guo Jiakun's Regular Press Conference on August 27, 2025," August 27, 2025, https://www.fmprc.gov.cn/eng/xw/fyrbt/lxjzh/202508 /t20250827_11696776.html.

race and thus a clear violation of Article VI of the Treaty."[91]

According to a report published by the International Campaign to Abolish Nuclear Weapons (ICAN) in June 2025, the total estimated nuclear weapons-related expenditures (including the modernization of nuclear forces) by NWS in 2024 amounted to $100.2 billion, up from $91.4 billion the previous year. Of this total, the United States spent $56.8 billion, China $12.5 billion, the United Kingdom $10.4 billion, Russia $8.1 billion, France $6.9 billion, India $2.6 billion, Israel $1.1 billion, Pakistan $1.1 billion, and North Korea $630 million.[92]

China

China has repeatedly stated that it "has always kept its nuclear capabilities at the minimum level required for national security, and has never engaged in, nor will it ever engage in, any arms race with any other country. China's nuclear forces and nuclear policies are important contributions to world peace."[93] However, China has not disclosed any information about the development and deployment of its nuclear forces. The actual situation therefore remains unclear.

In the white paper entitled *China's Arms Control, Disarmament, and Nonproliferation in the New Era* and published on November 27, China affirmed that "in building a lean and effective nuclear force system, China is improving its capabilities in strategic early warning, command and control, missile penetration, and rapid response, as well as its survivability, in order to ensure the safety, security, reliability and effectiveness of its nuclear weapons and deter other countries from using or threatening to use nuclear weapons against China."[94]

There have been growing concerns in recent years over the acceleration of China's nuclear forces modernization. According to the U.S. Department of Defense's (DoD) annual report to Congress entitled *Military and Security Developments Involving the People's Republic of China* and released in December 2025, the United States estimates that "China's stockpile of nuclear warheads remained in the low 600s through 2024, reflecting a slower rate of production when compared to previous years. Despite this slowdown, the PLA [People's Liberation Army] has continued its massive nuclear expansion. While this report assessed in 2020 that China's nuclear warhead would double from a stockpile of the low 200s over the next decade, the PLA remains on track to have over 1,000 warheads by 2030."[95]

Since the late 2000s, China has been developing ICBMs, which are central to its strategic nuclear forces, including the road-mobile DF-31A/AG, the fixed DF-5B capable of carrying three to five nuclear warheads with multiple independently targetable reentry vehicles (MIRV),

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91 "Statement by NAM," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

92 "Hidden Costs: Nuclear Weapons Spending in 2024," ICAN, June 2025, https://www.icanw.org/hidden_costs_2024_global_nuclear_weapons_spending.

93 "Statement by China," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

94 Ministry of Foreign Affairs of China, *China's Arms Control*, op. cit.

95 U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2025*, December 2025, p. 28, https://media.defense.gov/2025/Dec/23/2003849070/-1/-1/1/ANNUAL-REPORT-TO-CONGRESS-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA-2025.PDF.

and the road-mobile DF-41, which can carry approximately three nuclear warheads with MIRV capability. In its 2025 report, the DoD stated that China "has likely loaded more than 100 solid-propellant ICBM missile silos at its three silo fields with DF-31 class ICBMs."[96]

China is also strengthening its SLBM capabilities. According to the DoD, China conducts continuous maritime patrols with six Jin class (Type 094) ballistic missile-equipped nuclear submarines (SSBNs) equipped with JL-2 or JL-3 SLBMs. It is also anticipated that construction of the next-generation Type 096 SSBN will begin soon. The JL-3 is China's latest SLBM, with an estimated range exceeding 10,000 km, allowing it to potentially strike the U.S. mainland from the Chinese coastline.[97]

In addition, China is in the process of completing its strategic triad with the H-6N strategic bomber, which can carry air-launched ballistic missiles (ALBM) that can be fitted with nuclear warheads, and the H-6K strategic bomber, which can carry nuclear cruise missiles.

Regarding non-strategic nuclear forces, it is estimated that China maintains a high level of both qualitative and quantitative ground-launched short- and medium-range missile capabilities that can be used for both nuclear and conventional weapons. In its 2025 report, the DoD stated that China "is probably pursuing nuclear weapons with yields below 10 kilotons. Such weapons address long-held PLA desires to be able to conduct limited nuclear counterstrikes against military targets and control nuclear escalation. Of China's currently fielded systems, the DF-26 IRBM and the H-6N's ALBM are both highly precise theater weapons that would be well suited for delivering a low-yield nuclear weapon."[98]

In addition to ballistic and cruise missiles, China is also actively promoting the development of hypersonic missiles. In addition to the DF-17 hypersonic missile, which was first deployed in 2020, it was reported in 2023 that China secretly began operating the DF-27 hypersonic missile (with a range of 5 ,000 to 8,000 km) and conducted flight tests.[99] In October 2021, it was also reported that China may have tested a fractional orbital bombardment system (FOBS).[100]

On September 3, 2025, China held a military parade marking the 80th anniversary of victory over Japan. For the first time, the parade showcased China's complete nuclear triad, unveiling several new capabilities: the country's first ALBM, the JL-1, designed for delivery by the H6-N long-range bomber; the JL-3 SLBM, an extended-range variant of the JL-2; and three new land-based ICBMs—the DF-061, DF-31BJ, and DF-5C. Analysts noted that all nuclear systems

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96 Ibid., p. 30.

97 U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2024*, December 2024, p. 53, https://media.defense.gov/2024/Dec/18/2003615520/ -1/-1/0/ MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUB LIC -OF-CHINA-2024.PDF.

98 U.S. Department of Defense, 2025, op. cit., p. 30.

99 Zuzanna Gwadera, "Intelligence Leak Reveals China's Successful Test of a New Hypersonic Missile," *IISS*, May 18, 2023, https://www.iiss.org/online-analysis/online-analysis/2023/05/intelligence-leak-reveals-chinas-successful-test-of-a-new-hypersonic-missile/.

100 "A Fractional Orbital Bombardment System with a Hypersonic Glide Vehicle?" *Arms Control Wonk*, October 18, 2021, https://www.armscontrolwonk.com/archive/1213655/a-fractional-orbital-bombardment-system-with-a-hyper sonic-glide-vehicle/.

displayed were capable of reaching the continental United States. However, none of these capabilities have been tested, raising questions about their operational readiness.[101]

The strengthening and expansion of China's nuclear arsenal was frequently singled out by U.S. allies. For instance, Germany stated at the NPT PrepCom that "China has the fastest growing nuclear arsenal and is the only NWS to produce fissile material for weapon purposes. A rapidly growing nuclear arsenal is not in line with Art. VI of the NPT even more so if it does not provide for any transparency and is not coupled with a willingness to engage in arms control and meaningful risk-reduction measures."[102] Australia stated at the 2025 UNGA that "as a great power pursuing rapid nuclear expansion, China's substantive engagement in arms control processes and good faith dialogue is essential."[103]

France

In 2015, France announced that it possessed no more than 300 nuclear weapons under the principle of "strict sufficiency".[104] Its arsenal is estimated to include 50 air-launched cruise missiles (ALCMs) and 48 SLBMs.[105] As of December 2025, this nuclear force posture has remained unchanged.

In March 2024, France began construction of its next-generation SSBN, the SNLE-3G: "France's future class of nuclear-powered ballistic missile submarines, known as SNLE-3G, took a significant step forward today, when Naval Group cut steel on the first of four boats, at the submarine shipyard in Cherbourg, Normandy."[106] Four SNLE 3G submarines are scheduled to be built and delivered to the navy after 2035. Naval Group expects to start assembling the various sections of the first submarine around 2026-2027 ahead of a launch in the early 2030s and a delivery to the French Navy "after" 2035. The exact year remains confidential at this stage.

On September 12, France's Defense Procurement and Technology Agency (DGA) announced that it had awarded ArianeGroup a contract to design and produce the fourth variant of the M51 SLBM, the M51.4.[107] The missile is intended for deployment aboard the future SNLE-3G submarines, with completion targeted for the early 2040s. On October 28, the French Ministry of the Armed Forces announced that the M51.3 variant, developed since 2014, had entered operational service. The missile is equipped with the new TNO-2 nuclear warhead, whose

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[101] Joseph Rodgers and Heather Williams, "Parading China's Nuclear Arsenal Out of the Shadows," *CSIS*, September 4, 2025, https://www.csis.org/analysis/parading-chinas-nuclear-arsenal-out-shadows.

[102] "Statement by Germany," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

[103] "Statement by Australia," Nuclear Cluster Debate, First Committee, UNGA, October 17, 2025.

[104] Simond de Galbert, "President Hollande's Message on Nuclear Deterrence," *CSIS*, March 9, 2015, https://www.csis.org/analysis/president-hollandes-message-nuclear-deterrence.

[105] Stockholm International Peace Research Institute, op. cit.

[106] Xavier Vavasseur, "France Cuts Steel on its First Next Gen SSBN – SNLE-3G," *Naval News*, March 20, 2024, https://www.navalnews.com/naval-news/2024/03/france-cuts-steel-on-its-first-next-gen-ssbn-snle-3g/.

[107] Xavier Vavasseur, "ArianeGroup to Develop M51.4 Submarine Launched Ballistic Missile," *Naval News*, September 14, 2025, https://www.navalnews.com/naval-news/2025/09/arianegroup-to-develop-m51-4-submarine-launched-ballistic-missile/.

development began in 2013.[108]

Regarding the air component of France's nuclear deterrent, President Macron announced on March 18 that the Luxeuil-Saint-Sauveur air base will be renovated and restored to its former nuclear mission by 2035. The base is set to host two squadrons of the future nuclear-capable Rafale F5 aircraft, along with the ASN4G hypersonic missile, which will succeed the ASMPA-R.[109] Once operational, Luxeuil-Saint-Sauveur will become the fourth base in France capable of storing nuclear weapons. The project is expected to cost €1.7 billion ($2.0 billion).[110]

France's only aircraft carrier—and the world's only surface vessel equipped to carry nuclear weapons—the *Charles de Gaulle*, is expected to be replaced by a next-generation carrier (PA-NG) by 2038. In October 2022, the DGA unveiled the latest design for the new carrier, which will also be equipped to support the Naval Nuclear Aviation Force's (FANU) strike mission.[111] On September 25, Naval Group's Cherbourg shipyard welded the first steel plate for the PA-NG's containment enclosures, which will house two K22 nuclear reactors, marking the beginning of physical construction of the aircraft carrier.[112] On December 21, President Macron formally announced that the next generation aircraft carrier program will proceed to the production phase.[113]

On November 13, the Ministry of Armed Forces announced that France has completed its current cycle of nuclear-missile modernization following the successful test of an ASMPA-R nuclear-armed cruise missile and its entry into service with the French Navy on November 10.[114] The missile, launched without a live warhead, was fired during an exercise simulating a nuclear raid by a Rafale M—France's nuclear-capable fighter jet operated from the aircraft carrier *Charles de Gaulle* as part of the FANU. The ASMPA-R had already entered service with France's Strategic Air Forces (FAS) in 2023.

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[108] Xavier Vavasseur, "France's M51.3 Submarine Launched Ballistic Missile Enters Operational Service," *Naval News*, October 29, 2025, https://www.navalnews.com/naval-news/2025/10/frances-m51-3-submarine-launched-ballistic-missile-enters-operational-service/.

[109] Ibid.

[110] "France Pumps Money into Eastern Air Base to Handle Nuclear-Armed Bombers," *RFI*, June 1, 2025, https://www.rfi.fr/en/france/20250601-france-pumps-money-into-eastern-air-base-to-handle-nuclear-armed -bombers?mkt_tok=ODEzLVhZVS00MjIAAAGa1nXBtAit-YktmQ5KxyVSdJbPAtB96IjgkBds32hUBD0M UXSwhLdb0PNOXt_jT0X_F2O6lnV1Br6RHqzZ-MZx1SxclN4ob5Yx0bGWVRUYFh7r.

[111] Hans Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight-Boyle, "French Nuclear Weapons, 2025," *Bulletin of the Atomic Scientists*, July 15, 2025, https://thebulletin.org/premium/2025-07/french-nuclear-weapons-2025/.

[112] Jérôme Brahy, "France Launches Fabrication of Europe's Largest Nuclear Aircraft Carrier with First K22 Reactor Units," *Naval News Navy*, October 13, 2025, https://www.armyrecognition.com/news/navy-news/2025/france-launches-fabrication-of-europes-largest-nuclear-aircraft-carrier-with-first-k22-reactor-units.

[113] Xavier Vavasseur, "France Formally Green Lights PANG Aircraft Carrier Production," *Naval News*, December 21, 2025, https://www.navalnews.com/naval-news/2025/12/france-formally-green-lights-pa-ng-aircraft-carrier-production/.

[114] Joseph Trevithick, "France's New Nuclear-Armed Supersonic Cruise Missile Seen Clearly for the First Time," *TWZ*, November 13, 2025, https://www.twz.com/air/frances-new-nuclear-armed-supersonic-cruise-missile-seen-clearly-for-the-first-time.

Russia

Russia has been replacing and modernizing its nuclear forces for over a decade, while also developing and deploying new types of delivery vehicles. In a speech delivered on June 11, 2025, Russian President Vladimir Putin stated that "currently, the share of modern weapons and equipment in the strategic nuclear forces is already 95%," adding that the nuclear triad should be prioritized in the new state armaments program for 2027-2036.[115]

On April 11, President Putin held a meeting on the Russian Navy's development strategy through 2050, during which he stated that "one of our priority tasks is to strengthen the domestic fleet in its key segment of strategic nuclear forces, which serve as the most important guarantee of Russia's security and the preservation of global balance. In this connection, I must note that the share of modern armaments and equipment in Russia's maritime strategic nuclear forces has already reached 100 percent. I underscore that this indicator must be maintained in the future." He further noted that Russia had commissioned four Borei-A-class SSBNs and four Yasen-M-class nuclear-powered submarines between 2020 and 2024.[116] The fifth Borei-A-class SSBN was commissioned on July 24th.[117]

On May 11, an unclassified report released by the U.S. Defense Intelligence Agency stated that "Russia is expanding its nuclear forces by adding new capabilities, including nuclear air-to-air missiles."[118] The report reaffirmed that the United States had obtained information indicating that Russia is developing nuclear weapons designed to target satellites in space, including "a satellite capable of carrying a nuclear device. The United States has been aware of Russia's pursuit of a satellite capable of carrying a nuclear device dating back years, but only recently have we been able to make a more precise assessment of their progress toward it."[119]

On June 1, Ukraine launched a drone attack codenamed "Spiderweb," targeting at least four Russian airbases. As Russia has not publicly disclosed the extent of the damage, no definitive assessment is available. However, various independent estimates suggest that between 12 to 14 nuclear-capable strategic bombers, including Tu-95MS and Tu-22M3, were rendered temporarily or entirely inoperable.[120] In the days following the operation, Russia reportedly relocated dozens of its strategic bombers to other bases across the country.[121]

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[115] "Putin Says Special Attention Should Be Paid to Nuclear Triad in Russia's New Arms Programme," *Reuters*, June 12, 2025, https://www.reuters.com/business/media-telecom/putin-says-special-attention-should-be-paid-nuclear-triad-russias-new-arms-2025-06-11/.

[116] Office of the President of Russia, "Meeting on Development Strategy for the Navy," April 11, 2025, http://en.kremlin.ru/events/president/news/76673.

[117] Tomasz Grotnik, "With Putin's Blessing: Russia Commissions Fifth Borei-A SSBN," *Naval News*, July 28, 2025, https://www.navalnews.com/naval-news/2025/07/with-putins-blessing-russia-commissions-fifth-borei-a-ssbn/.

[118] U.S. Defense Intelligence Agency, *2025 Worldwide Threat Assessment*, May 11, 2025, p. 15, https://armedservices.house.gov/uploadedfiles/2025_dia_statement_for_the_record.pdf.

[119] Ibid., p. 14.

[120] Veaceslav Epureanu, "Caught in the Spiderweb: Ukraine's Successful June Operation Has Driven the Russian Bomber Fleet into the Far East," *The Insider*, September 11, 2025, https://theins.ru/en/politics/284957.

[121] "Russia Relocates Strategic Bombers After Ukraine's Spiderweb Drone Attack," *The Moscow Times*,

On June 23, President Putin announced that Russia had begun mass production of the Oreshnik IRBM,[122] first used in combat against Ukraine on November 21, 2024. According to Russian claims, the Oreshnik has a range of up to 5,500 kilometers. President Putin had identified the missile's large-scale development as a strategic priority back on December 11, 2024, stating: "What we need now is not to improve our nuclear strategy, but to improve our 'Oreshniks'. If these modern weapons systems are sufficiently developed, they will virtually eliminate the need to use nuclear weapons."[123]

On August 4, the Russian Ministry of Foreign Affairs announced that it "no longer considers itself bound" by the 1987 Intermediate-Range Nuclear Forces (INF) Treaty, after having claimed since 2019 to observe a unilateral moratorium on the deployment of ground-launched INF-range missiles, following the U.S. withdrawal from the treaty.[124] Kremlin spokesman Dmitry Peskov said that "Russia does not consider itself limited by anything anymore. Russia considers itself entitled to take relevant measures and steps if necessary." Deputy Chairman of the Security Council of Russia Dmitry Medvedev added in a post on X: "This is a new reality all our opponents will have to reckon with. Expect further steps."[125]

Since the failed launch test of the RS-28 (Sarmat) ICBM in September 2024,[126] no significant activity related to this system has been reported in 2025. However, on November 28, during a test launch of an ICBM from the Yasny test site, the missile exploded in midair and fell near the silo. While the exact type of missile involved has not been officially confirmed, numerous experts assessed that it was most likely a Sarmat.[127]

During a meeting held on October 26, President Putin and Chief of the General Staff Valery Gerasimov reported that Russia had conducted a successful test of the Burevestnik nuclear-powered missile on October 21. The Burevestnik is a ground-launched, subsonic, dual-capable cruise missile. The missile reportedly flew for fifteen hours over a distance of 14,000 kilometers, with Gerasimov adding that "that is not the limit." President Putin described the missile as able to pierce "any missile defenses."[128] In the same meeting, President Putin said

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June 12, 2025, https://www.themoscowtimes.com/2025/06/12/russia-relocates-strategic-bombers-after-ukraines-spid ers-web-drone-attack-a89427.

122 "Russia Begins Mass Production of Oreshnik Hypersonic Missile, Eyes Deployment in Belarus," *Defence Industry Europe*, June 23, 2025, https://defence-industry.eu/russia-begins-mass-production-of-oreshnik-hypersonic-missile-eyes-deployment-in-belarus/.

123 Brendan Cole, "Russia's Deadly New Missile Makes Nuclear Weapons Redundant, Putin Says," *Newsweek*, December 12, 2024, https://www.newsweek.com/russia-putin-nuclear-oreshnik-1998950.

124 Ministry of Foreign Affairs of Russia, "Statement by the Ministry of Foreign Affairs of the Russian Federation on the Moratorium on the Deployment of Ground-Launched Intermediate-Range and Shorter-Range Missiles," August 4, 2025, https://mid.ru/en/foreign_policy/news/2039749/.

125 Ellie Cook, "Russia Issues Nuclear Weapons Warning: 'No Limit'," *Newsweek*, August 5, 2025, https://www.newsweek.com/russia-issues-nuclear-weapons-warning-no-limits-2108986.

126 Mark Trevelyan, "Images Show Russia's New Sarmat Missile Suffered Major Test Failure, Researchers Say," *Reuters*, September 23, 2024, https://www.reuters.com/business/aerospace-defense/russian-missile-failed-during-test-researchers-imagery-indicate-2024-09-23/.

127 Dylan Malyasov, "Russia's ICBM Test Fails in Mid-Launch Explosion," *Defence Blog*, November 28, 2025, https://defence-blog.com/russias-icbm-test-fails-in-mid-launch-explosion/.

128 Teoman Nicanci, "Russia Declares 9M370 Burevestnik Nuclear Cruise Missile Test Marks Global-

that Russia still needed to "determine which class of weapons this new system belongs to, identify possible modes of employment, and begin preparing the infrastructure to base it in our Armed Forces."[129] This statement suggests that the missile's employment doctrine and deployment modalities are yet to be determined. Responding to the announcement of the test, President Trump stated that the U.S. Navy has a nuclear submarine "right off [Russia's] shores."[130]

At the UNGA First Committee, the United States described the Burevestnik as a "flying Chernobyl," criticizing it as a "radiation-spewing" and "accident prone" system. The United States argued that it "in no way contributes to stability" and accused President Putin of "undermining strategic stability with Russia's ongoing testing of dangerous, destabilizing, and novel nuclear weapon systems. Instead of continued development and testing of systems that heighten nuclear risks, Russia should focus on ending the war in Ukraine."[131]

The missile is part of Russia's so-called "exotic" nuclear delivery systems based on novel concepts, which also include the Avangard hypersonic glide vehicle and the Poseidon nuclear-powered, nuclear-capable unmanned underwater drone. On October 28, President Putin announced that the first Poseidon test had been successfully conducted, declaring that it "cannot be intercepted" and that the yield of its nuclear warhead is "significantly higher than that of our most advanced Sarmat intercontinental ballistic missile."[132] In December, experts analyzing satellite imagery reported that the special-purpose submarine *Khabarovsk*, designed to carry and launch the Poseidon system, had entered the water around November 30—several weeks after its ceremonial launch on November 1.[133]

The United Kingdom

In its 2021 *Integrated Review of Security, Defence, Development and Foreign Policy*, the United Kingdom announced its intention to raise the ceiling on its total nuclear warhead stockpile from a maximum of 180 to no more than 260 warheads.[134] In its national report

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Reach Capability," *Defense News Aerospace 2025*, October 26, 2025, https://www.armyrecognition.com/news/aerospace-news/2025/russia-declares-9m730-burevestnik-nuclear-cruise-missile-test-marks-global-reach-capability.

129 Office of the President of Russia, "Visit to the Joint Force Command Post," October 26, 2025, http://en.kremlin.ru/events/president/news/78301.

130 Thomas Newdick, "Skyfall Nuclear-Powered Cruise Missile Long-Range Test Claimed by Russia," *TWZ*, October 27, 2025, https://www.twz.com/nuclear/skyfall-nuclear-powered-cruise-missile-long-range-test-claimed-by-russia.

131 "Statement by the United States," Thematic Debate, First Committee, UNGA, October 28, 2025.

132 Sasha Vakulina, "Moscow Says It Tested Poseidon Underwater Drone, Another Nuclear 'Super Weapon'," *Euronews*, October 29, 2025, https://www.euronews.com/2025/10/29/moscow-says-it-tested-poseidon-underwater-drone-another-nuclear-super-weapon.

133 Frederik Van Lokeren, "Russian Navy's Khabarovsk Special Purpose Submarine Hits the Water," December 2, 2025, https://www.navalnews.com/naval-news/2025/12/russian-navys-kharabovsk-special-purpose-submarine-hits-the-water/.

134 U.K. Cabinet Office, *Global Britain in a Competitive Age. The Integrated Review of Security, Defence, Development and Foreign Policy*, March 2021, p. 76, https://www.gov.uk/government/publications/global-britain-in-a-competitive-age-the-integrated-review-of-security-defence-development-and-foreign-policy.

submitted to the NPT RevCon, the United Kingdom clarified: "This is a ceiling, not a target, and it is not our current stockpile number. This is fully consistent with the longstanding minimum credible deterrence posture of the United Kingdom, and we will continue to keep this under review in light of the international security environment."[135]

The *Strategic Defence Review* (SDR), commissioned by the British government in July 2024, was released on June 2, 2025. Prime Minister Keir Starmer announced that his government would adopt all 62 of the SDR's recommendations, including a £15 billion (~$20 billion) investment in its sovereign warhead program.[136] The "Astrea" (also referred to as the "A21/Mk7") warhead program was unveiled in the *Defence Nuclear Enterprise Command Paper* released in March 2024. This "sovereign" capability is developed in parallel with the U.S. W93/Mk7 warhead, without the use of explosive nuclear testing.[137]

The SDR also advised that, "to avoid the costs of the past, the government must commit to not extending the life of the Dreadnought-class submarines beyond their intended end-of-service dates from the mid-2050s. It should start to define the requirement for the post-Dreadnought nuclear deterrent within this Parliament."[138] The United Kingdom began construction of four Dreadnought-class SSBNs in October 2017 to replace the aging Vanguard-class submarines, with deployment expected by the early 2030s.

The United States

The United States is currently undertaking a comprehensive modernization of all three legs of its strategic nuclear forces. Under current plans, the Congressional Budget Office (CBO) estimates the total cost of U.S. nuclear forces at $946 billion over the 2025–2034 period, with nuclear modernization accounting for $460 billion of that total.[139]

On June 12, 2025, during a hearing before the House Armed Services Committee, Secretary of Defense Pete Hegseth requested "more than $62 billion in support of the nuclear enterprise, including $50 billion to modernize and sustain our nuclear forces and over $12 billion for nuclear command, control, and communications" for fiscal year 2026.[140] At a separate hearing held the same day, General John Daniel Caine, Chairman of the Joint Chiefs of Staff and a U.S. Air Force officer, outlined the strategic rationale for modernization: "Today's security environment features multiple nuclear-armed challengers, some actively engaged in

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135 NPT/CONF.2020/33, November 5, 2021.

136 U.K. Ministry of Defence, *Strategic Defence Review. Making Britain Safer: Secure at Home, Strong Abroad*, June 2, 2025, p. 6, https://www.gov.uk/government/publications/the-strategic-defence-review-2025-making-britain-safer-secure-at-home-strong-abroad.

137 U.K. Ministry of Defence, *Defence Nuclear Enterprise Command Paper. Delivering the UK's Nuclear Deterrent as a National Endeavour*, March 2024, p. 32, https://assets.publishing.service.gov.uk/media/671b8641956d9b52e8c 6d276/ Defence_Nuclear_Enterprise_Command_Paper.pdf

138 U.K. Ministry of Defence, *Strategic Defence Review*, p. 103.

139 U.S. Congressional Budget Office, "Projected Costs of U.S. Nuclear Forces, 2025 to 2034," April 2025, https://www.cbo.gov/system/files/2025-04/61224-NuclearForces.pdf.

140 Committee on Armed Services, U.S. House of Representatives, "Statement by the Honorable Pete Hegseth, Secretary of Defense, on Department of Defense Fiscal Year 2026 Budget Request," June 12, 2025, https://armedservices.house.gov/calendar/eventsingle.aspx?EventID=5179.

conflict, requiring the U.S. to deter more than one nuclear challenger at a time. [...] While this modernization effort began under less urgent conditions, it now underpins deterrence in a more dangerous and complex world."[141]

Regarding the land-based component of its nuclear triad, the United States is currently developing the Sentinel ICBM to replace the Minuteman III. On March 6, the U.S. Air Force completed a full-scale qualification static fire test of the motor's design, "bringing the stage-one solid rocket motor closer to achieving full qualification."[142] A successful qualification test of the stage-two motor was completed on July 20.[143] Pending the development of the Sentinel, the United States tested an unarmed Minuteman III on February 19[144] and May 21.[145] On November 5, the United States conducted another test of an unarmed Minuteman III, this time using the Airborne Launch Control System aboard a U.S. Navy E-6B Mercury aircraft, which serves as a backup command and control system for the ICBM force in case launch centers on the ground become incapacitated.[146]

However, the program continues to face delays and cost overruns. On February 10, the U.S. Air Force announced a restructuring of the program—particularly concerning the command and launch segments—following assessments that projected costs had exceeded initial estimates by 81%.[147] Additionally, on May 7, the Air Force stated that entirely new missile silos would need to be constructed to mitigate potential risks associated with reusing the existing 450 Minuteman silos. This measure is expected to result in further cost increases and schedule delays.[148] Due to ongoing setbacks, U.S. officials now estimate that the Sentinel missile may

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141 Committee on Armed Services, U.S. House of Representatives, "Statement by General John Daniel Caine, USAF, Department of Defense Budget Hearing," June 12, 2025, https://armedservices.house.gov/calendar /eventsingle.aspx?EventID=5179.

142 "Sentinel ICBM Achieves Modernization Milestone with State-One Solid Rocket Motor Test," *Air Force Nuclear Weapons Center*, March 7, 2025, https://www.af.mil/News/Article-Display/Article/4112318/sentinel-icbm-achieves-modernization-milestone-with-stage-one-solid-rocket-moto/.

143 "Air Force, Northrop Grumman Advance Sentinel ICBM Modernization with Stage-Two Rocket Motor Test," *Air Force Nuclear Weapons Center*, July 29, 2025, https://www.af.mil/News/Article-Display/Article/4258953/air-force-northrop-grumman-advance-sentinel-icbm-modernization-with-stage-two-r/.

144 U.S. Air Force Global Strike Command Public Affairs, "Minuteman III Test Launch Showcases Readiness of U.S. Nuclear Force's Safe, Effective Deterrent," Air Force Global Strike Command AFSTRAT-AIR, February 19, 2025, https://www.afgsc.af.mil/News/Article-Display/Article/4070139/minuteman-iii-test-launch-showcases-readiness-of-us-nuclear-forces-safe-effecti/.

145 Space Launch Delta 30 Public Affairs, "Minuteman III Test Launch Showcases Readiness of U.S. Nuclear Force's Safe, Effective Deterrent," U.S. Indo-Pacific Command, May 28, 2025, https://www.pacom.mil/Media/NEWS/News-Article-View/Article/4199890/minuteman-iii-test-launch-showcases-readiness-of-us-nuclear-forces-safe-effecti/.

146 United States Space Force, Space Launch Delta 30, "GT 254: AFGSC Validates Reliability, Readiness of ICBM Force with Minuteman III Test Launch," November 5, 2025, https://www.vandenberg.spaceforce.mil/News/Article-Display/Article/4328255/gt-254-afgsc-validates-reliability-readiness-of-icbm-force-with-minuteman-iii-t/.

147 Audrey Decker, "Air Force has Halted Work on Parts of its ICBM Program," *Defense One*, February 10, 2025, https://www.defenseone.com/defense-systems/2025/02/air-force-halted-work-parts-new-icbm-program/402897/.

148 Stephen Losey, "Sentinel Nuclear Missiles Will Need New Silos, Air Force Says," *Defense News*, May 7, 2025, https://www.defensenews.com/air/2025/05/06/sentinel-nuclear-missiles-will-need-new-silos-air-force-says/.

not be flight-tested until March 2028—two years behind schedule.[149]

Officials from the U.S. Department of Defense have consistently emphasized that threats from China and Russia leave no alternative but to proceed with the Sentinel ICBM program. On April 9, 2025, General Anthony J. Cotton, Commander of the U.S. Strategic Command (USSTRATCOM), told the House Armed Services Committee that "any further Sentinel delay will increase USSTRATCOM's operational risk and impact the credibility of our deterrent."[150] In order to sustain the program, the "H.R.1 – Big Beautiful Bill Act" signed into law by President Trump on July 4, 2025, allocated an additional $2.5 billion for "risk reduction activities" related to the Sentinel program and $500 million to upgrade the existing Minuteman III systems.[151] The Air Force reportedly plans to extend their service life until "at least 2050" due to ongoing delays with the Sentinel program.[152]

With regard to the sea-based leg of its nuclear triad, the United States is transitioning from Ohio-class SSBNs, armed with Trident II D5 Life Extension missiles, to the next-generation Columbia-class SSBNs, which will be equipped with the Trident II D5 Life Extension 2 (D5LE2). The U.S. Navy plans to build 12 Columbia-class submarines, with the first scheduled to enter service in 2031. However, the program has faced various delays and challenges. On April 9, 2025, General Cotton reaffirmed before the House Armed Services Committee that "the Columbia-class SSBN remains a high USSTRATCOM priority strategic deterrent program and must achieve its first strategic deterrent patrol by 2031 to avoid an unacceptable capability gap."[153] From September 17 to 21, the U.S. Navy conducted four scheduled missile test flights of unarmed Trident II D5LE missiles from an Ohio-class SSBN.[154]

In parallel, the United States is developing and producing the W93 nuclear warhead for use with SLBMs. Officials from the Department of Energy have confirmed that the warhead will be developed without resorting to explosive nuclear testing.[155] On December 16, the NNSA announced that it had completed the last production unit of the W88 nuclear warhead upgrade,

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149 Xiaodon Liang, "Trump Administration Increases Nuclear Weapons Budget," *Arms Control Association*, July/August 2025, https://www.armscontrol.org/act/2025-07/news/trump-administration-increases-nuclear-weapons-budget.

150 Committee on Armed Services, U.S. House of Representatives, "Statement by General Anthony J. Cotton, Commander, United States Strategic Command, Before the Subcommittee on Strategic Forces," April 9, 2025, p. 9, https://armedservices.house.gov/calendar/eventsingle.aspx?EventID=5034.

151 U.S. Congress, "H.R.1 – One Big Beautiful Bill Act. 119th Congress (2025-2026)," July 4, 2025, p. 50, https://www.congress.gov/bill/119th-congress/house-bill/1/text.

152 Matt Korda, Mackenzie Knight-Boyle, "The Two-Hundred Billion Dollar Boondoggle," *Federation of American Scientists*, June 24, 2025, https://fas.org/publication/the-two-hundred-billion-dollar-boondoggle/#reference-item-6.

153 Committee on Armed Services, "Statement by General Anthony J. Cotton," p. 10.

154 April Crew-Kelly, "Successful Trident II D5 Life Extension (D5LE) Launches Demonstrate Continued Readiness of Nation's Sea-Based Deterrent," U.S. Navy, September 23, 2025, https://www.navy.mil/Press-Office/News-Stories/display-news/Article/4312684/successful-trident-ii-d5-life-extension-d5le-launches-demonstrate-continued-rea/.

155 Bill Gertz, "Pentagon Speeding Up Work on First New Nuclear Warhead in 40 Years," *The Washington Times*, April 18, 2024, https://www.washingtontimes.com/news/2024/apr/18/pentagon-speeding-work-first-new-nuclear-warhead-4/.

the W88 Alt 370. This warhead is carried onboard Ohio-class SSBNs.[156] Finally, the "H.R.1 – Big Beautiful Bill Act" allocated $15 billion to modernize nuclear forces. For the sea-based leg, the legislation included $2 billion to accelerate the development of the SLCM-N, $400 million to accelerate the development of its warhead, and $400 million to accelerate the development of Trident D5LE2 SLBMs.[157]

Regarding the development of a nuclear sea-launched cruise missile (SLCM-N), General Cotton stated that "this program will provide much-needed low-yield, non-ballistic, survivable, and persistent nuclear capability without visible generation, offering additional range, flexibility, and survivability for extended deterrence and assurance."[158]

On December 22, President Trump announced that his administration would develop a new class of aircraft carriers that can carry nuclear-capable cruise missiles. He stated that at least 25 "Trump-class" battleships would be constructed in the coming years—a schedule that many experts consider unrealistic given budgetary constraints and current delays in U.S. shipbuilding.[159] Regarding the air component of its nuclear triad, the United States plans to develop at least 100 B-21 Raider strategic bombers to replace the B-2 Spirit. On July 15, the U.S. Air Force confirmed that at least "two additional B-21 Raider bombers will be flying by 2026 and can be modified for operational use if required."[160] This confirmation followed additional budget allocations, including $4.5 billion through the "H.R.1 – Big Beautiful Bill Act," aimed at expanding the program's production capacity.[161]

Both the B-21 Raider and B-52 bombers will be equipped with the Long-Range Stand-Off Weapon (LRSO), which will replace the current AGM-86B ALCMs. In June, the U.S. Air Force released the first concept illustration of the missile, which is scheduled to enter low-rate production in February 2027. The program is reportedly on schedule.[162]

On May 19, the U.S. National Nuclear Security Administration (NNSA) completed the assembly of the first B61-13 nuclear gravity bomb, a year ahead of schedule. Designed to replace the B61-7, it features a higher maximum yield capable of threatening hardened targets such as underground command-and-control facilities. Unlike the B61-12, the B61-13 will be

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156 U.S. Department of Energy, "NNSA Completes Last Production Unit of W88 Nuclear Warhead Upgrade," December 16, 2025, https://www.energy.gov/nnsa/articles/nnsa-completes-last-production-unit-w88-nuclear-warhead-upgrade.

157 U.S. Congress, "H.R.1 – One Big Beautiful Bill Act," p. 51.

158 Ibid., p. 11.

159 Paul McLeary, "Trump's New 'Trump-Class' Battleship Will Carry Nuclear Weapons," *Politico*, December 22, 2025, https://www.politico.com/news/2025/12/22/trumps-new-trump-class-battleship-will-carry-nuclear-weapons-00704179.

160 "U.S. Air Force Says Test B-21 Raider Bombers Can Be Made Combat-Ready, Production to Expand Using Existing Facilities," *Defence Industry Europe*, July 15, 2025, https://defence-industry.eu/u-s-air-force-says-test-b-21-raider-bombers-can-be-made-combat-ready-production-to-expand-using-existing-facilities/.

161 U.S. Congress, "H.R.1 – One Big Beautiful Bill Act," p. 50.

162 "U.S. Air Force Unveils First Rendering of Next-Gen AGM-181A Nuclear Cruise Missile," *Defence Industry Europe*, June 11, 2025, https://defence-industry.eu/u-s-air-force-unveils-first-rendering-of-next-gen-agm-181a-nuclear-cruise-missile/.

reserved exclusively for U.S. military use with the B-2 Spirit and the upcoming B-21 Raider stealth bombers and will not be included in NATO's nuclear sharing arrangements.[163]

On September 25, the NNSA certified the first canned subassembly of the W80-4 nuclear warhead ahead of schedule. The canned subassembly is the secondary stage of a two-stage thermonuclear weapon. The first production unit of the W80-4 warhead, intended for the U.S. Air Force's LRSO, is expected to be completed in September 2027.[164]

India

India appears to be pursuing the establishment of a full-fledged strategic nuclear triad. It is currently constructing a fleet of four to six SSBNs, with the *INS Arihant* and *INS Arighaat* already commissioned, while the S4 and S4* SSBNs—originally scheduled to enter service before 2024—have experienced delays.[165] A next generation of SSBNs, known as S5, is reportedly in the design stage.[166]

Indian SSBNs are currently equipped with the K-15 SLBM, with a range of 700 km, and the K-4 SLBM, with a range of 3,500 km. On June 25, India reportedly completed the development of the K-5 SLBM, with a range of 5,000 to 6,000 km.[167] In July, it was announced that the Defence Research and Development Organisation (DRDO) of the Indian Ministry of Defence would soon conduct test launches of the K-6 variant, which is expected to be MIRVed and to have a range exceeding 8,000 km.[168]

On July 17, India successfully tested the Prithvi-II and Agni-I dual-capable SRBMs. These tests were carried out under the supervision of the Strategic Forces Command, which is responsible for the management and administration of India's nuclear arsenal.[169]

On August 20, India successfully tested the nuclear-capable Agni-V IRBM. Meanwhile, it is reportedly developing the missile's next variant, the Agni-VI, which is expected to have a

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[163] Joseph Trevithick, "Far More Powerful B61-13 Guided Nuclear Bomb Variant Joins U.S. Stockpile," *TWZ*, May 19, 2025, https://www.twz.com/air/far-more-powerful-b61-13-guided-nuclear-bomb-variant-joins-u-s-stockpile.

[164] NNSA, "NNSA Certifies First W80-4 Warhead Canned Subassembly at Y-12 Ahead of Schedule," September 25, 2025, https://www.energy.gov/nnsa/articles/nnsa-certifies-first-w80-4-warhead-canned-subassembly-y-12-ahead-schedule.

[165] Hans Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight, "Indian Nuclear Weapons, 2024," *Bulletin of the Atomic Scientists*, September 5, 2024, https://thebulletin.org/premium/2024-09/indian-nuclear-weapons-2024/.

[166] Stockholm International Peace Research Institute, *SIPRI Yearbook 2025: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2025), chapter 6.

[167] "India Completes Development of K-5 Nuclear Ballistic Missile to Expand Submarine Strike Range," *Naval News Navy*, July 3, 2025, https://www.armyrecognition.com/news/navy-news/2025/india-completes-development-of-k-5-nuclear-ballistic-missile-to-expand-submarine-strike-range.

[168] Gareth Havelock, "India to Test New Submarine-Launched Hypersonic Ballistic Missile," *Baird Maritime*, July 1, 2025, https://www.bairdmaritime.com/security/weaponry/india-to-test-new-submarine-launched-hypersonic-ballistic-missile.

[169] Ministry of Defence of India, "Successful Test-Firing of Prithvi-II & Agni-I Ballistic Missiles," July 17, 2025, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2145662.

range exceeding 10,000 km and to carry MIRVs, similar to the Agni-V.[170]

On September 24, India tested a rail-mobile version of the dual-capable Agni-Prime MRBM, presented as a "force multiplier to strategic forces."[171] The development of this missile likely aims to strengthen India's ability to strike Southern China and to facilitate rapid dispersion on Indian territory.

On October 21, at the UNGA First Committee, Pakistan accused India of raising "the operational readiness of its arsenal through canisterization of delivery systems – despite a record of accidental launches."[172] Canisterization refers to the action of "storing missiles inside a sealed, climate-controlled tube to protect them from the outside elements during transportation. In this configuration, the warhead can be permanently mated with the missile instead of having to be installed prior to launch, which would significantly reduce the amount of time needed to launch nuclear weapons in a crisis."[173]

Israel

Israel has neither confirmed nor denied possessing nuclear weapons and its nuclear activities remain opaque.[174] In terms of nuclear delivery systems, Israel has developed and deployed both nuclear-capable IRBMs and SLCMs. It is also believed that Israel is upgrading the two-stage Jericho II IRBM to a three-stage Jericho III, with a range of over 4,000 km.

The *INS Dracon*, Israel's sixth Dolphin II submarine, was launched in June 2023. It is larger than its sister ships. This increased size is believed to provide space for new missiles, as well as a vertical launch system (VLS), which can be used to deploy a wider variety of weapons.[175] In addition, Israel signed an agreement with Germany in 2022 to procure new Dakar-class submarines to replace its three Dolphin-class submarines.

Pakistan

Pakistan has prioritized the development and deployment of nuclear-capable short-, medium- and intermediate-range missiles to ensure deterrence against India. In October 2023, Pakistan conducted test launches of the Ababeel MIRVed IRBM and the single-warhead Hatf-5 IRBM.

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170 Abid Hussain, "India-Pakistan Missile Race Heats Up, But China in Crosshairs, Too," *Al Jazeera*, August 28, 2025, https://www.aljazeera.com/news/2025/8/28/india-pakistan-missile-race-heats-up-but-china-in-cross hairs-too.

171 Thomas Newdick, "India Just Launched a Ballistic Missile From a Train," *TWZ*, September 25, 2025, https://www.twz.com/nuclear/india-just-launched-a-ballistic-missile-from-a-train.

172 "Statement by Pakistan," Thematic Debate, First Committee, UNGA, October 21, 2025.

173 Matt Korda and Hans Kristensen, "India's Nuclear Arsenal Takes A Big Step Forward," *Federation of Atomic Scientists*, December 23, 2021, https://fas.org/publication/indias-nuclear-arsenal-takes-a-big-step-forward/

174 Hans M. Kristensen and Matt Korda, "Nuclear Notebook: Israeli Nuclear Weapons, 2022," *Bulletin of the Atomic Scientists*, January 17, 2022, https://thebulletin.org/premium/2022-01/nuclear-notebook-israeli-nuclear-weapons-2022/.

175 Maya Carlin, "Dolphin-Class: Israel's Submarines Might Have a Big Nuclear Secret," *The National Interest*, February 21, 2024, https://nationalinterest.org/blog/buzz/dolphin-class-israels-submarines-might-have-big-nuclear-secret-209554.

However, Pakistan is still not believed to possess MIRV technology. It is also developing enhanced versions of the Babur (Hatf-7) ground launched cruise missile (GLCM), designed to be nuclear-capable, as well as a sea-launched variant, still believed to be under development.[176]

In a briefing for nongovernmental experts on January 3, senior U.S. officials reiterated claims that Pakistan is developing "increasingly sophisticated missile technology," including long-range ballistic missiles that could "strike targets well beyond South Asia, including the United States." The U.S. officials added that Pakistan's capability to do so remains "several years to a decade away."[177] Experts analysis indicates that "satellite imagery of Pakistan's missile-production and -testing facilities, combined with analysis of Chinese entities supplying Pakistan's missile programme suggests that efforts are indeed underway in Pakistan to develop larger rocket motors, although its ambitions and the purpose of the rocket motors are unclear."[178]

Amid heightened tensions with India and citing "credible intelligence" that India was preparing to launch a military strike in response to the killing of tourists in Kashmir on April 22—a strike that ultimately occurred on May 7, sparking a four-day conflict—Pakistan successfully test-fired its surface-to-surface, dual-capable Abdali (Hatf-2) SRBM on May 3.[179]

North Korea

In 2025, North Korea continued to actively pursue its nuclear and missile development programs.[180]

Regarding land-based capabilities, North Korea tested a reportedly new type of IRBM on January 6, which flew approximately 1,100 km toward the Sea of Japan. General Secretary Kim Jong Un stated that the test aimed to "steadily put the country's nuclear war deterrent on an advanced basis."[181] On May 8, North Korea launched a Hwasong-11A SRBM to simulate nuclear counterstrikes against U.S. and South Korean forces. The missile reportedly traveled 800 km before landing in the Sea of Japan.[182] Finally, on October 11, North Korea unveiled a new ICBM, the Hwasong-20, during a military parade in Pyongyang. It was described as

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[176] Hans Kristensen, Matt Korda, Eliana Johns, Mackenzie Knight, "Pakistan Nuclear Weapons, 2025," *Bulletin of the Atomic Scientists*, September 4, 2025, https://thebulletin.org/premium/2025-09/pakistan-nuclear-weapons-2025/.

[177] Kelsey Davenport, Daryl Kimball, "U.S. Says Pakistan Developing Long-Range Missiles," *Arms Control Association*, January 2025, https://www.armscontrol.org/act/2025-01/news/us-says-pakistan-developing-long-range-missiles.

[178] Timothy Wright, "Developments Concerning Pakistan's Ballistic-Missile Programme," *IISS*, February 4, 2025, https://www.iiss.org/online-analysis/missile-dialogue-initiative/2025/02/developments-concerning-pakistans-ballistic-missile-programme/.

[179] Ray Furlong, "Pakistan Carries Out Ballistic Missile Test Amid India Tensions," *RFE/RL*, May 3, 2025, https://www.rferl.org/a/pakistan-ballistic-missile-test-india-kashmir-tensions/33403773.html.

[180] See "Database: North Korean Provocations," *CSIS Beyond Parallel*, May 28, 2025, https://beyondparalle l.csis.org/database-north-korean-provocations/.

[181] "North Korea Claims Successful Test-Firing of New Hypersonic Missile," *Kyodo News*, January 7, 2025, https://english.kyodonews.net/articles/-/52024.

[182] "North Korea Says Leader Kim Supervised Missile Tests Simulating Nuclear Strikes Against Rivals," *The Asahi Shimbun*, May 9, 2025, https://www.asahi.com/ajw/articles/15752180.

"the most powerful nuclear strategic weapon of the DPRK." It is believed to be a solid-fueled missile with an estimated range of 15,000 km, which—if confirmed—would place the entire territory of the United States within range. The missile is also thought to be MIRV-capable.[183]

Regarding sea-based capabilities, North Korea test-fired sea-to-surface strategic cruise missiles on January 25, which allegedly struck their targets after a 1,500 km flight. The launch was followed by a statement criticizing ongoing U.S.–South Korean joint military exercises, warning that "the DPRK should counter the U.S. with the toughest counteraction from A to Z as long as it refuses the sovereignty and security interests of the DPRK."[184] An additional strategic cruise missile test took place on February 26, reportedly conducted "to inform the enemies, who are seriously violating the security environment of the DPRK and fostering and escalating the confrontation environment, of the Korean People's Army counterattack capability in any space and the readiness of its various nuclear operation means, and to demonstrate the reliability of the state nuclear deterrence and make the strategic cruise missile sub-units get adept in fulfilling their sudden firing mission."[185] On October 28, North Korea proceeded with another launch of allegedly nuclear-capable sea-to-surface cruise missiles, describing the tests as an effort to "toughen the nuclear combat posture."[186]

On March 8, North Korean state media released images of what it described as "a nuclear-powered strategic guided missile submarine" under construction.[187] The deployment of a SSBN has been identified as a key objective of the regime, announced by Kim Jong Un during a political conference in 2021. North Korea released new images of the submarine on December 25.[188] North Korea has also been developing a diesel-electric "tactical nuclear submarine," the *Hero Kim Kun OK*, which was launched in September 2023. It is intended to serve as "a menacing means as it is capable of carrying a large number of means for delivering nukes of various powers and of launching a preemptive or retaliatory strikes at the hostile states in any waters."[189] However, research reports based on satellite imagery indicate that the submarine

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183 Jesse Johnson, "North Korea Unveils New Long-Range Missile During Military Parade," *The Japan Times*, October 11, 2025, https://www.japantimes.co.jp/news/2025/10/11/asia-pacific/north-korea-hwasong-20-missile/.

184 "North Korea Tests Sea-to-Surface Cruise Missiles, State Media Says," *VOA*, January 25, 2025, https://ww w.voanews.com/a/nkorea-test-fires-sea-to-surface-strategic-cruise-missile-state-media-says-/7950531.html.

185 Colin Zwirko, "North Korea Conducts Cruise Missile Test to Show Nuclear Attack 'Readiness'," *NK News*, February 28, 2025, https://www.nknews.org/2025/02/north-korea-conducts-cruise-missile-test-to-show-nuclear-attack-readiness/.

186 Choe Sang-Hun, "Just Before Trump's Visit to South Korea, North Test-Fires Missiles," *The New York Times*, October 28, 2025, https://www.nytimes.com/2025/10/28/world/asia/north-korea-kim-missile-trump.html?searchResultPosition=2.

187 "North Korea Unveils What It Says Is a Nuclear-Powered Submarine," *CNN*, March 8, 2025, https://edition.cnn.com/2025/03/08/asia/north-korea-nuclear-submarine-int-latam.

188 Brad Lendon and Gawon Bae, "North Korea Reveals New Images of Its First 'Nuclear-Powered' Submarine," *CNN World*, December 25, 2025, https://edition.cnn.com/2025/12/24/asia/north-korea-nuclear-powered-submarine-intl-hnk-ml.

189 Joseph S. Bermudez Jr., Victor Cha, and Jennifer Jun, "North Korea's First Ballistic Missile Submarine Still Not Operational," *CSIS Beyond Parallel*, July 17, 2025, https://beyondparallel.csis.org/north-koreas-first-ballistic-missile-submarine-still-not-operational/.

was not yet fully operational as of July 2025.[190]

On April 30, state media reported that Kim Jong Un had ordered increased efforts to arm the country's navy with nuclear weapons. The announcement came after two days of weapons testing involving North Korea's newest destroyer, the *Choe Hyon*, which had been unveiled earlier that month. The destroyer is reportedly being equipped with a "supersonic cruise missile," a "strategic cruise missile," and a "tactical ballistic missile."[191] A second destroyer, believed to be similarly outfitted, was launched on June 7—three weeks after a failed launch and accident on May 21. Following the initial launch failure, several unidentified cruise missiles were fired towards the Sea of Japan on May 22.[192] During the June launch ceremony, Kim delivered a speech calling for the deployment of two additional Choe Hyon-class destroyers each year.[193]

Regarding the air force, Kim Jong Un announced on November 28 that "the Air Force will be given new strategic military assets and entrusted with a new important duty," without providing further details. He added that the Air Force "will play a role in the exercise of the nuclear war deterrent."[194]

Regarding North Korea's nuclear weapon program, Russian Foreign Minister Sergey Lavrov stated during a press conference in North Korea on July 12 that Russia "respect[s] North Korea's nuclear aspirations and understand the reasons why it is pursuing a nuclear development."[195] This statement is consistent with the growing defense cooperation between the two countries. It also aligns with Lavrov's earlier remark in September 2024 that the denuclearization of the Korean Peninsula was a "closed issue" for Russia, as it "understand[s] the principled position of our Korean friends, who believe that a missile and nuclear shield, along with other self-defense measures, form the bedrock of their independence and security."[196]

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190 Ibid.

191 Jesse Johnson, "North Korea's Kim Sets Sights on Nuclear-Armed Navy," *The Japan Times*, April 30, 2025, https://www.japantimes.co.jp/news/2025/04/30/asia-pacific/north-korea-nuclear-navy/.

192 Yang Ji Ho and Lee Jung Soo, "North Korea Fires Cruise Missiles After Warship Launch Failure," *The Chosun Daily*, May 22, 2025, https://www.chosun.com/english/north-korea-en/2025/05/22/4BGZLJNXJ5HPRLFA GA3LSUILGQ/.

193 Joseph S. Bermudez Jr., Victor Cha, Jennifer Jun, "Launching of North Korea's Second Choe Hyon-Class Destroyer," *CSIS Beyond Parallel*, June 12, 2025, https://beyondparallel.csis.org/launching-of-north-koreas-second-choe-hyon-class-destroyer/.

194 "North Korea's Kim Vows to Equip Air Force With New Strategic Assets," *The Japan Times*, November 30, 2025, https://www.japantimes.co.jp/news/2025/11/30/asia-pacific/north-korea-kim-air-force/.

195 "Russia Sees Why North Korea Develop Its Nuclear Program – Lavrov," *TASS*, July 12, 2025, https://tass.com/politics/1988725.

196 Ministry of Foreign Affairs of Russia, "Foreign Minister Sergey Lavrov's Answer to a Question from Rossiya Segodnya News Agency, New York, September 26, 2024," September 26, 2024, https://mid.ru/ru/foreign_policy/news/1971804/?lang=en.

(6) Diminishing the Role and Significance of Nuclear Weapons in National Security Strategies and Policies

A) Developments in nuclear doctrines and signaling throughout 2025

In the latter half of the 2010s, as great power rivalry and geopolitical competition intensified, NWS and other nuclear-armed states increasingly reaffirmed the role and significance of nuclear weapons in their national security strategies. A clear trend has emerged: these states are placing greater reliance on nuclear deterrence to address persistent and complex security challenges. As it continued its invasion of Ukraine, Russia again resorted to nuclear threats in 2025.

China

China maintained that its nuclear strategy remains unchanged, including its commitment to a no-first-use policy and the provision of negative security assurances to NNWS.

Responding to the release of the *SIPRI Yearbook 2025* and its analysis of China's nuclear buildup, Foreign Ministry Spokesperson Guo Jiakun stated on June 16 that "China follows a nuclear strategy that focuses on self-defense. China always keeps its nuclear capabilities at minimum level required by national security and never engages in arms race. China follows a policy of "no first use" of nuclear weapons at any time and under any circumstances and has committed unconditionally to not using or threatening to use nuclear weapons against non-nuclear weapon states and nuclear-weapon-free zones. China is the only nuclear weapon state to have adopted such a policy. China will stay firmly committed to safeguarding its own legitimate security interests and keeping the world peaceful and stable."[197]

At the UNGA First Committee on October 9, China stated that its "nuclear policy remains highly stable, consistent and predictable, which is conducive to global strategic stability and represents a significant contribution to international nuclear arms control. China's nuclear strategy of self-defense will not change. China's policy of no first use of nuclear weapons will not change. China's policy of no engagement in any arms race will not change. China's willingness to engage in dialogue on strategic risk reduction will not change. And China's policy of maintaining its nuclear forces at the lowest level required for national security will not change. China rejects the misrepresentation of and accusation against China's nuclear policy leveled by a few countries."[198]

In its 2025 report, the U.S. DoD indicated that "in addition to its longstanding goal of deterring an adversary's nuclear first strike and coercion, Beijing probably increasingly seeks to use nuclear deterrence to more broadly deter and limit adversary military involvement in a conventional conflict. China continues to reaffirm its commitment to its No First Use (NFU) policy despite seeking to deter non-nuclear military actions with its nuclear forces,

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[197] Ministry of Foreign Affairs of China, "Foreign Ministry Spokesperson Guo Jiakun's Regular Press Conference on June 16, 2025," June 16, 2025, http://us.china-embassy.gov.cn/eng/fyrth/202506/t20250616 _116 49408.htm.

[198] "Statement by China," General Debate, First Committee, UNGA, October 9, 2025.

complicating communication about the role of these forces during a Taiwan conflict and raising the risks of unintended escalation. Beijing continues to reiterate NFU when questioned about its lack of transparency regarding its expanding nuclear arsenal and is likely to reemphasize this policy when faced with assessments that it has expanded its objectives for nuclear deterrence."[199]

France

On February 21, 2025, Friedrich Merz, who became German Chancellor on May 6, declared: "We need to have discussions with both the British and the French—the two European nuclear powers—about whether nuclear sharing, or at least nuclear security from the U.K. and France, could also apply to us."[200] Following this statement, on February 28, French President Emmanuel Macron replied that "France has always acknowledged a European dimension to its vital interests, with some ambiguity. [...] If my colleagues want to move towards greater autonomy and deterrence capabilities, then we will have to open this deeply strategic discussion."[201] On March 2, he added that allies willing to do so could be associated to the nuclear deterrence exercises carried out by the French forces, "contributing to the development of a genuine strategic culture between Europeans."[202] This message reiterated a proposal made during his speech on defense and deterrence strategy in February 2020, following which Italy participated in a French Poker nuclear exercise in 2022. On April 23, France conducted its annual Pegasus power-projection exercise, deploying nuclear-capable Rafale fighters to Sweden for the first time, with aerial refueling provided by a British Multi-Role Tanker Transport (MRTT).[203]

On March 5, President Macron delivered a rare official television address to the French public, in which he stated the following: "Our nuclear deterrence protects us. It is comprehensive, sovereign, and French from A to Z. Ever since 1964, it has always explicitly played a part in the preservation of peace and security in Europe. In response to the historic call of the future German Chancellor, I have decided to open the strategic debate on the protection of our allies of the European continent by our deterrence. Whatever happens, the decision has always been and will remain in the hands of the President of the Republic, commander-in-chief of the armed forces."[204] This proposal was welcomed by several European states, such as Poland and

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199 U.S. Department of Defense, op. cit., p.30.

200 Chris Lunday, "Europe Should Brace for Trump to End NATO Protection, Germany's Merz Warns," *Politico*, February 21, 2025, https://www.politico.eu/article/europe-brace-us-trump-end-nato-german y-friedrich-merz-election/.

201 "Macron Is Ready to Discuss European Nuclear Deterrence," *UNN*, March 1, 2025, https://unn.ua/en/news/macron-is-ready-to-discuss-european-nuclear-deterrence.

202 "France's Macron Is Ready to Discuss Nuclear Deterrence For Europe," *Reuters*, March 2, 2025, https://www.reuters.com/world/europe/frances-macron-is-ready-discuss-nuclear-deterrence-europe-2025-03-01/.

203 Parth Satam, "France Begins Pégase 25 Deployment to Sweden in Forward 'Power Projection Operation'," *The Aviationist*, April 24, 2025, https://theaviationist.com/2025/04/24/france-pegase-25-to-sweden/.

204 Office of the French Presidency, "Address to the French People," March 5, 2025, https://www.elysee.fr / en/emmanuel-macron/2025/03/05/address-to-the-french-people.

the Baltic states.[205]

On March 25, France conducted a Poker nuclear deterrence exercise, simulating nuclear strikes by Rafale B fighter jets equipped with ASMP-A nuclear missile mock-ups. Unlike previous iterations, this exercise was held during the daytime and involved a significant number of assets.[206] A second Poker exercise took place during the night of September 23 to 24.[207]

On May 13, further stressing the European dimension of the French nuclear deterrent, President Macron said he was "ready to open a discussion" with European allies about stationing French nuclear weapons on their soil, under three conditions: that France would not pay for the security of allies; that such deployments would not undermine its ability to defend itself; that the decision of nuclear use remains solely in the hands of the French president.[208] However, these statements do not amount to the establishment of an extended nuclear deterrence or nuclear-sharing framework, both of which remain outside the scope of the French nuclear doctrine. Instead, France continues to emphasize the "European dimension of its vital interests", particularly in the context of "the Russian threat."[209]

In the wake of these developments, France and the United Kingdom signed the Northwood Declaration on July 10, during Macron's state visit to the United Kingdom. This declaration further underscored the roles of the French and British nuclear deterrents: "Our nuclear weapons exist to deter the most extreme threats to the security of our nations and our vital interests. Our nuclear forces are independent, but can be coordinated and contribute significantly to the overall security of the Alliance, and to the peace and stability of the Euro Atlantic area. As we have explicitly stated since 1995, we do not see situations arising in which the vital interests of either France or the United Kingdom could be threatened without the vital interest of the other also being threatened. France and the United Kingdom agree that there is no extreme threat to Europe that would not prompt a response by our two nations."[210]

It also established a "U.K.-France Nuclear Steering Group" to enhance coordination "across nuclear policy, capabilities and operations", complementing the broader modernization of

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[205] Sylvie Corbet, "Poland and Baltic Nations Welcome Macron's Nuclear Deterrent Proposal," *AP News*, March 7, 2025, https://apnews.com/article/france-nuclear-deterrent-umbrella-russia-55e91ab65d13559dfc 55dfe376ba5268.

[206] Ivan Khomenko, "France Conducts Daytime Nuclear Drill 'Poker 2025' With Simulated Strike Missions," *United 24 Media*, March 26, 2025, https://united24media.com/latest-news/france-conducts-daytime-nuclear-drill-poker-2025-with-simulated-strike-missions-7082.

[207] Clement Charpentreau, "France Puts Airborne Nuclear Force to the Test in 'Operation Poker' Drill," *Aerotime*, September 24, 2025, https://www.aerotime.aero/articles/france-airborne-nuclear-force-operation-poker.

[208] Leila Abboud and Polina Ivanova, "Emmanuel Macron Open to Stationing French Nuclear Weapons in Other European Nations," *Financial Times*, May 14, 2024, https://www.ft.com/content/96231d9c-ee48-43b3-9c82-bdc4002b41a5.

[209] French General Secretariat for Defence and National Security, *National Strategic Review 2025*, July 14, 2025, https://www.sgdsn.gouv.fr/files/files/Publications/20250713_NP_SGDSN_RNS2025_EN_0.pdf.

[210] U.K. Cabinet Office, "Northwood Declaration: 10 July 2025 (UK-France Joint Nuclear Statement)," July 10, 2025, https://www.gov.uk/government/news/northwood-declaration-10-july-2025-uk-france-joint-nuclea r-statement.

nuclear and defense cooperation through the signing of the "Lancaster House 2.0: Declaration on Modernising UK-French Defence and Security Cooperation."[211]

On December 10, the Nuclear Steering Group met for the first time in Paris to discuss the "approach to strengthening deterrence in Europe" and to confirm the "ambition for bilateral co-operation on nuclear deterrence." The statement also disclosed that British officials and senior military personnel had observed the Poker nuclear exercise held on December 9-10, "which was the first time foreign officials were given access to this demonstration of France's Strategic Nuclear airborne Component."[212]

Russia

While continuing its invasion of Ukraine, Russia repeatedly resorted to nuclear intimidation throughout 2025. The following are some of the most salient developments reported in relation to Russia's nuclear threats and signaling:

- On May 4, responding to a reporter about Ukrainian strikes on Russia, President Putin said: "There has been no need to use those [nuclear] weapons and I hope they will not be required."[213]
- On June 20, in response to a question about the potential use of a dirty bomb by Ukraine, President Putin stated that Russia's response would be proportionate to all threats and would be "catastrophic" for Ukraine. The following day, on June 21, Dmitry Medvedev added that Russia would respond with a tactical nuclear weapon.[214]
- On July 31, after President Trump imposed a deadline for President Putin to agree to a ceasefire in Ukraine, Medvedev wrote that "each new ultimatum is a threat and a step towards war," adding that President Trump should "remember how dangerous the mythical 'Dead Hand' can be."[215] "Dead Hand" is the nickname for Russia's alleged "Perimeter" backup communication system for nuclear command and control.
- On September 22, President Putin stated at a meeting of the Russian Security Council that Russia is prepared to respond to strategic threats "not with words but with military and technological measures."[216]

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[211] U.K. Cabinet Office, "Lancaster House 2.0: Declaration on Modernising UK-French Defence and Security Cooperation," July 10, 2025, https://www.gov.uk/government/news/lancaster-house-20-declaration-on-modernising-uk-french-defence-and-security-cooperation.

[212] Office of the French Presidency, "New UK-France Nuclear Steering Group Met for the First Time in Paris," December 18, 2025, https://www.elysee.fr/en/emmanuel-macron/2025/12/18/new-uk-france-nuclear-steering-group-met-for-the-first-time-in-paris.

[213] Angelique Chrisafis, "Need to Use Nuclear Weapons Has Not Arisen in Ukraine, Says Putin," *The Guardian*, May 4, 2025, https://www.theguardian.com/world/2025/may/04/need-to-use-use-nuclear-weapons-has-not-arisen-in-ukraine-says-putin.

[214] "Russian Offensive Campaign Assessment, June 21, 2025," *The Institute for the Study of War*, June 21, 2025, https://understandingwar.org/backgrounder/russian-offensive-campaign-assessment-june-21-2025.

[215] "Russian Offensive Campaign Assessment, August 1, 2025," *The Institute for the Study of War*, August 1, 2025, https://understandingwar.org/research/russia-ukraine/russian-offensive-campaign-assessment-august-1-2025/.

[216] "Russia Prepared for Threats, New START Treaty: Putin Speaks to Security Council," *TASS*,

- On October 22, President Putin oversaw a routine annual strategic nuclear forces exercise involving all three components of Russia's nuclear triad. Russian forces launched a Yars ICBM, a Sineva SLBM, and ALCMs from Tu-95MS strategic bombers. The exercise was intended to "practice procedures for authorizing the use of nuclear weapons."[217] Deputy Foreign Minister Ryabkov described the drills as "compensatory military-technical measures" in response to NATO's alleged "aggressive policies."[218] Referring to the exercise two days later, President Putin stated that Russia's nuclear forces "exceed" those of all other nuclear-weapon states.[219]
- On October 30, following Russia's test of the nuclear-powered Poseidon torpedo, Medvedev wrote on X that "unlike the Burevestnik, the Poseidon can be considered a true doomsday weapon."[220]

Russia's nuclear intimidation and rhetoric were strongly condemned at the 2025 NPT PrepCom. For instance, the United States said that "Russia has developed novel nuclear weapons and improved dual-capable delivery systems, unlawfully purported to suspend the New START Treaty, engaged in irresponsible nuclear rhetoric, and reneged on the security assurances it provided Ukraine."[221] France said that "against the backdrop of Russia's war of aggression against Ukraine, France continues to condemn Russia's irresponsible nuclear rhetoric and its posture of strategic intimidation, both of which run counter to the objectives of the Treaty."[222]

However, such condemnation by NNWS was far from uniform at the PrepCom. U.S. NATO allies, as well as Australia and Japan, explicitly denounced Russia's nuclear threats in their statements. By contrast, non-aligned states did not do so, nor did the joint statements issued by the NAC and the TPNW states parties include explicit condemnation of Russia's nuclear intimidation. This uneven pattern highlights significant divisions among NNWS in their approach to directly address nuclear intimidation by a NWS.

Russia responded to criticism by stating the following: "Due to a quantum leap in the development of combat capability of the US nuclear weapons deployed in Europe and posing strategic threat, potential expansion of the geographic scope of its deployment, as well as

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September 22, 2025, https://tass.com/politics/2019735.

217 Jerry Fisayo-Bambi, "Putin Supervises Nuclear Forces Drills as Sanctions Mount on Russia over Its War Against Ukraine," *Euronews*, October 23, 2025, https://www.euronews.com/2025/10/23/putin-supervises-nuclear-forces-drills-as-sanctions-mount-on-russia-over-its-war-against-u.

218 "Russian Offensive Campaign Assessment, October 22, 2025," *The Institute for the Study of War*, October 22, 2025, https://understandingwar.org/research/russia-ukraine/russian-offensive-campaign-assessment-october -22-2025/.

219 "Russian Offensive Campaign Assessment, October 26, 2025," *The Institute for the Study of War*, October 26, 2025, https://understandingwar.org/research/russia-ukraine/russian-offensive-campaign-assessment-october -26-2025/.

220 Dmitry Medvedev, X post, October 30, 2025, https://www.newsweek.com/trump-putin-ryabkov-nuclear-warning-russia-ukraine-us-10848547.

221 "Statement by the United States," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

222 "Statement by France," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

general increase of diverse threats posed by NATO, the Russian Federation and the Republic of Belarus have had to resort to compensating steps in the nuclear field. Nevertheless, Russian-Belarusian cooperation in this sphere strictly complies with the international law and our international obligations, including the provisions of the NPT, and poses no threat to third countries."[223]

The United States

An executive order signed by President Trump on January 28 to develop a "Golden Dome" missile defense system faced sharp criticism, particularly from China and Russia, which condemned the program as undermining strategic stability. For example, on May 9, China and Russia issued a joint statement calling the Golden Dome "a complete and ultimate rejection" of "the inseparable interrelationship between strategic offensive arms and strategic defensive arms, which is one of the central and fundamental principles of maintaining global strategic stability."[224]

The "Golden Dome" program was officially launched on May 20, with an estimated cost of about $.175 billion.[225] The following day, China stated that "the project will heighten the risk of turning the space into a war zone and creating a space arms race and shake the international security and arms control system. […] It violates the principle of "undiminished security for all" and will hurt global strategic balance and stability. China is gravely concerned."[226] On May 27, Russian Foreign Ministry spokeswoman Maria Zakharova called it "a literal manifestation of the US' highly dangerous doctrinal course toward delivering so-called preventive, but essentially first strikes. This is an opportunistic approach which directly undermines the basis of strategic stability."[227] On October 21, North Korea called it "a 'threat initiative' designed to secure its military supremacy by pressuring the strategic security of other countries and facilitating the offensive use of military forces."[228]

Following Medvedev's statements regarding the alleged "Dead Hand" system, President Trump ordered on August 1 the positioning of two nuclear submarines in "appropriate regions, just in case these foolish and inflammatory statements are more than just that."[229] It remained

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223 "Statement by Russia and Belarus," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

224 Ministry of Foreign Affairs of China, "Joint Statement by the People's Republic of China and the Russian Federation on Global Strategic Stability," May 9, 2025, https://www.mfa.gov.cn/eng/xw/zyxw/202505/t20 250509_11617864.html.

225 Jessie Yeung and Maureen Chowdhury, "Trump Details Plan to Build 'Golden Dome' Missile Shield by End of Term," *CNN*, May 21, 2025, https://edition.cnn.com/2025/05/21/politics/trump-golden-dome-missile-intl-hnk.

226 Ministry of Foreign Affairs of China, "Foreign Ministry Spokesperson Mao Ning's Regular Press Conference on May 21, 2025," May 21, 2025, https://www.mfa.gov.cn/eng/xw/fyrbt/202505/t20250521_11630009.html.

227 "US' Golden Dome Project Threatens Strategic Stability – Russian Diplomat," *TASS*, May 27, 2025, https:/ /tass.com/politics/1964123.

228 "Statement by North Korea," Thematic Debate, First Committee, UNGA, October 21, 2025.

229 Steff Chávez and Amy Mackinnon, "Trump Says He Will Reposition Nuclear Submarines After 'Provocative' Russian Comments," *Financial Times*, August 2, 2025, https://www.ft.com/content/

unclear whether President Trump was referring to nuclear-powered submarines in general or specifically to SSBNs, and whether the announcement signaled any change in the U.S. nuclear posture, as the United States consistently maintains four or five SSBNs on "hard alert" in designated patrol areas.[230]

On October 21, the United States began its annual nuclear command-and-control exercise, Global Thunder 26. The exercise involved all three legs of the U.S. nuclear triad, along with associated command-and-control systems. It included simulated presidential directives and rehearsals of alert procedures and launch protocols. According to USSTRATCOM, "this is an annual exercise, not held in response to world events or actions by any nation or entity."[231]

Released on December 5, the U.S. *National Security Strategy* contained very little detail on U.S. nuclear deterrence compared with previous versions. It only briefly stated that the United States seeks "the world's most robust, credible, and modern nuclear deterrent, plus next-generation missile defenses—including a Golden Dome for the American homeland—to protect the American people, American assets overseas, and American allies."[232]

Pakistan

On August 9, Pakistan's Chief of Army Staff, Marshal Asim Munir, reportedly declared at a private dinner in Florida, United States, that "we are a nuclear nation. If we are going down, we will take half the world down with us." He also allegedly named a specific civilian economic asset in India as a potential target.[233] It should be noted, however, that due to the informal nature of the setting and the absence of any official statement, the accuracy of these remarks could not be confirmed. Despite this lack of confirmation, on August 11, India's Foreign Ministry spokesperson Randhir Jaiswal stated that "nuclear saber-rattling is Pakistan's stock-in-trade" and accused Pakistan of "irresponsibility."[234] Prime Minister Modi added that "India will no longer tolerate nuclear blackmail. If the enemy dares to commit any more misadventure, the Indian Armed Forces will give them a befitting reply."[235]

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a3974d79-7a5d-49f6-a192-80d78ab03f59.

230 Hans Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight, "United States Nuclear Weapons, 2025," *Bulletin of the Atomic Scientists*, January 13, 2025, https://thebulletin.org/premium/2025-01/united-states-nuclear-weapons-2025/.

231 "Global Thunder 26 Underway as U.S. Strategic Command Tests Nuclear Deterrence and Readiness," *Defence Industry Europe*, October 28, 2025, https://defence-industry.eu/global-thunder-26-underway-as-u-s-strategic-command-tests-nuclear-deterrence-and-readiness/.

232 White House, *National Security Strategy*, December 5, 2025, p. 3, https://www.whitehouse.gov/wp-content/uploads/2025/12/2025-National-Security-Strategy.pdf.

233 Anna Mahjar-Barducci, "Pakistan's Army Chief Sparks Alarm with Nuclear Threats on U.S. Soil," *Australian Institute of International Affairs*, September 11, 2025, https://www.internationalaffairs.org.au/australianoutlook/ pakistans-army-chief-sparks-alarm-with-nuclear-threats-on-u-s-soil/.

234 "India Decries 'Sabre Rattling' After Pakistan Army Chief's Reported Nuclear Remarks," *Reuters*, August 11, 2025, https://www.reuters.com/world/asia-pacific/india-decries-sabre-rattling-after-pakistan-army-chiefs-reported-nuclear-remarks-2025-08-11/.

235 Chandrajit Mitra, "India Won't Tolerate Nuclear Blackmail: PM Modi's Big Message to Pakistan," *NDTV*, August 15, 2025, https://www.ndtv.com/india-news/independence-day-2025-pm-narendra-modi-on-indus-waters-treats-says-india-wont-tolerate-nuclear-blackmail-by-pakistan-9089402.

On September 17, Pakistan and Saudi Arabia issued a joint statement announcing the signing of a "Strategic Mutual Defense Agreement", which aims to "develop aspects of defense cooperation between the two countries and strengthen joint deterrence against any aggression" and stipulates that "any aggression against either country shall be considered an aggression against both."[236] Following remarks by a Saudi official that "this is a comprehensive defense agreement that will utilize all defensive and military means deemed necessary depending on the specific threat,"[237] the agreement has prompted speculation among experts as to whether it could be interpreted as a form of extended nuclear deterrence guarantee. On September 18, Pakistan's Defense Minister Khawaja Mohammad Asif said that his country's nuclear program "will be made available" to Saudi Arabia if needed,[238] but no official statement confirmed these remarks.

North Korea

Since 2022, North Korea has been expanding the role of nuclear weapons in its national security, with a seemingly growing focus on a potential warfighting function.[239]

During an inspection of a nuclear material production facility on January 28, North Korean leader Kim Jong Un called for further bolstering the country's nuclear forces.[240] He later declared, in his address to the 13th session of the 14th People's Assembly on September 21, that North Korea's nuclear forces are "fully and perfectly performing their deterrent function for coping with and overwhelming all security challenges from outside," affirming that the country "we will never lay down [its] nukes."[241] He added that "we are now exercising our war deterrent, and I do not want the primary mission of this deterrent to become invalid. If invalid, its secondary mission will be put into operation. I have already mentioned it. If the secondary mission of the deterrent is put into operation, the military organizations and infrastructures of the ROK and its allies in the vicinity will collapse in a moment, and this just means annihilation."[242]

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[236] Ministry of Information and Broadcasting of Pakistan, "Joint Statement on the State Visit of H.E. Muhammad Shehbaz Sharif, Prime Minister of the Islamic Republic of Pakistan, to the Kingdom of Saudi Arabia," September 17, 2025, https://pid.gov.pk/site/press_detail/30371?utm_source=substack&utm_ medium=email.

[237] Andrew England, Ahmed Al Omran and Humza Jilani, "Saudi Arabia Signs 'Strategic Mutual Defence' Pact with Pakistan," *Financial Times*, September 18, 2025, https://www.ft.com/content/50a48a5a-a022-411d-803e-bbd804f99563?utm_source=substack&utm_medium=email.

[238] Jon Gambrell and Munir Ahmed, "Pakistan Says Its Nuclear Program Can Be Made Available to Saudi Arabia Under Defense Pact," *AP News*, September 20, 2025, https://apnews.com/article/pakistan-saudi-nuclear-pact-defense-e66e0ded8045812c8aea39e21d764836.

[239] "Report on 6th Enlarged Plenary Meeting of 8th WPK Central Committee," *KCNA*, January 1, 2023, http://www.kcna.co.jp/item/2023/202301/news01/20230101-18ee.html.

[240] "North Korean Leader Kim Inspects Nuclear Facility and Calls for Bolstering Arsenal," *CNN*, January 28, 2025, https://edition.cnn.com/2025/01/28/asia/north-korea-kim-nuclear-facility-visit-intl-hnk/.

[241] "Respected Comrade Kim Jong Un's Speech at 13th Session of 14th Supreme People's Assembly of DPRK," *KCNA*, September 22, 2025, http://kcna.kp/en/article/q/f2c6c6e3cf5a57003e0f67cdc9789876.kcmsf.

[242] Ibid.

B) No first use and sole purpose

In 2025, no NWS altered its policy on no first use (NFU) or the "sole purpose" of nuclear weapons. Among the NWS, China remains the only country to have officially declared an NFU policy, which it reaffirmed in 2025. The other four NWS have continued to reject both NFU and "sole purpose" doctrines.

At the 2025 NPT PrepCom, China urged the NWS to "support the negotiation and conclusion of a treaty on mutual no-first-use of nuclear weapons or to make a political statement thereon and to undertake not to be the first to use nuclear weapons against each other at any time and under any circumstances." At the same time, it directly criticized the United States for "adher[ing] to the policy of first-use of nuclear weapons."[243]

In response to China's proposal, the United States said: "We were dismayed by some States Parties' support for China's proposal for a non-credible, unverifiable No First Use Treaty. We must ask–what good is a statement from China that it will not use nuclear weapons first, when its nuclear build-up appears to contradict to its stated policy?"[244] At the UNGA First Committee, the United States further explained its position regarding China's proposal for a no-first-use treaty: "a treaty on No First Use should not be considered an effective measure relating to nuclear disarmament within the meaning of NPT Article VI. As a practical matter, a simple "no first use" policy is an empty statement absent transparency surrounding nuclear forces, plans, and procedures. Without answers to concrete questions about these topics, we must conclude this rhetorical, unverifiable policy is not credible as the basis for a treaty negotiation. Furthermore, this proposal is premised entirely on trust, yet the country espousing this policy itself claims it cannot engage in arms control talks with the United States because of a lack of trust."[245]

Regarding other nuclear-armed states, India continues to uphold an NFU policy, while reserving the option of nuclear retaliation in the event of a major biological or chemical attack. At the UNGA First Committee, India reaffirmed its NFU policy amid heated exchanges with Pakistan, following the May 2025 conflict between the two countries: "As a responsible nuclear-weapon State, India is committed, per its nuclear doctrine, to a policy of credible minimum deterrence, with the posture of No-First Use and non-use against non-nuclear weapon States. [...] India will not use its nuclear weapons first. If there is any nuclear escalation it will be by Pakistan. Pakistan can make an enormous contribution to international peace and security by adopting a No First Use policy."[246]

Pakistan, for its part, has developed short-range nuclear weapons to counter the Indian Army's "Cold Start" strategy and does not rule out the first use of nuclear weapons in response to a conventional attack. It also responded to India's statement cited above, asserting that

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243 "Statement by China," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

244 "Statement by the United States," Closing Session, Third PrepCom for the 11th NPT RevCon, May 9, 2025.

245 "Statement by the United States, Thematic Debate, First Committee, UNGA, October 21, 2025.

246 "Statement by India," General Debate, First Committee, UNGA, October 15, 2025.

"India boasts of its "No First Use" doctrine but conveniently omits the exceptions and policy statements by its own leaders that contradict this claim."[247]

North Korea's "Policy on Nuclear Forces," which became law in September 2022, states that it could use nuclear weapons first.[248] In addition, North Korean leaders have repeatedly and emphatically mentioned this option in recent years.

C) Negative security assurances

Negative security assurances (NSAs) are commitments by nuclear-weapon states not to use or threaten to use nuclear weapons against non-nuclear-weapon states. Beyond the protocols to nuclear-weapon-free zone (NWFZ) treaties, however, the NWS have not offered legally binding NSAs. In 2025, the NWS made no changes to their NSA policies and reaffirmed their respective positions at the 2025 NPT PrepCom.

China stated that it "clearly undertakes not to be the first to use nuclear weapons at any time and under any circumstances, and unconditionally undertakes not to use or threaten to use nuclear weapons against non-nuclear-weapon States and nuclear-weapon-free zones. China is the only nuclear-weapon State that has clearly made the above-mentioned undertakings."[249] It urged the Conference on Disarmament to commence negotiations on an international legal instrument that would enshrine NSAs by the NWS. It remains the only NWS that provides unconditional NSAs.

France reaffirmed its commitment to "ensuring that negative security assurances are extended to non-nuclear-weapon states that respect their non-proliferation obligations. In this context, we strongly condemn the unprovoked and unjustified armed aggression against Ukraine by the Russian Federation, in flagrant violation of the United Nations Charter and Ukraine's territorial integrity, as well as the irresponsible nuclear rhetoric employed by Russia. These actions stand in stark contradiction to the commitments made under the Budapest Memorandum and the security assurances provided by Russia to Ukraine."[250]

Following the revisions to its NSAs policy, as outlined in its new nuclear doctrine adopted in November 2024, Russia affirmed its support for the NNWS: "parties to the NPT in seeking legally binding negative security assurances. [...] It is important that these States should neither engage in nor facilitate aggression against nuclear-weapon States and/or their allies and should comply with their nuclear non-proliferation obligations, which includes the renunciation from having nuclear weapons under control in the framework of military alliances with nuclear-weapons States." It added: "the main issues to be discussed should include possible assurances

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[247] "Statement of Right of Reply by Pakistan," General Debate, First Committee, UNGA, October 16, 2025.

[248] "Law on DPRK's Policy on Nuclear Forces Promulgated," *KNCA Watch*, September 9, 2022, https://kcnawatch.org/newstream/1662687258-950776986/law-on-dprks-policy-on-nuclear-forces-promulgated/.

[249] "Statement by China," Cluster 1 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

[250] "Statement by France," Cluster 1 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

to those non-nuclear-weapon States that make part of alliances with nuclear powers or have concluded bilateral security agreements with them (the so-called 'nuclear umbrella'). It is obvious that the special status/situation of such non-nuclear-weapon States excludes granting them any universal security assurances applicable to other States."[251]

The United Kingdom stated that it "continues to support negative security assurances and is open to discussions on an NSA treaty in an appropriate forum. To accept a negative security assurance, we would require states not to be in material breach of their obligations under the NPT. We regard a material breach as a State developing or attempting to develop or acquire nuclear weapons, not safeguards or procedural issues."[252]

The United States reaffirmed that it "will not use or threaten to use nuclear weapons against non-nuclear weapon states that are party to the NPT and in compliance with their nuclear nonproliferation obligations. This describes, and therefore is applied to, the vast majority of countries. These assurances are a matter of U.S. policy, but we also offer legally binding negative security assurances in connection with the Protocols to the nuclear-weapon-free zones."[253]

As noted in previous *Hiroshima Reports*, one purpose of the NSAs provided by NWS to NNWS is to mitigate the imbalance of rights and obligations between the two groups under the NPT. Beyond the NPT framework, India, Pakistan, and North Korea have also issued NSAs to NNWS. None of these countries made significant changes to their NSA policies in 2025. India has declared that it will not use nuclear weapons against NNWS, except that "in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons." Pakistan has announced an unconditional NSA. Meanwhile, North Korea stipulated in its 2022 "Law on Policy on Nuclear Weapons" that it "shall neither threaten non-nuclear weapons states with its nuclear weapons nor use nuclear weapons against them unless they join aggression or attack against the DPRK in collusion with other nuclear weapons states."

The members of the Stockholm Initiative for Nuclear Disarmament[254] submitted a working paper entitled "Steps to Strengthen Negative Security Assurances to Non-Nuclear-Weapon States." Reaffirming the role of NSAs in "advancing nuclear disarmament and non-proliferation," the working paper made the following recommendations: "reaffirm NSAs as a priority"; "reaffirm existing NSAs"; "explore effective international agreements to strengthen and formalize NSAs"; "sign and ratify protocols to NWFZs treaties"; "report on progress and exchange with NNWS"; and "address emerging technologies."[255]

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[251] "Statement by Russia," Cluster 1 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

[252] "Statement by the United Kingdom," Cluster 1 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

[253] "Statement by the United States," Cluster 1 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

[254] Canada, Ethiopia, Finland, Germany, Japan, Jordan, Kazakhstan, South Korea, the Netherlands, Norway, Spain, Sweden, and Switzerland.

[255] NPT/CONF.2026/PC.III/WP.42.

Finally, NAM countries reaffirmed that "pending the total elimination of nuclear weapons, it is the legitimate right of all non-nuclear-weapon States that, by becoming parties to the Treaty have given up the nuclear-weapon option, to receive effective, universal, unconditional, non-discriminatory and irrevocable legally binding negative security assurances against the use or threat of use of nuclear weapons under all circumstances."[256]

At the 2025 UNGA, a resolution titled "Conclusion of effective international arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons" was adopted. The resolution considers that "until nuclear disarmament is achieved on a universal basis, it is imperative for the international community to develop effective measures and arrangements to ensure the security of non-nuclear-weapon States against the use or threat of use of nuclear weapons from any quarter."[257] The voting behavior of countries examined in this project on this resolution is as follows:

- 120 in favor (Brazil, China, Egypt, India, Indonesia, Iran, Japan, Kazakhstan, Mexico, Pakistan, Saudi Arabia, Syria, and others); 0 against; 60 abstentions (Australia, Austria, Canada, France, Germany, Israel, South Korea, North Korea, the Netherlands, New Zealand, Norway, Poland, Russia, South Africa, Sweden, Switzerland, Türkiye, the United Kingdom, the United States, and others).

D) Signature and ratification of nuclear-weapon-free zone treaty protocols

The protocols to the Nuclear-Weapon-Free Zone (NWFZ) treaties contain provisions for legally binding NSAs. However, as of the end of 2025, only the Protocol to the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco) has been ratified by all NWS. No further progress in additional ratifications by the NWS was recorded in 2025.

Table 1-5: Status of Signature and Ratification of NWFZ Treaty Protocols by NWS (2025)

	China	France	Russia	U.K.	U.S.
Treaty of Tlatelolco (Latin America and the Caribbean)	○	○	○	○	○
Treaty of Rarotonga (South Pacific)	○	○	○	○	△
Treaty of Bangkok (Southeast Asia)					
Treaty of Pelindaba (Africa)	○	○	○	○	△
Treaty of Semipalatinsk (Central Asia)	○	○	○	○	△

[○: ratification △: signature]

Regarding the Protocol to the Southeast Asia NWFZ (SEANWFZ) Treaty (Bangkok Treaty), which has not been signed by any of the five NWS, the Association of Southeast Asian Nations (ASEAN) stated the following at the NPT PrepCom: "We reaffirm our commitment to

[256] "Statement by NAM," Cluster 1 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

[257] A/RES/80/18, December 1, 2025.

continuously engage all the NWS, including those with reservations, and intensify efforts of all parties to resolve all outstanding issues in accordance with the objectives and principles of the SEANWFZ Treaty."[258]

The five nuclear-weapon states have expressed their intention to sign the protocol, and it was reiterated that consultations between the treaty parties and these states are ongoing. Although China had stated in February 2024 at the Conference on Disarmament (CD) that it would sign the protocol[259], it has not done so and instead reaffirmed at the 2025 NPT PrepCom its "willing[ness]" to sign.[260] France stated that it will "continue to work constructively with the States Parties to these treaties, as well as with the States Parties to the Bangkok Treaty, to advance discussions on adherence to its protocol."[261] The United Kingdom stated that it continues "to engage with ASEAN members in the hope of being able to sign and ratify the Additional Protocol to the Bangkok Treaty at the earliest opportunity."[262] At the NPT PrepCom, neither Russia nor the United States made any mention of the Bangkok Treaty in their official statements.

Some NWS have attached declarations and reservations to the protocols of NWFZ treaties when signing or ratifying them. The NAM, NAC, and states parties to these treaties have called for the withdrawal of such reservations. For instance, NAM countries submitted a working paper entitled "Nuclear-weapon-free zones" at the 2025 NPT PrepCom, in which they "strongly call[ed] for the withdrawal of any related reservations or unilateral interpretative declarations that are incompatible with the object of and purpose of such treaties."[263]

E) Extended nuclear deterrence

NATO

It is currently estimated that the United States deploys around 100 B61 nuclear gravity bombs across five NATO countries—Belgium, Germany, Italy, the Netherlands, and Türkiye—under nuclear sharing arrangements. In January 2025, the NNSA announced the completion of the B61-12 gravity bomb life-extension program and its full forward deployment to Europe under NATO's nuclear sharing arrangements.[264] On November 13, Sandia National Laboratories announced that it had conducted, in coordination with the NNSA, a series of successful exercises between August 19 and 21 in which an F-35A fighter jet carried and released the B61-

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258 "Statement by Malaysia on Behalf of the ASEAN," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

259 Ministry of Foreign Affairs of China, "Remarks by Director-General Mr. Sun Xiaobo at the High-Level Segment of the Conference on Disarmament," February 29, 2024, https://www.fmprc.gov.cn/eng/wjb/zzjg_663340/jks_665232/kjfywj_665252/202406/t20240606_11405418.html.

260 "Statement by China," Cluster 2 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

261 "Statement by France," Cluster 2 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

262 "Statement by the United Kingdom," Cluster 2 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

263 NPT/CONF.2026/PC.III/WP.24.

264 Ellie Cook, "US Deploys Upgraded 'Gravity Bombs' to Europe," *Newsweek*, January 20, 2025, https://www.newsweek.com/us-deploys-b61-12-gravity-bombs-europe-tactical-nuclear-weapons-2017485.

12.[265]

In response to Russia's full-scale invasion of Ukraine and its escalating threats to NATO member states, the Alliance's *Strategic Concept* adopted in June 2022 placed greater emphasis on nuclear deterrence than the 2010 version. In 2025, NATO members reaffirmed the central importance of extended nuclear deterrence to the Alliance's deterrence and defense strategy.

For instance, in June 2025, during the NATO Hague Summit, the British government announced that it will acquire "at least a dozen" nuclear-capable F-35A fighter jets and join NATO's dual-capable aircraft nuclear mission (DCA), calling it "the biggest strengthening of the UK's nuclear posture in a generation."[266] This represents a reversal of the decision made in 1998 to eliminate the United Kingdom's air-launched nuclear capabilities, as well as a reinforcement of NATO's nuclear sharing arrangements. Following this decision, and after public speculation that U.S. B61-12 gravity nuclear bombs had been delivered to the Royal Air Force (RAF) Lakenheath base on July 18, based on flight tracking observation, members of the Campaign for Nuclear Disarmament called for Prime Minister Starmer to tell the British Parliament whether this alleged deployment was actually true.[267] The British government and the United States stuck to their policy to "neither confirm nor deny" the presence of nuclear weapons in a particular location.

Throughout 2025, Poland has repeatedly expressed its interest in joining NATO's nuclear sharing arrangements. On March 13, President Duda called on the United States to deploy nuclear weapons on Polish territory to deter future Russian aggression.[268] He reiterated this position on April 18, adding that Poland could also host French nuclear weapons as "these two ideas are neither contradictory nor mutually exclusive."[269] His successor, President Nawrocki, reaffirmed both possibilities on September 17.[270]

Following the violation of Estonian airspace by three Russian MiG-31 fighter jets on September 19, Estonian Defense Minister Hanno Pekvur said on September 23 that Estonia would be open to hosting future British nuclear-capable F-35As.[271]

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[265] Kylie Engleman, "B61-12 Flight Tests Yield Positive Results," *Sandia National Laboratories*, November 13, 2025, https://www.sandia.gov/labnews/2025/11/13/b61-12-flight-tests-yield-positive-results/.

[266] Jonathan Beale and Imogen James, "UK to Buy Nuclear-Capable F-35A Fighter Jets," *BBC*, June 25, 2025, https://www.bbc.com/news/articles/c335406gxdvo.

[267] Dan Sabbagh, "Campaigners Call for Keir Starmer to Say if US Nuclear Weapons Are Back in UK," *The Guardian*, July 22, 2025, https://www.theguardian.com/world/2025/jul/22/campaigners-call-for-keir-starmer-to-say-if-us-nuclear-weapons-are-back-in-uk.

[268] Raphael Minder, "Poland's President Urges US to Move Nuclear Warheads to Polish Territory," *Financial Times*, March 13, 2025, https://www.ft.com/content/f9e5f2a9-5d81-4557-af6d-ed3a33eecf1a.

[269] Seb Starcevic, "We Want French Nukes, Polish President Says," *Politico*, April 18, 2025, https://www.politico.eu/article/poland-andrzej-duda-france-nuclear-weapons-emmanuel-macron/.

[270] Daryna Vialko, "Poland's President Hopes for Deployment of Nuclear Weapons on Its Territory," *RBC-Ukraine*, September 17, 2025, https://newsukraine.rbc.ua/news/poland-s-president-hopes-for-deployment-of-1758115625.html.

[271] Memphis Barker, "Estonia Open to Hosting British Nuclear-Capable Fighter Jets," *The Telegraph*, September 23, 2025, https://www.telegraph.co.uk/world-news/2025/09/23/estonia-open-to-hosting-british-nuclear-weapons/.

NATO held its annual nuclear exercise "Steadfast Noon" from October 13 to October 24. The exercise involved around 70 aircraft from 14 allied nations, with a mix of conventional and dual-capable aircraft. NATO specified that "the exercise is a long planned, routine training activity and part of NATO's broader efforts to maintain readiness and ensure transparency around its nuclear posture. It is not linked to any current world events, and no live weapons are used."[272]

Indo-Pacific

Although U.S. nuclear weapons are deployed abroad only in the five NATO countries mentioned above, the United States has established consultative mechanisms on extended deterrence with Australia (the Strategic Policy Dialogue, SPD), Japan (the Extended Deterrence Dialogue, EDD), and South Korea (the Nuclear Consultative Group, NCG).

The U.S.-Japan Joint Leaders' Statement issued on February 7 reaffirmed the U.S. "unwavering commitment to the defense of Japan, using its full range of capabilities, including nuclear capabilities."[273] Illustrating this commitment to extended deterrence, a meeting of the U.S.-Japan EDD was held at the U.S. Barksdale Air Force Base on June 5-6.[274] Furthermore, on July 26, it was reported that Japan and the United States had, for the first time, discussed a contingency scenario in which the United States would use nuclear weapons. This scenario was reportedly addressed during extended deterrence talks and was based on the guidelines for extended nuclear deterrence announced in December 2024.[275] It was also reported on July 27 that, in a similar Japan-U.S. computer simulation exercise conducted in 2024, the Japanese Self-Defense Forces had strongly urged the U.S. military to respond in kind to any nuclear threats by China in the event of a contingency in Taiwan[276]. Furthermore, on December 10, two U.S. nuclear-capable B-52 strategic bombers flew over the Sea of Japan alongside Japanese fighter jets. The Japanese Ministry of Defense stated that it reaffirmed the alliance's "strong resolve to prevent any unilateral change to the status quo by force" and that it "confirmed the readiness posture of both the Self-Defense Forces and U.S. forces."[277]

Against this backdrop, the Japanese government has reaffirmed the coexistence of reliance on extended deterrence and its commitment to the elimination of nuclear weapons. On September 23, then-Prime Minister Shigeru Ishiba (who was replaced by Prime Minister Sanae Takaichi

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[272] NATO, "NATO's Annual Nuclear Exercise Steadfast Noon Begins," October 13, 2025, https://www.nato.int/en/news-and-events/articles/news/2025/10/13/natos-annual-nuclear-exercise-steadfast-noon-begins.

[273] Ministry of Foreign Affairs of Japan, "United States-Japan Joint Leaders' Statement – February 7, 2025," February 7, 2025, https://www.mofa.go.jp/files/100791691.pdf.

[274] Ministry of Foreign Affairs of Japan, "Japan-U.S. Extended Deterrence Dialogue," June 9, 2025, https://www.mofa.go.jp/press/release/pressite_000001_01351.html.

[275] "Japan, U.S. Discussing Scenario for Nuclear Weapons Use: Sources," *Kyodo News*, July 26, 2025, https://english.kyodonews.net/articles/-/58051.

[276] "SDF Request Led to Nuclear Threat Scenario in Japan-U.S. Exercise," *Kyodo News*, July 27, 2025, https://english.kyodonews.net/articles/-/58075.

[277] Kaori Kaneko, Tim Kelly and Idrees Ali, "US Bombers Join Japanese Jets in Show of Force After China-Russia Drills, Tokyo Says," *Reuters*, December 12, 2025, https://www.reuters.com/world/china/japan-says-it-held-joint-military-drills-with-us-over-sea-japan-2025-12-11/.

the following month) stated in his address at the 80th session of the UNGA: "For Japan, which has been placed in an extremely severe security environment concerning nuclear weapons, extended deterrence provided by the United States, including nuclear deterrence, remains necessary to protect the lives and properties of our citizens. We cannot take a position that rejects deterrence theory. This is the reality of implementing a responsible security policy. Yet, the nuclear catastrophe our nation has experienced must never be repeated."[278]

Developments surrounding extended deterrence also prompted domestic debate in Japan regarding the three non-nuclear principles. On November 11, Prime Minister Takaichi said during parliamentary questioning that she could not yet "definitively state" whether the wording of Japan's three non-nuclear principles—prohibiting the production, possession, and introduction of nuclear weapons—would remain unchanged as the government revises its national security documents.[279] Subsequent discussions focused in particular on the principle of non-introduction and on whether revising it might be necessary to strengthen the framework of extended nuclear deterrence with the United States.[280]

At a press conference on December 19, Defense Minister Shinjiro Koizumi expressed the following position regarding the principle of "no introduction" of nuclear weapons on Japanese soil:

> I intend to carry on the position stated by then–Foreign Minister Katsuya Okada in 2010. To reiterate, he said: 'I do not believe we should engage too much in hypothetical discussions, but if an emergency were to occur and a situation arose in which Japan's security could not be protected unless we allowed the temporary port entry of nuclear weapons, then the government in power at that time would stake its political fate on making a decision and explaining it to the people.' That was the statement made by Katsuya Okada, who was Foreign Minister at the time, and I intend to uphold that statement.[281]

In response, civil society groups, including the Japan Confederation of A- and H-Bomb Sufferers Organizations (Nihon Hidankyo), submitted protests to the Prime Minister's Cabinet, reiterating their demand that the three non-nuclear principles be enshrined in law.[282]

Moreover, beyond the bilateral framework, U.S.-Japan-South Korea trilateral security cooperation has made ongoing progress, as reflected in the joint statement released on

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[278] Ministry of Foreign Affairs of Japan, "Address by Prime Minister Ishiba at the Eightieth Session of the United Nations General Assembly," September 24, 2025, https://www.mofa.go.jp/fp/un/pageite_000001_01290.html.

[279] Jesse Johnson, "Takaichi Sidesteps Commitment to Decades-Old Nonnuclear Principles," *The Japan Times*, November 12, 2025, https://www.japantimes.co.jp/news/2025/11/12/japan/politics/takaichi-nonnuclear-principles/.

[280] Jesse Johnson, "Senior LDP Official Hints at Need for Discussion of Non-Nuclear Principles," *The Japan Times*, December 21, 2025, https://www.japantimes.co.jp/news/2025/12/21/japan/politics/ldp-onodera-nuclear-principles/.

[281] Ministry of Defense of Japan, "Defense Minister Press Conference," December 19, 2025, https://www.mod.go.jp/j/press/kisha/2025/1219a.html (in Japanese).

[282] "Takaichi's Stance on 3 Non-Nuclear Princples Angers Survivors," *The Asahi Shimbun*, November 21, 2025, https://www.asahi.com/ajw/articles/16173320.

September 22, in which "the United States reaffirmed its extended deterrence commitments to Japan and the ROK, which are critically important to the security and stability of the Korean Peninsula and the broader Indo-Pacific region."[283]

As for South Korea, on December 11, the United States and South Korea held their fifth NCG discussion. South Korea emphasized that it will assume "the leading role in the conventional defense of the Korean peninsula," while the United States "reiterated the U.S. commitment to provide extended deterrence to the ROK, utilizing the full range of U.S. defense capabilities, including nuclear." The two sides also discussed "various efforts to maintain and strengthen nuclear deterrence policy and posture through in-depth discussions on all areas of extended deterrence, including information sharing, consultation and communication processes, Conventional-Nuclear Integration (CNI), and joint exercises, simulations, and trainings."[284]

Russia and Belarus

The extension of Russia's nuclear deterrence to its ally Belarus has been formally confirmed through amendments to the Russian nuclear doctrine, the Belarusian constitution, and Belarus's military doctrine. In April 2024, President Alexander Lukashenko announced that the deployment of Russian tactical nuclear weapons in Belarus had been completed in October 2023, and that the terms of their use were not specified but would be determined in consultation with President Putin.[285]

According to the U.S. Defense Intelligence Agency, "Russia is expanding its nuclear posture to Belarus by establishing missile and nuclear-capable aircraft capabilities, renovating a nuclear weapons storage site, and training Belarusian crews to handle tactical nuclear weapons."[286] This assessment seems to be confirmed by the following developments.

On March 13, President Putin and President Lukashenko exchanged letters of ratification of the treaty on security guarantees within the Union State (the supranational union of Belarus and Russia), which allows for the use of "all available forces and means" to protect the allied countries. During the press conference, President Putin stated that "a joint regional group of forces has been deployed in Belarus, alongside advanced Russian defense systems and tactical nuclear weapons."[287] On August 21, the head of Belarus' State Security Council stated

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283 U.S. Department of State, "Joint Statement from the Trilateral Meeting of the United States of America, Japan, and the Republic of Korea in New York City," September 22, 2025, https://www.state.gov/releases/office-of-the-spokesperson/2025/09/joint-statement-from-the-trilateral-meeting-of-the-united-states-of-america-japan-and-the-republic-of-korea-in-new-york-city.

284 U.S. Department of Defense, "Joint Press Statement on the Fifth Nuclear Consultative Group Meeting," December 11, 2025, https://www.war.gov/News/Releases/Release/Article/4358035/joint-press-statement-on-the-fifth-nuclear-consultative-group-meeting/.

285 "Lukashenko on How Belarus Can Respond to Aggression Coming from the West," *Belarus Segodnya*, April 25, 2024, https://www.sb.by/en/lukashenko-on-how-belarus-can-respond-to-aggression-coming-from-the-west.html.

286 U.S. Defense Intelligence Agency, *2025 Worldwide Threat Assessment*, May 11, 2025, https://armedservices.house.gov/uploadedfiles/2025_dia_statement_for_the_record.pdf.

287 "Russian Offensive Campaign Assessment, March 13, 2025," *The Institute for the Study of War*, March 13, 2025, https://understandingwar.org/research/russia-ukraine/russian-offensive-campaign-assessment-march-13-2025/.

that Belarus was exploring how to equip some of its rocket launcher systems with nuclear warheads.[288] Growing cooperation in the context of extended nuclear deterrence was illustrated by the joint Zapad-2025 military exercises held from September 12 to 16, during which the two countries rehearsed the launch of Russian tactical nuclear weapons as well as the nuclear-capable Oreshnik IRBM.[289] On December 18, President Lukashenko stated that the Oreshnik had been deployed to Belarus.[290]

Criticism and counterarguments

Extended nuclear deterrence arrangements faced particularly strong criticism at the 2025 NPT PrepCom. China called on some states to "abolish nuclear sharing and extended deterrence arrangements" and "withdraw nuclear weapons deployed abroad back to its own territories."[291] Despite its own extended nuclear deterrence arrangement with Belarus, Russia called nuclear sharing an "irresponsible policy that has become a major obstacle to the nuclear disarmament."[292] Conversely, a group of 48 states (including Austria, Australia, Canada, France, Germany, Japan, South Korea, the Netherlands, New Zealand, Norway, Poland, Sweden and the United Kingdom) condemned "in the strongest possible terms Russia's irresponsible and threatening nuclear rhetoric as well as its posture of strategic intimidation, including its announced deployment of nuclear weapons in Belarus."[293]

The NAM countries stated that "the policies of extended nuclear deterrence and "nuclear weapons sharing" run counter to the spirit and objectives of the Treaty and threaten its credibility and effectiveness."[294] Brazil criticized "a tendency of increased salience in extended nuclear deterrence, including calls for new so-called 'nuclear sharing' arrangements. Brazil has long maintained that such arrangements are inconsistent with Articles I and II of the NPT. Besides contradicting the Treaty, these arrangements can be profoundly destabilizing."[295] States parties and signatories to the TPNW stated that they were "disturbed by any deployment of nuclear weapons on the territory of non-nuclear-armed states, and urge all States with any such arrangements to put an end to them."[296]

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288 "Belarus Says It Is Looking at How to Arm Its Missile Systems With Nuclear Warheads," *Reuters*, August 21, 2025, https://www.reuters.com/business/aerospace-defense/belarus-says-it-is-looking-how-arm-its-missile-systems-with-nuclear-warheads-2025-08-21/.

289 Andrew Osborn and Mark Trevelyan, "Moscow and Minsk Rehearse Launch of Nuclear Weapons Deployed in Belarus, Lukashenko Says," *Reuters*, September 17, 2025, https://www.reuters.com/world/europe/moscow-minsk-rehearse-launch-nuclear-weapons-deployed-belarus-lukashenko-says-2025-09-16/.

290 "Belarusian Leader Says Russia Deployed Its Latest Nuclear-Capable Oreshnik Missile to the Country," *AP News*, December 19, 2025, https://apnews.com/article/russia-belarus-ukraine-nuclear-missile-oreshnik-cd2ff4b142402634aff9535cd94f5f79.

291 "Statement by China," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

292 "Statement by Russia," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

293 "Joint Statement," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

294 "Statement by NAM," Cluster 1 Specific Issue, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

295 "Statement by Brazil," General Debate, Third PrepCom for the 11th NPT RevCon, April 29, 2025.

296 "Joint Statement by TPNW States Parties and Signatory States," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

Nearly all NATO member states and other U.S. allies voiced strong opposition to the Chair's proposal, which was taken up by other states, that "non-nuclear weapon States may develop a standard reporting template to use for national reporting in furtherance of the implementation of action 20 of the 64-point Action Plan of 2010, with due regard, as applicable, for considerations such as nuclear sharing and umbrella arrangements."[297] The implication was that states involved in nuclear sharing arrangements should be treated differently than other NNWS. For instance, Australia stated that "we cannot accept any language that would implicitly create a third category of states – there are only two categories of states under the NPT – nuclear-weapon states and non-nuclear weapon states."[298] The Chair's proposal was included in the revised draft decision entitled "Strengthening the Review Process"[299] but the document was not adopted, underscoring the lack of consensus on this issue.

Other countries such as Germany reaffirmed the value of nuclear-sharing arrangements for non-proliferation and their compliance with the NPT: "It is important to emphasize that NATO, including its nuclear-sharing arrangements, has largely contributed to stability, security and nuclear nonproliferation since its foundation. Nuclear sharing arrangements have been in place during times of major progress in nuclear disarmament after the end of the Cold War and they would certainly not stand in the way for further progress. NATO's nuclear sharing arrangements were never contested for more than 50 years, they have always been and continue to be fully consistent with the NPT. NPT negotiations accounted for NATO's nuclear posture, which resulted in a seamless integration into the NPT. This has long been accepted and publicly understood by all States Party to the NPT, including by Russia until 2015."[300]

Similarly, Sweden stated that "Russia is undermining the existing arms control framework and global security. It is against this background that Sweden sought membership in NATO. Nuclear deterrence is a core part of NATO's collective security since the birth of the alliance. NATO's nuclear sharing arrangements, which preceded the NPT, were taken into account when the treaty was concluded and are consistent with articles I and II of the treaty, have contributed to nuclear non-proliferation."[301]

During the closing session of the NPT PrepCom, the United States said it was "extremely concerned by false narratives about extended deterrence arrangements and their corrosive effects on transparency and dialogue. Just yesterday, we heard a claim that U.S extended deterrence allies have a role in decision-making with respect to U.S. nuclear weapons employment, and therefore are in violation of their NPT obligations. This is false. The United States remains committed to our consultative arrangements with our Allies. Let me be clear, the President of the United States has the sole decision-making authority for U.S. nuclear weapon employment. Such falsehoods distract from the truly worrisome issues at hand,

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297 "Draft Chair's Elements Paper Strengthening the Review Process," April 25, 2025, NPT/CONF.2026/PC.III/CRP.1.

298 "Statement by Australia," Cluster 3 Specific Issues, Third PrepCom for the 11th NPT RevCon, May 7, 2025.

299 NPT/CONF.2026/PC.III/CRP.3/Rev.1, May 8, 2025.

300 "Statement by Germany," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

301 "Statement by Sweden," Cluster, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

including China's rapid and opaque nuclear weapons build-up, and Russia's coercive nuclear rhetoric and increased military cooperation with the DPRK."[302]

F) Nuclear risk reduction

In recent years, as nuclear disarmament efforts have continued to stall and, in some cases, regress, and as concerns have grown over the increasing possibility of nuclear weapon use, interest in nuclear risk reduction has intensified. This approach is viewed as one of the few viable and concrete kind of measures that could be collectively agreed upon to both advance nuclear disarmament and address these concerns. NNWS offer a broad perspective on nuclear risk reduction, encompassing not only the prevention of unintended use of nuclear weapons but also measures to prevent their intentional use. They propose a wide range of initiatives for nuclear arms control and disarmament, including reductions in nuclear arsenals and enhanced transparency. In contrast, NWS have largely focused their discussions on nuclear risk reduction with particular emphasis on preventing the unintended use of nuclear weapons. The *Hiroshima Report* provides an analysis and evaluation of nuclear risk reduction, primarily concentrating on the prevention of unintended nuclear weapon use, while also engaging with the arguments and proposals put forward by both sides.

Efforts by NWS

At the 2025 NPT PrepCom, France, the United Kingdom, and the United States, together with other states including Australia, Brazil, Canada, Germany, Japan, Kazakhstan, South Korea, Sweden, and Switzerland, submitted a working paper titled "Reducing the Risk of Nuclear Conflict." The paper recognized that "risk reduction is neither a substitute nor a prerequisite for nuclear disarmament" and highlighted several risk reduction measures, such as "stress[ing] the importance of Negative Security Assurances," "intensifying regular dialogue among and between the NWS," exploring "transparency and confidence building measures," "maintaining the de-targeted status of nuclear forces," and "identifying vulnerabilities and opportunities related to potentially disruptive new technologies."[303]

China called on NWS to "promote the reduction of strategic risks. At the beginning of 2022, the leaders of the five nuclear-weapon States issued the Joint Statement on the Preventing Nuclear War and the Avoiding Arms Races, reiterating the principle that 'a nuclear war cannot be won and cannot be fought.' The adoption of a no-first-use policy is a practical action to achieve the goal of nuclear disarmament. China once again calls on the nuclear-weapon States to support the negotiation and conclusion of a treaty on mutual no-first-use of nuclear weapons or to make a political statement thereon and to undertake not to be the first to use nuclear weapons against each other at any time and under any circumstances."[304]

In the white paper titled *China's Arms Control, Disarmament, and Nonproliferation in the New Era,* published on November 27, China stated that "due to the vast differences between

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[302] "Statement by the United States," Closing Session, Third PrepCom for the 11th NPT RevCon, May 9, 2025.

[303] NPT/CONF.2026/PC.III/WP.41, April 29, 2025.

[304] "Statement by China," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

nuclear-weapon states in their nuclear forces and policies, and in their security environment, there are no measures to reduce nuclear risks that can be universally applied. China advocates prioritizing crisis prevention and opposes the hypocritical approach of inciting confrontation and creating crises while calling for the reduction of nuclear risks. Nuclear-weapon states should effectively reduce the nuclear risks by abandoning the policy of aggressive nuclear deterrence based on the first use of nuclear weapons and reducing the role of nuclear weapons in their national and collective security policies."[305]

On April 2–3, the United States and China held working-level talks under the Military Maritime Consultative Agreement (MMCA), which the United States described as focusing on "decreasing the incidences of unsafe and unprofessional actions" by China's naval and air forces, and which China described as focusing on actions "prone to cause misunderstandings and miscalculations and jeopardize China's sovereignty and military security."[306] On November 2, U.S. Secretary of Defense Pete Hegseth announced that his Chinese counterpart, Admiral Dong Jun, had agreed that the United States and China "should set up military-to-military channels to deconflict and de-escalate any problems that arise."[307] However, no concrete initiatives have been made public.

Proposals by NNWS

During the 2025 NPT PrepCom, NNWS made various proposals regarding nuclear risk reduction.

The NAM states submitted a working paper in which they stressed that "nuclear risk reduction measures, including reductions in deployments and in operational status cannot substitute for irreversible cuts in, and the total elimination of, nuclear weapons and, accordingly, calls on the nuclear-weapon States to apply the principles of transparency, irreversibility and verifiability to all such cuts, to further reduce their nuclear arsenals, both warheads and delivery systems, thus contributing to the fulfillment of their nuclear disarmament obligations and facilitating the realization of a world free of nuclear weapons at the earliest date."[308]

The Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) submitted a working paper underscoring the urgency of risk reduction measures and the importance of "meaningful and inclusive dialogue" with NWS on the role of NWFZs. The paper also called for the establishment of formal dialogue mechanisms with each NWFZ.[309]

Members of the Stockholm Initiative (including Canada, Germany, Japan, Kazakhstan, South

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[305] Ministry of Foreign Affairs of China, *China's Arms Control*, op. cit.

[306] Didi Tang, "US and Chinese Military Officials Hold Talks on Maritime Security in Bid to Lower Risks," *AP News*, April 4, 2025, https://apnews.com/article/united-states-china-military-talks-maritime-security-bb494659f5bf2e279bf4632a2142f3ce.

[307] Phelim Kine, "Hegseth Seeks a Reboot of US-China Military Hotlines," *Politico*, November 2, 2025, https://www.politico.com/news/2025/11/01/hegseth-seeks-a-reboot-of-u-s-china-military-hotlines-00632761.

[308] NPT/CONF.2026/PC.III/WP.22, April 1, 2025.

[309] NPT/CONF.2026/PC.III/WP.34, April 21, 2025.

Korea, the Netherlands, Norway, Sweden and Switzerland) submitted a working paper titled "Navigating the potential impact of emerging technologies on nuclear disarmament, arms control, non-proliferation and peaceful uses of nuclear energy and technology." Emphasizing the risks posed by emerging technologies, the paper called for "a joint commitment by the nuclear-weapon States to keep human control and involvement in decisions that could lead to the use of a nuclear weapon and to refrain from any interference with nuclear command, control and communications (NC3) systems" and urged dialogue between NWS and NNWS on artificial intelligence (AI), cyber threats, and counterspace technologies "to identify risk reduction measures through a common framework." The paper also placed special emphasis on the need for NWS to "commit to refrain from any attacks or interference with NC3 systems of other states, acknowledging that such acts pose a significant threat to international security."[310]

Among the NNWS surveyed in this report, Canada, Germany, Japan, South Korea, the Netherlands, Sweden, and Türkiye stated at the NPT PrepCom that while nuclear risk reduction measures should be encouraged, they should not be viewed as a substitute for nuclear disarmament. Brazil, Mexico, and South Africa expressed the same view and further emphasized that "disarmament is the only sustainable form of risk reduction."[311]

The challenges linked to the development of artificial intelligence and nuclear risk reduction were also noted. For instance, Mexico stated that "beyond the longstanding stagnation in nuclear disarmament, in 2025 we now face a once unimaginable reality: artificial intelligence (AI) could one day make decisions regarding the use of nuclear weapons. In light of this risk and its catastrophic consequences, Mexico proposes that the First Committee urgently address the dangers of integrating AI into nuclear command and control systems."[312]

In this context, at the 2025 UNGA, Austria, Kazakhstan, Mexico, and other states submitted a resolution titled "Possible risks of the integration of artificial intelligence into command, control and communications systems of nuclear weapons," which was adopted. It expressed concern "about the possibility that artificial intelligence-driven decision-making related to command, control and communications systems of nuclear weapons could reduce human control and oversight, increasing the possibility of induced distortions in decision-making environments and shortened action and response windows, particularly when related to the most sensitive and critical stages such as decision to launch, which could heighten the risk of accidental, unintended or unauthorized use of nuclear weapons." The resolution demanded that "pending the total elimination of nuclear weapons, human control and oversight is maintained over command, control and communications systems of nuclear weapons, including those that integrate artificial intelligence technology."[313] The voting behavior of the countries examined in this project on this resolution is as follows:

- 118 in favor (Australia, Austria, Brazil, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, Saudi Arabia, South Africa, Switzerland, and other states); 9 against

[310] NPT/CONF.2026/PC.III/WP.3, April 25, 2025.

[311] "Statement by Brazil," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

[312] "Statement by Mexico," General Debate, First Committee, UNGA, October 8, 2025.

[313] A/RES/80/23, December 1, 2025.

(France, Israel, North Korea, Russia, the United Kingdom, the United States, and other states); 44 abstentions (Canada, China, Germany, India, Japan, South Korea, the Netherlands, Norway, Pakistan, Poland, Sweden, Türkiye, and other states); Syria did not vote.

(7) De-alerting and Measures to Extend Decision Time for Nuclear Weapon Use

In 2025, there were no significant changes in the official policies of NWS and other nuclear-armed states regarding the alert and operational status of their respective nuclear forces. Russian and U.S. strategic ballistic missiles remain on high alert. In its 2022 *Nuclear Posture Review*, the United States stated that while its ICBMs are not on "hair-trigger" alert, it would not lower their alert level, as doing so could undermine crisis stability.[314] In the case of Russia, President Putin stated in 2024 that "it is likewise important to keep non-strategic nuclear forces on constant alert and to continue holding exercises involving their potential use."[315] The United Kingdom and France maintain their nuclear forces on alert through continuous SSBN patrols, although at lower readiness levels than those of the two nuclear superpowers.

China is not expected to maintain its nuclear forces on high alert in peacetime, unlike the United States and Russia, but the exact meaning of China's stated "moderate readiness"[316] remains unclear. In its 2025 report, the DoD has warned that "China probably made progress on its attempts to achieve an early warning counterstrike (EWCS) capability, similar to launch on warning (LOW), where warning of a missile strike enables a counterstrike launch before an enemy first strike can detonate. China likely will continue to refine and train on this capability throughout the rest of the decade. [...] China's early warning infrared satellites can reportedly detect an incoming ICBM within 90 seconds of launch with an early warning alert sent to a command center within three to four minutes."[317]

Little definitive information is available regarding the alert status of other nuclear-armed states' forces. Uncertainty remains about the readiness of India's nuclear arsenal, which is not believed to be on high alert.[318] North Korea reportedly introduced a new policy at the Central Military Commission of the Workers' Party of Korea in May 2020, aiming to place its "strategic military forces under a heightened state of alert."[319] Furthermore, in its "Nuclear

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[314] U.S. Department of Defense, *2022 National Defense Strategy of the United States of America, Including the 2022 Nuclear Posture Review and the 2022 Missile Defense Review*, October 2022, p. 13, https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEG Y-NPR-MDR.pdf.

[315] Hans Kristensen, Matt Korda, Eliana Johns and Mackenzie Knight, "Russian Nuclear Weapons, 2025," *Bulletin of the Atomic Scientists*, May 13, 2025, https://thebulletin.org/premium/2025-05/russian-nuclear-weapons-2025/.

[316] NPT/CONF.2020/41, November 16, 2021.

[317] U.S. Department of Defense, op. cit., p. 29.

[318] Hans Kristensen, Matt Korda, Eliana Johns and Mackenzie Knight-Boyle, "Indian Nuclear Weapons, 2024," *Federation of Atomic Scientists*, September 5, 2024, https://thebulletin.org/premium/2024-09/indian-nuclear-weapons-2024/#post-heading.

[319] "Supreme Leader Kim Jong Un Guides Enlarged Meeting of WPK Central Military Commission,"

Use Regulations" announced in October 2022, North Korea stated that "in the event that the command and control system of the national nuclear force is in danger due to an attack by hostile forces," "a nuclear strike to annihilate the hostile forces, starting with the starting point and command center, will be carried out automatically and immediately in accordance with the pre-determined operational plan."[320] Regarding Pakistan, its nuclear warheads are not believed to be mated with missiles.[321]

Proponents of de-alerting have often argued that such measures can help prevent the accidental use of nuclear weapons. The UNGA resolution titled "Reducing Nuclear Danger"[322] and sponsored by India, Iran, Kazakhstan, and other states, called for "immediate and urgent steps to reduce the risks of unintentional and accidental use of nuclear weapons, including through de-alerting and de-targeting nuclear weapons." The votes of the countries examined in this report are as follows:

- 117 in favor (including Brazil, Egypt, India, Indonesia, Iran, Kazakhstan, Mexico, Saudi Arabia, and South Africa), 50 against (including Australia, Austria, Canada, France, Germany, Israel, South Korea, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, Türkiye, the United Kingdom, and the United States), 11 abstentions (including China, Japan, North Korea, Pakistan, and Russia). Syria did not vote.

(8) Comprehensive Nuclear-Test-Ban Treaty (CTBT)

A) Signature and ratification of the CTBT

By the end of 2025, 178 of the 187 CTBT signatories had ratified the treaty. Among the 44 states listed in Annex 2 of the CTBT, whose ratification is required for the treaty to enter into force, six states (China, Egypt, Iran, Israel, Russia, and the United States) have signed but not ratified, while three (India, North Korea, and Pakistan) have not signed. Among the countries surveyed, Saudi Arabia and Syria have also not yet signed the CTBT.

At the 2025 UNGA, a resolution entitled "Comprehensive Nuclear-Test-Ban Treaty,"[323] which emphasized the vital importance and urgency of signing and ratifying the treaty without delay or conditions in order to achieve its earliest entry into force, was adopted by 176 votes in favor, one against (the United States), and three abstentions (including India and Saudi Arabia). North Korea and Syria did not vote.

The 14th Conference on Facilitating Entry into Force of the CTBT (Article XIV Conference) was held at the United Nations on September 26. A document titled "Activities Undertaken

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KCNA, May 24, 2020, http://www.kcna.co.jp/item/2020/202005/news24/20200524-01ee.html.

320 "Law on DPRK's Policy on Nuclear Forces Promulgated," *KCNA Watch*, September 9, 2022, https://kcnawatch.org/newstream/1662687258-950776986/law-on-dprks-policy-on-nuclear-forces-promulgated/.

321 Hans Kristensen, "Status of World Nuclear Forces," *Federation of Atomic Scientists*, March 26, 2025, https://fas.org/initiative/status-world-nuclear-forces/.

322 A/RES/80/37, December 1, 2025.

323 A/RES/80/70, December 1, 2025.

by Signatory and Ratifying States Under Measure (L) of the Final Declaration of the 2025 Conference on Facilitating the Entry into Force of the Treaty in the Period June 2023 – May 2025" summarized the outreach efforts by ratifying and signatory states to promote the treaty's entry into force.[324] It highlighted:

- Bilateral activities related to Annex 2 states (conducted by Australia, Brazil, Japan, Kazakhstan, New Zealand, Norway, Russia, and others);
- Bilateral activities related to non-Annex 2 states (conducted by Australia, Brazil, Canada, Japan, Kazakhstan, New Zealand, Norway, Russia, and others);
- Global-level activities (conducted by Australia, Brazil, Canada, France, Japan, Kazakhstan, South Korea, the Netherlands, New Zealand, Norway, Russia, and others);
- Regional-level activities (conducted by Australia, Brazil, France, Kazakhstan, New Zealand, Norway, Russia, and others).

On August 29, a meeting was held at the United Nations to commemorate the International Day Against Nuclear Testing, established under the leadership of Kazakhstan.

B) Moratoria on nuclear test explosions pending the CTBT's entry into force

In its 2025 annual report titled *Adherence to and Compliance with Arms Control, Non-Proliferation, and Disarmament Agreements and Commitments*, the United States expressed concerns about the lack of transparency regarding China's and Russia's nuclear testing activities, as well as their compliance with the moratoria.[325] The report also stated that "since 1992, the United States has maintained a moratorium on nuclear explosive testing and remains committed to assuring the safety, security, and reliability of its nuclear arsenal through a rigorous science-based stockpile stewardship program. For more than twenty years, the directors of the national security laboratories and the Commanders of U.S. Strategic Command have annually assessed that our nuclear stockpile is safe, reliable, and effective, and that there is no current need to conduct nuclear explosive tests to ensure stockpile reliability."[326]

However, on October 31, President Trump announced that he had instructed the U.S. Department of Defense to "immediately" resume nuclear testing "on an equal basis" with unnamed countries.[327] He told reporters he had issued this order because of other countries "doing testing."[328] It remained unclear whether he was referring to an explosive test of a nuclear warhead or to a test of a nuclear-capable delivery system—which the United States is already doing—following Russia's recent tests of the Burevestnik cruise missile and the

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[324] CTBT-Art.XIV/2025/4, September 11, 2025.

[325] U.S. Department of State, *Adherence to and Compliance with Arms Control, Non-Proliferation, and Disarmament Agreements and Commitments*, April 2025, p. 29, https://www.state.gov/wp-content/uploads/2025/04/2025-Arms-Control-Treaty-Compliance-Report-1.pdf.

[326] Ibid., p. 8.

[327] Amy Mackinnon, "Donald Trump Orders Immediate Resumption of Nuclear Weapons Testing," *Financial Times*, October 30, 2025, https://www.ft.com/content/6e4fb93f-38e5-4d31-85f0-60628c282048.

[328] David E. Sanger and William J. Broad, "Trump's Call to Resume Nuclear Testing After Decades Revives a Cold War Debate," *New York Times*, October 30, 2025, https://www.nytimes.com/2025/10/30/us/politics/trump-nuclear-testing-cold-war.html.

Poseidon torpedo. This ambiguity was further compounded by his reference to the Department of Defense, rather than the Department of Energy—and more specifically, the NNSA—which oversees the U.S. nuclear stockpile and has been responsible for maintaining a readiness to perform an underground nuclear test within 36 months.[329]

Following President Trump's announcement, Vice Admiral Richard Correll, the administration's nominee to head the U.S. Strategic Command, told the Senate Armed Services Committee that he "wouldn't presume that the president's words meant nuclear testing." He noted that, apart from North Korea, no other nation has conducted explosive nuclear tests this century and expressed confidence in the reliability of the U.S. nuclear arsenal.[330] On November 2, Energy Secretary Chris Wright stated that "the tests we're talking about right now are system tests. These are not nuclear explosions. These are what we call non-critical explosions. With our science and our computation power, we can simulate incredibly accurately exactly what will happen in a nuclear explosion."[331]

However, on the same day, President Trump, during an interview, accused China, Russia, Pakistan, and North Korea of conducting nuclear tests underground. When asked whether the United States would "start detonating nuclear weapons for testing," he responded, "we're going to test nuclear weapons like other countries do," suggesting that he was in fact contemplating the possibility of resuming explosive nuclear testing.[332]

China responded by expressing hope that "the U.S. will earnestly abide by its obligations under the Comprehensive Nuclear-Test-Ban Treaty and its commitment to a 'moratorium on nuclear testing' and take concrete actions to uphold the international nuclear disarmament and non-proliferation regime, as well as global strategic balance and stability."[333] Kremlin spokesman Dmitry Peskov responded to the announcement by stating: "If [Trump] in some way refers to the Burevestnik tests as a nuclear test carried out by another country, that is in no way accurate. All nations continue to advance the development of their defense systems, but this does not constitute a nuclear test."[334] Since withdrawing its ratification of the CTBT in 2023, Russia has repeatedly stated that it will not resume nuclear tests unless the United States does so first. "If a country with the capability makes the erroneous decision to conduct nuclear tests,

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329 Heather Williams, "Can the United States Immediately Return to Nuclear Testing?," *CSIS*, October 30, 2025, https://www.csis.org/analysis/can-united-states-immediately-return-nuclear-testing.

330 Theresa Hitchens, "US Nuclear Arsenal Currently Safe, Reliable: STRATCOM Nominee," *Breaking Defense*, October 30, 2025, https://breakingdefense.com/2025/10/us-nuclear-arsenal-currently-safe-reliable-stratcom-nominee/.

331 "US Not Planning Nuclear Explosions at This Time, Energy Secretary Says," *Reuters*, November 4, 2025, https://www.reuters.com/world/us/us-not-planning-nuclear-explosions-this-time-energy-secretary-says-2025-11-02/.

332 "Read the Full Transcript of Norah O'Donnell's Interview With President Trump Here," *CBS News*, November 2, 2025, https://www.cbsnews.com/news/read-full-transcript-norah-odonnell-60-minutes-interview-with-president-trump/.

333 Ministry of Foreign Affairs of China, "Foreign Ministry Spokesperson Guo Jiakun's Regular Press Conference on October 30, 2025," October 30, 2025, https://www.fmprc.gov.cn/mfa_eng/xw/fyrbt/lxjzh/202510/t20251030_11744169.html.

334 "Tests of Burevestnik Missile Do Not Fall under Category of Nuclear Tests – Kremlin," *TASS*, October 30, 2025, https://tass.com/politics/2037465.

and Washington is clearly in our focus, then we will retaliate immediately," President Putin said on October 2.[335]

The other NWS, along with India and Pakistan, continued to maintain a moratorium on nuclear test explosions. Israel, whose nuclear policy remains opaque, has not indicated any intention to conduct nuclear tests. In the case of North Korea, after Kim Jong Un reconsidered the moratorium on long-range ballistic missile and nuclear explosion tests in January 2022 and instructed relevant departments to promptly review the possibility of resuming them,[336] there were frequent reports suggesting that preparations for nuclear tests had been completed. However, as of the end of 2025, North Korea had not resumed nuclear explosion tests.

C) Cooperation with the CTBTO Preparatory Commission

As of December 31, 2025, the status of contribution payments to the CTBTO (CTBT Organization) by the countries surveyed in this study is as follows:[337]

- Fully paid (104 countries): Australia, Austria, Brazil, Canada, China, Egypt, France, Germany, Indonesia, Israel, Japan, Kazakhstan, South Korea, the Netherlands, New Zealand, Norway, Poland, Russia, South Africa, Sweden, Switzerland, Türkiye, and the United Kingdom.
- Partially paid (20 countries): Mexico and the United States.
- Suspension of voting rights (due to non-payment over the past three years): Iran.

D) Contributions to the development of the CTBT's verification systems

The establishment of the CTBT verification system has progressed steadily. In April 2025, the CTBTO concluded a facility agreement with Indonesia concerning auxiliary seismic stations, aimed at strengthening IMS coverage both regionally and globally.[338] The establishment of IMS stations in Egypt and Iran—along with those in India, North Korea, Pakistan, and Saudi Arabia, which have not yet signed the CTBT—has progressed more slowly than in other signatory states. In addition, nearly half of China's stations have yet to be certified by the CTBTO Preparatory Commission.[339]

At the 2025 NPT PrepCom, several working papers submitted recommendations concerning the role of the CTBT verification system in the lead-up to the 2026 RevCon. Australia, Canada, Japan, South Korea, New Zealand, Norway, and the European Union (among other

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335 Amanda Castro, "Russia Issues New Nuclear Warning to US – We Will Retaliate Immediately," *Newsweek*, October 8, 2025, https://www.newsweek.com/trump-putin-ryabkov-nuclear-warning-russia-ukraine-us-10848547.

336 Colin Zwirko, "North Korea Hints at 'Resuming' Long-Range Weapons Tests After New US Sanctions," *NK News*, January 20, 2022, https://www.nknews.org/2022/01/north-korea-hints-at-resuming-long-range-weapons-tests-after-new-us-sanctions/?t=16 50473342578..

337 CTBTO, "Status of Assessed Contributions," December 31, 2025, https://www.ctbto.org/sites/default/files/2026-01/52_Weekly%20AC%20Status%2031%20December%20 2025_web.pdf.

338 CTBTO Preparatory Commission, "CTBTO Signs Facility Agreement with Indonesia," April 16, 2025, https://www.ctbto.org/news-and-events/news/ctbto-signs-facility-agreement-indonesia.

339 CTBTO Preparatory Commission, "Station Profiles," https://www.ctbto.org/our-work/station-profiles.

states) suggested that the 2026 review cycle should "acknowledge the potential benefits of (regional) cooperation between national data centres in order to pool complementary expertise, allowing for more profound and multidimensional analysis, which can generate more in-depth assessments of suspected nuclear test explosions and also increase confidence in the respect for the moratorium by all States, including nuclear-weapon States."[340] France, Mexico, New Zealand, and Switzerland (among other states) stressed that "while the International Monitoring System is close to completion, the very first stations that were deployed are getting near their end of their life cycle and some need to be fully refurbished. Important financing is needed to ensure the CTBTO can keep operating existing stations and to guarantee that the IMS provides."[341]

E) Nuclear testing

No country conducted a nuclear test explosion in 2025. While the five NWS have conducted subcritical experiments and other non-explosive activities, no specific instances were reported in 2025.

China

Based on satellite imagery, analysts have reaffirmed that China is developing new infrastructure at its Lop Nur nuclear test site in Xinjiang, with steady activity continuing through 2025. This includes the expansion of nearby support areas and electrical systems. New construction at horizontal tunnels—potentially capable of supporting smaller explosive nuclear tests—was documented in January.[342]

Russia

In its 2025 annual report titled *Adherence to and Compliance with Arms Control, Non-Proliferation, and Disarmament Agreements and Commitments*, the United States reaffirmed its concerns vis-à-vis Russia regarding "supercritical nuclear weapons test without TTBT [Threshold Test Ban Treaty] notification since renewing its nuclear explosive testing moratorium in 1996" and "lack of transparency relating to Russia's activities at Novaya Zemlya."[343]

Following President Trump's announcement that the United States would resume nuclear testing, President Putin, during a meeting of Russia's Security Council on November 5, instructed military and political leaders to "submit coordinated proposals on the possible first steps focusing on preparations for nuclear weapons test." Kremlin spokesperson Dmitry Peskov later clarified that "the president did not give instructions to begin preparations for testing… The president instructed that the advisability of beginning preparations for such tests

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340 NPT/CONF.2026/PC.III/WP.3, April 10, 2025.

341 NPT/CONF.2026/PC.III/WP.38, April 26, 2025.

342 Cade Cadell, "China Rapidly Expands Nuclear Test Site as Trump Revives Cold War Tension," *The Washington Post*, November 17, 2025, https://www.washingtonpost.com/national-security/2025/11/17/china-nuclear-test-site-lop-nur/?nid=top_pb_signin&arcId=ZN6PBAXDYFAUXB5ULFQMZDDV2Q&account _%20location=ONSITE_HEADER_ARTICLE.

343 U.S. Department of State, Adherence to and Compliance with Arms Control, op. cit., p. 27.

be considered."[344]

The United States

With regard to experimental activities other than nuclear test explosions, the United States continues to conduct various non-explosive tests and experiments under the Stockpile Stewardship Program (SSP), which aims to maintain and assess the safety and reliability of its nuclear weapons stockpile without resorting to underground nuclear testing. These activities include subcritical experiments and tests using the Z Machine, which generates X-rays through the rapid discharge of capacitors, enabling the study of plutonium properties under extreme pressures and temperatures. On May 23, the Nevada Senate and Assembly passed a bipartisan resolution calling on the U.S. government to maintain its moratorium on explosive nuclear weapons testing.[345]

North Korea

In its 2025 annual report titled *Adherence to and Compliance with Arms Control, Non-Proliferation, and Disarmament Agreements and Commitments*, the United States reaffirmed that "it continues to assess the [Punggye nuclear] site is available for a seventh nuclear test, once the regime makes the political decision to do so."[346]

The other nuclear-armed states have not provided any information regarding whether they carried out non-explosive testing activities.

While the CTBT does not prohibit nuclear tests that do not involve an explosion, the NAM countries expressed their "grave concern at the nuclear weapon test explosions in alternative ways, as well as the use of new technologies for upgrading the existing nuclear weapons systems as well as the development of new types of nuclear weapons, which may result in the resumption of tests and a lowering of the nuclear threshold. Accordingly the Group strongly calls on the nuclear-weapon States to put an immediate end to such activities and refrain from any other action that would defeat the object and purpose of the Comprehensive Nuclear-Test-Ban Treaty, pending its entry into force."[347]

In contrast to the CTBT, which explicitly prohibits nuclear "explosions," the TPNW broadly bans "nuclear tests," a term that could be interpreted to encompass tests that do not produce an explosion. However, the TPNW does not specify any measures for verifying compliance with this testing prohibition.

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[344] Heather Williams and Lachlan MacKenzie, "Russia's Latest Nuclear Saber-Rattling: Nuclear Testing?," *CSIS*, November 5, 2025, https://www.csis.org/analysis/russias-latest-nuclear-saber-rattling-nuclear-testing.

[345] "Nevada Legislature Passes Unanimous Resolution Supporting the U.S. Moratorium on Nuclear Weapons Testing," *Nuclear Threat Initiative*, May 23, 2025, https://www.nti.org/news/nevada-legislature-passes-unanimous-resolution-supporting-the-u-s-moratorium-on-nuclear-weapons-testing/.

[346] U.S. Department of State, Adherence to and Compliance with Arms Control, op. cit., p. 16.

[347] NPT/CONF.2026/PC.III/WP.23, April 1, 2025.

(9) Fissile Material Cut-Off Treaty (FMCT)

A) Efforts to initiate negotiations on an FMCT

In the "Decision 2: Principles and Objectives for Nuclear Non-Proliferation and Disarmament" adopted at the 1995 NPT Review and Extension Conference, participating states agreed on the immediate commencement and early conclusion of negotiations on a Fissile Material Cut-off Treaty (FMCT) at the Conference on Disarmament (CD). However, substantive negotiations have not yet begun.

In its white paper titled *China's Arms Control, Disarmament, and Nonproliferation in the New Era*, China stated that "the CD is the only appropriate forum for negotiating a treaty banning the production of fissile materials for nuclear weapons. China supports negotiating and concluding a multilateral, nondiscriminatory, and internationally verifiable FMCT on the basis of agreeing a comprehensive and balanced program of work and the universal participation of all key stakeholders in accordance with the Shannon Report and the mandate contained therein."[348]

At the 2025 PrepCom, two working papers were submitted on the FMCT. The first, sponsored by Canada, Japan, South Korea, the United Kingdom, the EU, and other states, called on all states to declare and uphold a moratorium on the production of fissile material for weapons purposes and to commence negotiations on an FMCT in the CD.[349] The second, sponsored by the members of the Non-Proliferation and Disarmament Initiative (NPDI), including Australia, Canada, Germany, Japan, Mexico, the Netherlands, Poland, and Türkiye, advocated similar measures. It additionally called on all states to "engage in additional transparency and confidence-building measures, as called for in General Assembly resolution 78/28, that could facilitate these negotiations."[350]

At the PrepCom, Russia stated that "today the idea of such a treaty has become to a considerable extent obsolete. However, we will be ready to participate in negotiations on its development should such a decision be adopted."[351]

On September 24, the first ministerial meeting of the "Friends of the FMCT," an initiative launched by Japan in March 2024, was held in New York. Member countries include Australia, Brazil, Canada, France, Germany, Japan, the Netherlands, the United Kingdom, the United States, and three other states. In a joint statement, they urged the CD to "immediately commence negotiations […] without any preconditions" and welcomed "substantive proposals to advance such a treaty as well as actions and efforts taken thus far, inter alia, voluntary moratoria on the production of fissile material for use in nuclear weapons or other nuclear explosive devices, the dismantling of fissile material production facilities, or conversion for peaceful uses, and reporting on stockpiles of civil plutonium, as important interim measures

348 Ministry of Foreign Affairs of China, *China's Arms Control*, op. cit.

349 NPT/CONF.2026/PC.III/WP.6, April 9, 2025.

350 NPT/CONF.2026/PC.III/WP.7, March 3, 2025.

351 "Statement by Russia," Cluster 2, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

pending the entry into force of such a treaty."[352]

At the UNGA First Committee, Pakistan reiterated its long-standing opposition to the FMCT, stating that "the proposal for a treaty banning only the production of fissile materials seeks to perpetuate existing asymmetries by excluding from its scope several metric tonnes of existing stocks that can produce thousands of new nuclear weapons. Such proposals that are cost-free for its proponents but disregard the legitimate security needs of others will remain a non-starter."[353]

At the 2025 UNGA, as in 2024, no resolution on an FMCT was submitted. Instead, a draft decision submitted by Canada, Germany, and the Netherlands calling for the inclusion of the agenda item "Treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices" was adopted.[354] The votes of the countries examined in this report are as follows:

- 166 in favor (including Australia, Austria, Brazil, Canada, Egypt, France, Germany, India, Indonesia, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, Norway, South Africa, Sweden, Switzerland, Türkiye, and the United Kingdom); 2 against (Iran and Pakistan); 9 abstentions (including China, Israel, North Korea, Russia, Saudi Arabia, and the United States). Syria did not vote.

The resolution entitled "Treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices" was last adopted by the UNGA in 2023.

B) Moratoria on the production of fissile material for nuclear weapons

As in the previous year, China, Israel, North Korea, and Pakistan have not declared a moratorium on the production of fissile material for nuclear weapons as of 2025. Among these states, Israel, North Korea, and Pakistan are considered highly likely to continue producing fissile material for nuclear weapons.

It is generally assessed that China is currently not producing fissile material for nuclear weapons. However, concerns remain that its development of advanced fast-breeder reactors (CFR-600) —with one of the two likely completed and the other still under construction— and its reprocessing facilities, though intended for civilian purposes, could potentially be diverted for weapons use. In its 2025 report, the DoD indicated that "China probably has faced delays constructing and commissioning its two CFR-600 sodium-cooled fast breeder reactors at Xiapu. China previously planned for the first unit to come online in 2023, but it is probably still undergoing testing. The second reactor unit is still under construction. Once online, the CFR-600s will reestablish China's ability to produce weapons-grade plutonium."[355]

India is thought to be producing both highly-enriched uranium (HEU) and weapons-grade

[352] Ministry of Foreign Affairs of Japan, "The First FMCT Friends Ministerial Meeting," September 24, 2025, https://www.mofa.go.jp/dns/ac_d/pageite_000001_01296.html.

[353] "Statement by Pakistan," General Debate, First Committee, UNGA, October 10, 2025.

[354] A/DES/80/513, December 1, 2025.

[355] U.S. Department of Defense, op. cit., p.30.

plutonium. On October 12, it announced that fuel loading at its first prototype 500-megawatt fast-breeder reactor in Kalpakkam, Tamil Nadu, was expected to begin the following week, after resolving technical issues related to sodium cooling.[356] If operated successfully, the reactor could substantially increase India's future plutonium production.

North Korea is assessed to have produced fissile material for nuclear weapons and engaged in related activities in 2025, continuing trends observed in previous years. On June 9, Rafael Grossi, Director General of the International Atomic Energy Agency (IAEA), stated that "the 5MW(e) reactor at Yongbyon likely continues to operate in its seventh cycle. […] In addition, the Agency is monitoring the construction of a new building at Yongbyon which has dimensions and features similar to the Kangson enrichment plant."[357]

On September 25, South Korean Unification Minister Chung Dong Young stated that North Korea is currently operating four uranium enrichment facilities, in addition to multiple covert atomic plants, and cited a civilian expert's assessment that the country possesses up to two tons of highly enriched uranium.[358] An expert report based on satellite imagery analysis, released on November 21, confirmed that activity at Yongbyon throughout 2025 included "the operation of the 5MW(e) reactor, ongoing pre-operational testing of the Experimental Light Water Reactor, a probable reprocessing campaign over the summer, and construction of probable new enrichment and waste storage facilities."[359]

None of the NWS or other nuclear-armed states have declared the amount of fissile material for nuclear weapons in their possession, with the exception of the United States, which declassifies the quantities of its past production of HEU and plutonium. Estimates provided by research institutes are summarized in Chapter 3 of this *Report*.

(10) Transparency Regarding Nuclear Forces, Fissile Material, and Nuclear Doctrines

There was no significant change in the basic transparency policies of the five NWS. Although China emphasizes the importance of transparency regarding intentions and policies, it has frequently been criticized for being less transparent than the other NWS on nuclear matters.

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356 "Fuel Loading at India's First Fast Breeder Reactor in Kalpakkam to Begin Next Week," *The Economic Times*, October 12, 2025, https://economictimes.indiatimes.com/industry/energy/power/fuel-loading-at-indias-first-fast-breeder-reactor-in-kalpakkam-to-begin-next-week/articleshow/124495944.cms?from=mdr.

357 IAEA, "IAEA Director General's Introductory Statement to the Board of Governors," June 9, 2025, https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-9-june-2025.

358 "South Korea Says the North Has 4 Uranium Enrichment Facilities to Build Nuclear Weapons," *NBC News*, September 25, 2025, https://www.nbcnews.com/world/asia/south-korea-says-north-4-uranium-enrichment-facilities-nuclear-weapons-rcna233607.

359 Peter Makowsky, Jack Liu, and Iliana Ragnone, "Yongbyon Nuclear Scientific Research Center: Modernization and Expansion in 2025," *38 North*, November 21, 2025, https://www.38north.org/2025/11/yongbyon-nuclear-scientific-research-center-modernization-and-expansion-in-2025/?mkt_tok=ODEzLVhZVS00MjIA AAGeW-Vf4EVxBzk1ovlSkUpy8N8WK-gLazpbcqEFeUFcKrlzDnp_Lw_xcTRtlj7nA722uM5ABi9ThSbVb z7f-nbqLQ4prOU9GNzbFAkmfYifPU8m.

Indeed, it has not disclosed information on the types or numbers of its nuclear weapons, nor its specific plans for modernizing its nuclear forces. For instance, the EU statement on nuclear weapons, delivered at the First Committee of the 80th UNGA on October 17, noted that "the EU remains deeply concerned by the rapid and opaque expansion of China's nuclear arsenal, which raises serious questions and is inconsistent with its disarmament commitments under the NPT. China's lack of transparency over its nuclear doctrine, policies, and expanding arsenal fuels mistrust and raises questions about the credibility of its No First Use policy. As the holder of the world's third-largest nuclear arsenal and a nuclear-weapon State under the NPT, China must establish necessary communication lines to prevent misperceptions and enhance transparency over its arsenals, doctrines and policies. We urge China to engage in arms control dialogue as a first step, improve information-sharing, and halt further expansion of its nuclear arsenal."[360]

In its white paper titled *China's Arms Control, Disarmament, and Nonproliferation in the New Era*, published on November 27, China stated that "nuclear transparency should be conducive to strategic mutual trust, take full account of the security environment and interests of each country, and be implemented by themselves voluntarily in accordance with their national conditions. Given the current international security situation, transparency in intentions and policies is of the most practical significance. China firmly follows a path of peaceful development, pursues a nuclear strategy of self-defense, and commits to a no-first-use policy on nuclear weapons. This is the most practical measure of transparency."[361]

France reaffirmed that "deterrence aims to sow doubt in the mind of the adversary. This requires a careful balance between political determination to defend France's vital interests, doctrinal transparency and deliberate ambiguity regarding the exact circumstances in which the use of nuclear weapons could be considered."[362]

The United Kingdom's policy was reiterated as follows: "The UK is deliberately ambiguous about precisely when, how and at what scale it contemplate the use of nuclear weapons. The UK does not publicise figures for its operational stockpile, deployed warhead, or deployed missile numbers. This posture enhances its deterrent effect by complicating the calculations of potential aggressors and reduces the risk of deliberate nuclear use by those seeking a first-strike advantage."[363]

In 2024, the United States released declassified information indicating that between 1994 and 2023, the United States had dismantled 12,088 warheads. Since September 30, 2020, it has dismantled 405 nuclear warheads. Approximately 2,000 additional warheads are currently

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[360] "Statement by the EU," Thematic Debate, First Committee, UNGA, October 17, 2025.

[361] Ministry of Foreign Affairs of China, *China's Arms Control*, op. cit.

[362] French General Secretariat for Defence and National Security, *National Strategic Review 2025*, July 14, 2025, p. 33, https://www.sgdsn.gouv.fr/files/files/Publications/20250713_NP_SGDSN_RNS2025_EN_0.pdf.

[363] U.K. Ministry of Defence, *Strategic Defence Review. Making Britain Safer: Secure at Home, Strong Abroad*, June 2, 2025, p. 98, https://www.gov.uk/government/publications/the-strategic-defence-review-2025-making-britain-safer-secure-at-home-strong-abroad.

retired and awaiting dismantlement.[364]

At the 2025 NPT PrepCom, France[365] and the United Kingdom[366] each submitted drafts of their respective national reports, and each held a separate side event to present them. The EU submitted a working paper on "Enhanced Transparency and Accountability," recommending that "every review conference shall include a specific session dedicated to the review of the national implementation reports provided by nuclear-weapon states."[367]

The NPDI also submitted a working paper on transparency, which included a "proposed best practice national reporting template proposed by the Non-Proliferation and Disarmament Initiative that can be used by all State parties to provide information about implementation of their Treaty obligations and commitments, particularly the Action Plan of 2010."[368] This template includes, among other information, reporting on the number, types, and status of nuclear warheads and delivery vehicles, the amount of fissile material produced for military purposes, and the measures taken to diminish the role of nuclear weapons in military doctrines.

Ireland, on behalf of Australia, Austria, Brazil, Canada, Egypt, Germany, Indonesia, Japan, South Korea, Mexico, the Netherlands, New Zealand, Norway, Sweden, Switzerland, Türkiye, and 41 other states, delivered a joint statement on "NPT Transparency and Accountability." The statement urged the clarification of "the submission and consideration of national reports by all the nuclear-weapon states" through a formalized process and called on NWS to "present their national reports at NPT meetings and engage in interactive discussions on them."[369]

Japan submitted the recommendations of the International Group of Eminent Persons for a World Without Nuclear Weapons (IGEP) as a working paper at the 2025 NPT PrepCom.[370] One recommendation called for "China, France, and the United Kingdom [to] engage in discussion on their respective conceptions of minimum deterrence, as a contribution to arms control" and as a means of enhancing transparency and understanding of their nuclear doctrines.

At the UNGA First Committee, Germany criticized China's lack of transparency and "highlight[ed] the P3's exemplary transparency regarding their stockpiles and doctrines, through the provision of national reports, and NATO's transparency regarding its annual nuclear exercise."[371]

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364 NNSA, "Transparency in the U.S. Nuclear Weapons Stockpile," 2024, https://www.energy.gov/nnsa/transparency-us-nuclear-weapons-stockpile.

365 NPT/CONF.2026/PC.III/2, March 7, 2025.

366 NPT/CONF.2026/PC.III/3, March 11, 2025.

367 NPT/CONF.2026/PC.III/WP.1, February 19, 2025.

368 NPT/CONF.2026/PC.III/WP.30, April 3, 2025.

369 "Joint Statement on behalf of a Group of States NPT Transparency & Accountability," Closing Session, Third PrepCom for the 11th NPT RevCon, May 9, 2025.

370 NPT/CONF.2026/PC.III/WP.33, April 14, 2025.

371 "Statement by Germany," Thematic Debate, First Committee, UNGA, October 17, 2025.

Table 1-6: Transparency in nuclear disarmament

■ Nuclear warheads	CHN	FRA	RUS	UK	US	IND	ISR	PAK	PRK
Total number of nuclear warheads (including those awaiting dismantlement)		○							
Aggregate number of nuclear warheads in stockpile		○		△	△				
Number of strategic or non-strategic nuclear warheads		○		△	△				
Number of strategic or non-strategic deployed nuclear warheads		○		△	△				
Number of strategic or non-strategic non-deployed nuclear warheads		○		△	△				
Reductions (in numbers) of nuclear warheads in 2025			○		○				
Aggregate number of nuclear warheads dismantled in 2025									
■ Delivery vehicles									
Number of nuclear warhead delivery systems by type (missiles, aircraft, submarines, artillery, other)		○	△	○	○				
Reduction (in numbers) of delivery systems in 2025									
Aggregate number of delivery systems dismantled in 2025									
Nuclear disarmament since 1995									
1995 - 2000		○	○	○	○				
2000 - 2005		○	○	○	○				
2005 - 2010		○	○	○	○				
2010 - 2020		○	○	○	○				
2020 - 2025			○		○				
■ Nuclear doctrine									
Measures taken or in process to diminish the role and significance of nuclear weapons in military and security concepts, doctrines and policies	○	○	○	○	○	○		○	
Measures taken or in process to reduce the operational readiness of the reporting State's nuclear arsenal	○	○	○	○	○	○		○	
Measures taken or in process to reduce the risk of accidental or unauthorized use of nuclear weapons	○	○	○	○	○	○		○	
Description of negative security assurances (including status and definition) by reporting States	○	○	○	○	○	○		○	○
Current status and future prospect of the ratification of the relevant protocols to nuclear weapon-free-zone treaties	○	○	○	○	○	—	—	—	—
Current status of consultations and cooperation on entry into force of the relevant protocols of nuclear-weapon-free-zone treaties	○	○	○	○	○	—	—	—	—
Current status of review of any related reservations about the relevant protocols of nuclear weapon-free-zone treaties by concerned States						—	—	—	—
■ Nuclear testing									
Current status of ratification of the Comprehensive Nuclear-Test-Ban Treaty	△	○	△	○	△		△		
Current status of the reporting State's policy on continued adherence to the moratorium on nuclear-weapon test explosions	○	○	○	○	○	○		○	
Activities to promote the entry into force of the Comprehensive Nuclear-Test-Ban Treaty at the national, regional and global levels			○	○	○				

■ Scheduled policy reviews									
Scope and focus of policy reviews, scheduled or under way, relating to nuclear weapon stocks, nuclear doctrine or nuclear posture									
■ Fissile material									
Aggregate amount of plutonium produced for national security purposes (in metric tons)				○	○				
Aggregate amount of HEU produced for national security purposes (in metric tons)				○	○				
Amount of fissile material declared excess for national security purposes (in metric tons)			△		△				
Current status (and any future plan), including the amount and year, of declarations to the International Atomic Energy Agency of all fissile material designated by the reporting State as no longer required for military purposes and placement of such material under Agency or other relevant international verification and arrangements for the disposition of such material for peaceful purposes		○	△	○	△				
Current status of the development of appropriate legally binding verification arrangements to ensure the irreversible removal of such fissile material			△	△	△				
Current status (and any future plan) of the dismantlement or conversion for peaceful uses of facilities for the production of fissile material for use in nuclear weapons		○							
■ Other measures in support of nuclear disarmament									
Any cooperation among Governments, the United Nations and civil society aimed at increasing confidence, improving transparency and developing efficient verification capabilities		○		○	○				
Year and official document symbol of regular reports on the implementation of Article VI, paragraph 4(c), of the 1995 decision entitled "Principles and objectives for nuclear nonproliferation and disarmament," and the practical steps agreed to in the Final Document of the 2000 Review Conference in 2019									
Activities to promote disarmament and non-proliferation education		○		○	○				

[○ : Highly transparent △ : Partially transparent]

(11) Nuclear Disarmament Verification

In 2025, the U.S.-Russian New START treaty was the only remaining arms control agreement to include verification measures, such as on-site inspections. Since the treaty entered into force, both countries have carried out these inspections as required. However, as noted above, on-site inspections have been suspended since April 1, 2020 (see Section 5(A) of this chapter). A notable verification initiative is the "International Partnership for Nuclear Disarmament Verification" (IPNDV), launched by the United States in December 2014.[372] With 28 participating countries, as well as the EU and the Vatican, the IPNDV continues to study verification measures and technologies for dismantling nuclear weapons and for monitoring fissile material derived from dismantled warheads. The IPNDV held a working meeting in Oslo

[372] In addition to three nuclear-weapon states (France, the United Kingdom, and the United States), participants include Australia, Brazil, Canada, Germany, Indonesia, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, Norway, Poland, Sweden, Switzerland, Türkiye, and the UAE. China and Russia participated as observers in Phase 1 but did not take part in Phase 2.

from June 2-6, refining papers on confidence in verification, irreversibility, and conceptual elements of a verification strategy. It also identified potential areas for continued work, including transportation verification exercises, expanded use of national technical means, and applications of emerging technologies to strengthen verification confidence.[373]

On January 15, the co-chairs of the informal working group on the implementation of article 4 of the TPNW, which details procedures for the verification of the elimination of nuclear weapons by nuclear-armed states, released their report.[374] The report highlighted the need for nuclear-armed states to "take specific policy steps to demonstrate irreversible commitment to the disarmament process. These steps should demonstrate that the commitment to disarmament is becoming structurally embedded in measurable senses." It also argued that "verification should be kept as simple as possible" and that the role of the TPNW is to enable theses states to demonstrate their commitment to the disarmament process "while tightly regulating the area of most risk (fissile material, which is the crucial ingredient of nuclear weapons). The International Atomic Energy Agency (IAEA) would then be invited in to implement and monitor safeguards on this material and production facilities." The report concluded that "the verification of irreversible nuclear disarmament is possible" and that it "would not require states parties to the treaty and their representatives to gain access to sensitive nuclear weapons information and data. [...] What is required is reliable information sufficient to establish that nuclear disarmament is being or has been undertaken, irreversibly, and that a nuclear weapon capability could not be reconstituted in the future."

At the 2025 NPT PrepCom, the NAM submitted a working paper on verification calling for "the development of appropriate legally binding verification arrangements, within the context of IAEA, to ensure the verifiable and irreversible removal of fissile material from nuclear weapons or other nuclear explosive devices" as well as the "establishment of a standing committee to monitor and verify the nuclear disarmament steps undertaken unilaterally or through bilateral agreements by the nuclear-weapon States."[375]

China also submitted a working paper, in which it stated that "effective nuclear disarmament verification measures are conducive to enhancing mutual trust among the contracting parties of nuclear disarmament treaties and are important guarantee for the complete prohibition and thorough destruction of nuclear weapons. The promotion of nuclear disarmament verification should balance the issues of credibility and sensitive information protection, prevent nuclear proliferation risks, and specific verification measures should be negotiated and agreed upon by relevant parties."[376]

At the 2025 UNGA, Brazil and Norway introduced a resolution entitled "Establishment of the Group of Scientific and Technical Experts on Nuclear Disarmament Verification."[377] The

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373 IPNDV, "IPNDV Working Meeting – Oslo, Norway," June 6, 2025, https://www.ipndv.org/events/ipndv-working-meeting-oslo-norway/.

374 TPNW/MSP/2025/2, January 14, 2025.

375 NPT/CONF.2026/PC.III/WP.29, April 1, 2025.

376 NPT/CONF.2026/PC.III/WP.39, April 26, 2025.

377 A/RES/80/53, December 1, 2025.

resolution established a group of 21 members serving in their personal capacity and selected for their technical expertise. The group will hold four two-week sessions in Geneva and Vienna between January 2027 and September 2029, with a mandate to improve approaches to disarmament verification. It will report to the UNGA and address the following areas in its program of work: nuclear declarations; the removal of deployed nuclear warheads; the dismantlement and storage of warhead components; the conversion of nuclear material with classified characteristics; the elimination or irreversible conversion of all nuclear-weapon-related facilities; the placement of nuclear material and facilities under international safeguards; verification of the correctness and completeness of baseline declarations of nuclear material once a state declares that it no longer possesses nuclear weapons or nuclear explosive devices; and the means of delivery of nuclear weapons. The resolution was adopted by 170 votes in favor, with two votes against (Russia and the United States) and two abstentions (Iran and Israel). North Korea and Syria did not participate in the vote.

(12) Irreversibility

In their joint statement submitted to the NPT PrepCom, Austria, Brazil, Germany, Japan, Mexico, the Netherlands, Norway, Sweden, Türkiye, the United Kingdom, and several other countries emphasized the following regarding the importance of irreversibility in nuclear disarmament:

> Efforts to understand irreversibility, like transparency and verification, are not an end in themselves. They are not a pre-requisite to commence nuclear disarmament, in compliance with the spirit and letter of article VI of the NPT. Nor are they a pre-requisite to implement the obligations and commitments agreed within the framework of the treaty. We are however convinced that the application of these three principles can ensure more effective and sustainable nuclear disarmament and non-proliferation. […]
>
> We reiterate the central importance of applying the agreed principles of transparency, verifiability, and irreversibility to any nuclear disarmament efforts, and towards the sustainability of all pillars of the NPT. We are, therefore, supportive of enhanced dialogue among States Parties to build a common understanding of the application of irreversibility, in its technical, legal, normative and political dimensions. This dialogue could be informed by a growing body of academic work on the principle. We understand irreversibility in nuclear disarmament as a spectrum of mutually reinforcing elements aimed at making the reconstitution of nuclear capacities as difficult as possible, including inter alia. legal, economic, social, societal, normative, political and technical measures. Nothing is ever truly irreversible and the capacity to develop nuclear weapons cannot go to zero, but weapons can be irreversibly eliminated in a verifiable and transparent manner. We also highlight that while all States have an interest in attaining and maintaining a world without nuclear weapons, the main focus of such a dialogue would be on irreversibility in the actions and activities of nuclear-weapon States to implement their agreed obligations and commitments on nuclear disarmament. These actions and activities will benefit from work

already having been done on the three principles.[378]

A) Implementing and planning the dismantlement of nuclear warheads and delivery vehicles

As with previous nuclear arms control agreements, the New START Treaty obliges Russia and the United States to dismantle or convert strategic nuclear delivery vehicles exceeding the treaty's limits, and to do so in a verifiable manner. Although the treaty does not require the dismantlement of retired nuclear warheads, both countries have partially dismantled such warheads as unilateral measures.

In August 2024, the United States announced that "from fiscal years 1994 through 2023, the United States dismantled 12,088 nuclear warheads. Since September 30, 2020, the United States has dismantled 405 nuclear warheads. Approximately 2,000 additional nuclear warheads are currently retired and awaiting dismantlement."[379] Although the pace of warhead dismantlement was assessed to have slowed significantly in recent years, "the FY 2025 Stockpile Stewardship and Management Plan reported that the Pantex Plant—where all warhead assembly and disassembly activities take place—surpassed its FY 2023 dismantlement goals and increased its staffing to support its FY 2024 commitments. It also reportedly completed the dismantlement of all remaining W84 warheads that had previously been in the queue."[380]

Table 1-7: U.S. nuclear weapons stockpile and warhead dismantlement

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Nuclear weapons stockpile*	4,881	4,804	4,717	4,571	4,018	3,822	3,785	3,805	3,750	3,713	3,768	3,748
Dismantled nuclear weapons	308	239	299	109	258	354	243	284	184	214	122	69

*Does not include retired weapons pending dismantlement.

Source: NNSA, "Transparency in the U.S. Nuclear Weapons Stockpile."

The other NWS have not released any information regarding nuclear weapons dismantlement. However, France and the United Kingdom have dismantled their retired nuclear warheads and delivery systems.

B) Decommissioning and conversion of nuclear weapons-related facilities

No significant activity or progress was reported in 2025 regarding the decommissioning or conversion of nuclear weapons-related facilities. In its working paper submitted to the NPT PrepCom, the EU proposed that the templates for national implementation reports of NWS

[378] "Joint Statement on the Principle of Irreversibility in Nuclear Disarmament," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

[379] NNSA, "Transparency in the U.S. Nuclear Weapons Stockpile," 2024, op. cit.

[380] Hans Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight, "United States Nuclear Weapons, 2025," *Bulletin of the Atomic Scientists*, January 13, 2025, https://thebulletin.org/premium/2025-01/united-states-nuclear-weapons-2025/.

include "the amount and types of weapons, delivery systems and nuclear weapon-related facilities dismantled and reduced as part of nuclear disarmament efforts, as well as any additional relevant information in this regard."[381]

In 1996, France became the only country to decide to completely and irreversibly dismantle its nuclear test sites, which were fully decommissioned by 1998. In its national report submitted to the NPT PrepCom, France stated that it has undertaken decommissioning operations at its former fissile material production facilities for nuclear weapons, including its uranium enrichment plant, reprocessing facility, and plutonium production reactor.[382]

C) Disposition and conversion to peaceful uses of fissile material declared excess for military purposes

As noted in the *Hiroshima Report 2021*, the United States formally terminated construction of the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) at the Savannah River Site in South Carolina in 2018. The NNSA has since proposed repurposing the MFFF for the production of plutonium pits.

On October 27, President Putin signed a law withdrawing Russia from the U.S.-Russian Plutonium Management and Disposition Agreement (PMDA), which entered into force in July 2011.[383] The agreement requires both countries to dispose of 34 tons of weapons-grade plutonium that was longer needed for military purposes. Russia had suspended its participation in 2016.

At the NPT PrepCom, the NAM stated its support for "the development of appropriate legally binding verification arrangements, within the context of IAEA, to ensure the irreversible removal of fissile material from nuclear weapons or other nuclear explosive devices. The Group further urges the Committee to examine such legally binding verification arrangements and the means of making them operational. In this context, the Group calls on the NWS to implement their commitments in relation to action 16 of the Action Plan adopted in the 2010 NPT Review Conference on the placement of fissile material no longer required for military purposes under IAEA or other relevant international verification."[384]

South Africa judged it "regrettable that little progress has been made to implement the actions agreed to at the 2000 and 2010 NPT RevCon in the development of appropriate verification arrangements with the IAEA to ensure the irreversible removal of fissile material designated by each nuclear-weapon State as no longer required for military purposes. Neither has there been progress with regard to additional declarations of stockpiles of fissile material that could be used in nuclear weapons or other nuclear explosive devices. To the contrary, the Safeguards Implementation Report reflects that some nuclear-weapon States have withdrawn such

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[381] NPT/CONF.2026/PC.III/WP.1, February 19, 2025.

[382] NPT/CONF.2026/PC.III/2, March 7, 2025.

[383] Tim Zadorozhnyy, "Russia Withdraws from US Deal to Dispose of Plutonium for Thousands of Warheads," *The Kyiv Independent*, October 27, 2025, https://kyivindependent.com/russia-withdraws-from-us-deal-to-dispose-of-plutonium/.

[384] "Statement by NAM," Cluster 2, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

material. It is therefore incumbent on nuclear-weapon States to refrain from such withdrawals, and to apply the principles of irreversibility, verifiability and transparency in relation to their NPT obligations to which they have committed."[385]

(13) Disarmament and Non-Proliferation Education and Cooperation with Civil Society

Disarmament and non-proliferation education, the promotion of diversity and inclusion, and engagement with civil society remain important elements of efforts to advance disarmament and non-proliferation.

In January 2025, India hosted the fifth edition of the "Annual Disarmament and International Security Fellowship Program," which brought together 34 diplomats from 33 countries. The program forms part of India's initiative on disarmament and non-proliferation education, following the UNGA resolution on the "United Nations study on disarmament and non-proliferation education."[386]

Members of the NPDI submitted a working paper on disarmament and non-proliferation education at the 2025 NPT PrepCom, stating that "based upon changes such as the deterioration of the security environment and the rapid advancement of science and technology, it is also vital to seek the most effective way to raise public awareness of disarmament and non-proliferation initiatives, alongside information about nuclear risks and challenges. Such an awareness should be generated among all people regardless of age, gender, background, and nationality. Scientific evidence as well as qualitative and quantitative studies of those impacts, including personal testimony by those affected by nuclear weapons and nuclear testing, is key. Education should also consider broader perspectives, such as the humanitarian and socio-economic aspects of disarmament, as well as the relationship between security and disarmament."[387]

Japan, on behalf of 94 states (including Australia, Brazil, Canada, Germany, Kazakhstan, South Korea, Mexico, the Netherlands, Norway, Poland, Saudi Arabia, Sweden, Türkiye, and the United Kingdom), delivered a joint statement praising "the invaluable testimonies of those who experienced and witnessed the devastation caused by nuclear explosions and its aftermath have played an indispensable role, including the distinguished work of Nihon Hidankyo, which was awarded the Nobel Peace Prize last year, and of other long-standing advocacy endeavors of the hibakusha, those who have suffered the use of nuclear weapons irrespective of their nationalities and origins."[388]

Established by Japan in 2023, the "Youth Leader Fund for a World without Nuclear Weapons"

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385 "Statement by South Africa," Cluster 2, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

386 Ministry of External Affairs of India, "India's Disarmament and International Security Affairs Fellowship Programme," https://www.mea.gov.in/02-indias-disarmament-and-international-security-affairs-fellowship-programme.htm.

387 NPT/CONF.2026/PC.III/WP.32, April 11, 2025.

388 "Joint Statement on Disarmament and Non-Proliferation Education," Cluster 1, Third PrepCom for the 11th NPT RevCon, May 1, 2025.

welcomed its second cohort (2025–2026) of 100 participants in July 2025, selected from over 8,400 applications. Participants, aged 18 to 29, come from 61 countries, including both NWS and NNWS. Fifty participants would be selected for a fully funded study tour to Japan, including visits to Hiroshima and Nagasaki.[389]

From June 26 to 27, South Korea hosted the 2025 session of the "Youth Envoys for Disarmament and Non-Proliferation" as part of its efforts to implement the UN General Assembly resolution on "Youth, Disarmament and Non-Proliferation." Around twenty undergraduate and graduate students from South Korea and abroad took part in field visits, followed by several weeks of lectures on disarmament and non-proliferation.[390]

At the 2025 NPT PrepCom[391] and UNGA First Committee,[392] side events were held with the participation of non-governmental organizations (NGOs), and some participating countries also hosted meetings.

The UNGA resolution on nuclear disarmament led by Japan highlighted the importance of disarmament and non-proliferation education, calling upon "all states to facilitate efforts on nuclear disarmament and non-proliferation education, which is a useful and effective means to advance the goals of the Treaty on the Non-Proliferation of Nuclear Weapons in support of achieving a world without nuclear weapons, inter alia, efforts in which the young generation can actively engage, including through dialogue platforms, mentoring, internships, fellowships, scholarships, model events and youth group activities, as well as to raise awareness of the realities of the use of nuclear weapons, including through, among others, visits by leaders, youth and others to and interactions with communities and people, including the hibakusha, those who have suffered the use of nuclear weapons irrespective of their nationalities and origins, and who pass on their experiences to the future generations through long-standing grass-roots efforts around the world, including those of Nihon Hidankyo, recognized with the Nobel Peace Prize 2024, and welcomes concrete measures in this regard, inter alia, the Young Professionals Network of P5 academics, the Youth4Disarmament Initiative, 'Disarmament education: resources for learning' and the 'Youth Leader Fund for a world without nuclear weapons'."[393]

Regarding cooperation with civil society, an important responsibility of governments is to provide more information on nuclear disarmament and non-proliferation. Among the countries surveyed for this report, the following have established one or more sections on disarmament

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389 United Nations, "Youth Leader Fund for World without Nuclear Weapons Announces New Group of Youth to Receive Training in Disarmament, Leadership, Storytelling," July 31, 2025, https://press.un.org/en/2025/dc3901.doc.htm.

390 Ministry of Foreign Affairs of Korea, "Youth and Disarmament in Global Security Landscape Reshaped by Emerging Technologies, Launching Ceremony of 2025 Youth Envoys for Disarmament and Non-Proliferation," June 26, 2025, https://www.mofa.go.kr/eng/brd/m_5676/view.do?seq=322904.

391 Australia, Austria, Canada, China, France, Germany, Japan, Kazakhstan, South Korea, Mexico, New Zealand, Norway, South Africa, Sweden, Switzerland, the United Kingdom, the United States, and other states hosted side events.

392 Austria, Kazakhstan, the United States, and other states hosted side events.

393 A/RES/80/48, December 1, 2025.

and non-proliferation on their official English-language websites and posted educational materials: Australia, Austria, Canada, China, France, Germany, Japan, New Zealand, Sweden, Switzerland, the United Kingdom, and the United States.

Finally, some countries have begun legislating for the "divestment" from organizations or companies involved in the production of nuclear weapons. A report published by ICAN in February 2025 summarized the following:[394]

- Between January 2022 and August 2024, 260 banks, pension funds, insurance companies, asset managers and other financial institutions had financing or investment relations with one or more of the 24 nuclear weapon producing companies, down from 287 institutions in previously published results.
- Investors held $513,576 million in shares and bonds in the 24 nuclear weapon producing companies, an increase of $36.7 billion since the last Don't Bank on the Bomb financial analysis.
- During the analyzed period, $269,958 million was provided to the 24 nuclear weapon manufacturers in loans and underwriting, a drop of $6.2 billion since the last Don't Bank on the Bomb financial analysis.

(14) Hiroshima and Nagasaki Peace Memorial Ceremonies

On August 6, 2025, the Hiroshima Peace Memorial Ceremony was held in Hiroshima, with participation from representatives of 120 countries and the European Union, including:

- Ambassadorial level—Australia, Austria, Brazil, Canada, Egypt, Germany, Indonesia, Iran, Israel, Kazakhstan, Mexico, the Netherlands, New Zealand, Norway, Poland, South Africa, Sweden, Switzerland, Syria, Türkiye, the United Kingdom, and the United States.
- Non-ambassadorial level—France, India, South Korea, and Saudi Arabia.
- Not attending—China, North Korea, Pakistan, and Russia.

On August 9, 94 countries attended the Nagasaki Peace Memorial Ceremony, including the following:

- Ambassadorial level—Australia, Austria, Brazil, Canada, India, Iran, Israel, Mexico, the Netherlands, New Zealand, Norway, Russia, South Africa, Sweden, Switzerland, the United Kingdom, and the United States.
- Non-ambassadorial level—Egypt, France, Germany, Indonesia, Poland, Saudi Arabia, and Türkiye.
- Not attending—China, Kazakhstan, South Korea, North Korea, Pakistan, and Syria (Note: Underlined countries have had representatives attend the ceremony at least once in the past three years.)

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[394] PAX and ICAN, *At Great Cost. The Companies Building Nuclear Weapons and Their Financiers*, February 2025, https://assets.nationbuilder.com/ican/pages/6939/attachments/original/1739803384/At_What_Cost_2025Feb_DBOTB.pdf?1739803384.

Since 2022, both Hiroshima and Nagasaki had chosen not to invite Russia and Belarus to their ceremonies due to Russia's ongoing invasion of Ukraine and Belarus's support for it. This year, both countries were notified that the ceremonies would be held.

At various fora, Japan has proposed that world political leaders visit Hiroshima and Nagasaki to observe the humanitarian consequences of nuclear weapons use. The IGEP recommendations submitted as a working paper to the NPT PrepCom also encouraged "visits of leaders, youth, and others to Hiroshima and Nagasaki to better comprehend the effects of nuclear use."[395]

In 2025, the following heads of state and government visited Hiroshima:[396] Frederik X, King of Denmark (April 25); Santiago Peña Palacios, President of Paraguay (May 20); Tamás Sulyok, President of Hungary (May 25, followed by Nagasaki); Halla Tómasdóttir, President of Iceland (May 28); Micheál Martin, Prime Minister of Ireland (July 4); Petr Pavel, President of the Czech Republic (July 23); and Peter Pellegrini, President of Slovakia (September 11).

On June 10, U.S. Director of National Intelligence Tulsi Gabbard visited Hiroshima and released a video in which she stated that "we must reject this path to nuclear war and work toward a world where no one has to live in fear of a nuclear holocaust."[397]

On October 11, the mayors of Hiroshima and Nagasaki jointly sent a letter to U.S. President Trump inviting him to visit both cities on the occasion of his visit to Japan later that month.[398] However, President Trump did not visit either city during his two-day stay in Japan.

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395 NPT/CONF.2026/PC.III/WP.33, April 14, 2025.

396 The City of Hiroshima, "Visit in 2025 (Head of State Level)," January 1, 2026, https://honyaku.j-server.com/LUCCHRSM/ns/tl.cgi/https://www.city.hiroshima.lg.jp/tourism-culture/global-inbound/1021468/1033130/1044433.html?SLANG=ja&TLANG=en&XMODE=0&XCHARSET=utf-8&XJSID=0.

397 Beatrice Peterson, "Tulsi Gabbard Warns of Nuclear Threat in Social Media Video," *ABC News*, June 12, 2025, https://abcnews.go.com/Politics/tulsi-gabbard-warns-nuclear-war-social-media-video/story?id=12273 1886.

398 City of Hiroshima, "Letter of Request to US President Trump to Visit the Atomic-Bombed Cities," October 10, 2025, https://www.city.hiroshima.lg.jp/english/peace/1029856/1029865/1044033.html.

Chapter 2

Nuclear Non-Proliferation[1]

(1) Acceptance and Compliance with Nuclear Non-Proliferation Obligations

A) Accession to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

As of the end of 2025, 191 states—including North Korea, the Holy See, and Palestine, which are not United Nations (U.N.) member states—are parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). Of the 193 UN member states, four are not parties to the NPT: South Sudan, which does not possess nuclear weapons and gained independence and UN membership in July 2011; India and Pakistan, both of which conducted nuclear tests in 1998 and have openly declared their possession of nuclear weapons; and Israel, which neither confirms nor denies possessing nuclear weapons but is widely believed to do so.

North Korea declared its withdrawal from the NPT in 2003, but there is no agreement among the states parties on North Korea's official status regarding the NPT. It has refused to return to the treaty despite UN Security Council resolutions (UNSCRs) demanding that it do so at an early date. As noted below, it has repeatedly insisted that it will not abandon its status as a nuclear-armed state.

B) Compliance with Articles 1 and 2 of the NPT and the UNSCRs on non-proliferation

North Korea

Since the NPT entered into force, no case of non-compliance with Articles I and II of the Treaty has been officially reported by the UN or any other international organization.[2] However, with respect to North Korea, which declared its withdrawal from the NPT, if that withdrawal were deemed legally invalid, or if it already possessed nuclear weapons before the withdrawal took effect, the acquisition of those weapons would constitute a violation of Article II of the NPT. The U.S. Department of State's annual report titled *Adherence to and Compliance with Arms Control, Non-Proliferation, and Disarmament Agreements and Commitments* has explicitly stated that North Korea was in violation of Articles II and III of the NPT and its International Atomic Energy Agency (IAEA) safeguards agreement at the time it notified its withdrawal from the NPT in 2003.[3]

United Nations Security Council Resolution 1718 (October 2006), adopted under Chapter VII

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1 This chapter is authored by Masahiro Okuda.

2 No international body is explicitly mandated with a responsibility for assessing compliance with these articles, apart from the IAEA's safeguards verification mandate.

3 The U.S. Department of State, *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, April 2025, p. 14.

of the UN Charter, stipulated that North Korea "shall abandon all nuclear weapons and existing nuclear programmes in a complete, verifiable and irreversible manner, shall act strictly in accordance with the obligations applicable to parties under the Treaty on the Non-Proliferation of Nuclear Weapons and the terms and conditions of its Safeguards Agreement (IAEA INFCIRC/403) and shall provide the IAEA transparency measures extending beyond these requirements, including such access to individuals, documentation, equipment and facilities as may be required and deemed necessary by the IAEA." The UN Security Council also decided that North Korea "shall suspend all activities related to its ballistic missile programme and in this context re-establish its pre-existing commitments to a moratorium on missile launching."[4]

Kim Jong-un, General Secretary of the Workers' Party of Korea, stated in a speech to the Supreme People's Assembly on September 21: "Our nuclear forces are fully and perfectly performing their deterrent function for coping with and overwhelming all security challenges from outside," underscoring the asserted effectiveness of the country's nuclear deterrent. He further emphasized the permanence of this posture, declaring, "We will never lay down our nukes."[5]

On several occasions in 2025, North Korea insisted that it would not relinquish its nuclear arsenal. Kim Yo-jong, Vice Department Director of the Central Committee of the Workers' Party of Korea and sister to Kim Jong-un, stated on April 9 that "[u]nless the nuclear threat to us coming from outside is terminated, and as long as there exist the imperialist forces that use the nukes for the means of existence of their tyranny, we will never allow an interruption on our road of bolstering up our military capabilities to safeguard the security of our state and the wellbeing of our people both at present and in the future." She also stated that "[t]he anachronistic 'denuclearization' idea of the U.S., Japan, and the ROK can never affect the position of our state," thereby making clear that the country has no intention to pursue denuclearization. In the same statement, she declared that North Korea's nuclear forces "not only play a key role in deterring aggression and threat from outside and defending the sovereignty and security of the state [...] make an important contribution to ensuring the regional and global balance of power and strategic security."[6]

On July 29, regarding negotiations between North Korea and the United States, Kim Yo-jong also stated that "the recognition of the irreversible position of the DPRK as a nuclear weapons state and the hard fact that its capabilities and geopolitical environment have radically changed should be a prerequisite for predicting and thinking everything in the future."[7] The statement

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4 S/RES/1718, October 14, 2006. The UNSCR 1874 in June 2009 also demanded that North Korea "immediately comply fully with its obligations under relevant Security Council resolutions, in particular resolution 1718 (2006)." Since this resolution also states to "[take] measures under its Article 41," any measures involving the use of armed force cannot be taken on the basis of this resolution.

5 "Respected Comrade Kim Jong Un's Speech at 13th Session of 14th Supreme People's Assembly of DPRK," *KCNA*, September 22, 2025, http://www.kcna.co.jp/item/2025/202509/news22/20250922-02ee.html.

6 "Press Statement of Kim Yo Jong, Vice Department of C.C., WPK," *KCNA*, April 9, 2025, http://www.kcna.kp/en/article/q/59ff167348aa7bab60621a1741c8f65d52088cca95101c8fdd951242629dec08.kcmsf.

7 "Press Statement of Kim Yo Jong, Vice Department Director of C.C., WPK," *KCNA*, July 29, 2025, http://www.kcna.co.jp/item/2025/202507/news29/20250729-01ee.html.

further described North Korea as "a nuclear weapons state which was established along with the existence of a powerful nuclear deterrent and fixed by the supreme law reflecting the unanimous will of all the DPRK people."[8]

Many countries continue to call for North Korea to abandon its nuclear weapons program. At the third Preparatory Committee for the 2025 NPT Review Conference (hereinafter referred to as the NPT PrepCom), a total of 83 countries issued a joint statement. Among the countries surveyed in this report, participants included Australia, Austria, Canada, France, Germany, Japan, South Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, Türkiye, the United Kingdom, and the United States. In addition, Non-Aligned Movement (NAM) member states such as Argentina and the United Arab Emirates also participated. The joint statement called on North Korea to "take concrete steps to abandon all nuclear weapons, ballistic missiles, and related programs in a complete, verifiable, and irreversible manner, and to immediately cease all related activities in accordance with all relevant Security Council resolutions," and urged North Korea to return to the NPT and IAEA safeguards at an early date.[9] Similar joint statements have been submitted annually to the NPT PrepCom, with the number of participating countries increasing by 7 compared with the previous year.

The Foreign Ministers of Japan, South Korea, and the United States issued a joint statement on security in the Indo-Pacific region in Brussels on April 3, 2025, in which they reaffirmed their resolute commitment to the complete denuclearization of North Korea in accordance with United Nations Security Council resolutions.[10]

However, Russia has made statements defending North Korea's nuclear and missile activities. Furthermore, it has strengthened cooperation with North Korea in recent years. On May 7, 2025, the UN Security Council held a public briefing on the issue of North Korean proliferation. During this briefing, Russia's UN Ambassador Vasily Alekseyevich Nebenzya stated: "I would like to stress that three countries I am referring to — the United States, Japan, and South Korea — are among the top 10 countries with the world's largest military budgets, with the most modern and destructive military equipment ready for action. That well-armed and well-coordinated alliance is trying to literally corner one independent sovereign state (North Korea, author's note), which as a result has find solutions to ensure its own security."[11]

Furthermore, on April 30, 2025, Sergei Shoigu, Secretary of the Russian Security Council, stated at the BRICS National Security Representatives Meeting that "unilateral international sanctions against North Korea have completely failed and only worsened the country's humanitarian situation," criticizing the previous approach centered on sanctions.[12] Meanwhile,

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8 Ibid.

9 "Addressing the North Korean nuclear challenge," Third PrepCom for the 11th NPT RevCon, May 5, 2025.

10 U.S. Department of State, "Joint Statement on the Trilateral – United States, Japan, Republic of Korea – Meeting in Brussels," April 3, 2025, https://www.state.gov/joint-statement-on-the-trilateral-united-states-japan-republic-of-korea-meeting-in-brussels.

11 United Nations Security Council, S/PV.9912, May 7, 2025.

12 "Russia's Top Security Official Says Country Supports Revising UN Sanctions on North Korea,"

Russia's recent statements defending North Korea have been met with criticism. For instance, South Korea stated at a UN Security Council open briefing on May 7 that, in response to remarks made in 2024 by Russian Foreign Minister Sergey Lavrov describing North Korea's denuclearization as a "closed issue," "one permanent member of the Council appears to have chosen a different path. Particularly concerning is the reversal of its long-standing position in defense of the global non-proliferation regime."[13]

China continues to oppose a sanctions-centered approach and advocates for a "dual-track approach" which simultaneously aims to achieve a peace agreement and the denuclearization of the Korean Peninsula. At the 2025 NPT PrepCom, China asserted that it "insists on the settlement of regional nuclear issues through political and diplomatic means and opposes wanton use of force or abuse of illegal unilateral sanctions."[14]

Shortly after the inauguration of the second Trump administration in January 2025, statements by the President and other senior government officials appeared to recognize North Korea as a nuclear-armed state. In January 2025, Secretary of Defense Pete Hegseth referred to North Korea as a "nuclear power" [sic] during his confirmation hearing before the U.S. Senate.[15] Additionally, President Trump stated, in response to a question on U.S.-North Korea relations during a press conference: "He [Kim Jong Un] is a nuclear power. We got along. I think he will be happy to see me coming back."[16] Some observers interpreted these remarks as signaling a shift away from the previous policy of demanding North Korea's denuclearization toward an implicit acknowledgment of North Korea's development and possession of nuclear weapons.[17]

In response to these remarks by senior U.S. officials, South Korea's Ministry of Foreign Affairs stated: "North Korea's denuclearization has been a principle consistently upheld by South Korea, the United States, and the international community," and reiterated Seoul's longstanding position of not recognizing North Korea's nuclear status, stating that "under the NPT, North Korea can never be recognized as a nuclear-armed state."[18]

Meanwhile, on January 29, U.S. National Security Council (NSC) Spokesperson Brian Hughes

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Korea JoongAng Daily, May 1, 2025, https://koreajoongangdaily.joins.com/news/2025-05-01/national/northKorea/Russias-top-security-official-says-country-supports-revising-UN-sanctions-on-North/2297995.

13 United Nations Security Council, S/PV.9912, May 7, 2025.

14 "Statement by China," General Debate of the Third PrepCom for 11th NPT RevCon, April 29, 2025.

15 "White House Says Trump Committed to Denuclearization of North Korea," *Kyodo News*, January 29, 2025, https://english.kyodonews.net/news/2025/01/a50e96bd25d0-white-house-says-trump-committed-to-denuclearization-of-n-korea.html; Senate Armed Services Committee, "Advance Policy Questions for Peter "Pete" B. Hegseth Nominee to Serve as Secretary of Defense," January 6, 2025, https://www.armed-services.senate.gov/imo/media/doc/hegseth_apq_responses.pdf.

16 "Trump Calls N. Korea 'Nuclear Power,' Says Kim Will be Happy to See His Presidential Comeback," *The Korea Times*, January 21, 2025, https://www.koreatimes.co.kr/foreignaffairs/northkorea/20250121/trump-calls-north-korea-a-nuclear-power-and-says-kim-will-welcome-his-presidential-comeback.

17 Ibid.

18 "S. Korea Says N. Korea can Never be Recognized as Nuclear Power after Trump Nominee Refers to Pyongyang as One," *Yonhap News Agency*, January 15, 2025, https://en.yna.co.kr/view/AEN20250115006600315.

stated that "just as in his first term, the President will pursue the complete denuclearization of North Korea."[19] Subsequent government statements, such as the joint foreign ministers' statement with Japan and South Korea released on April 3—which reaffirmed their commitment for the denuclearization of North Korea—have not included language suggesting acceptance of North Korea's nuclear weapons or a shift away from a denuclearization policy.

In 2025, President Trump frequently called for holding talks with North Korea. At the U.S.-South Korea summit in August, he told South Korean President Lee Jae-myung that he wished to hold a summit with North Korea within 2025.[20] The fact sheet for the U.S.-South Korea summit in October, released on November 13, 2025, also stated: "The two leaders reiterated their commitment to the complete denuclearization of the DPRK and peace and stability on the Korean Peninsula, and pledged to work together to implement the Joint Statement of the 2018 U.S.-DPRK Singapore Summit."[21]

Despite these approaches from the United States, no concrete progress—such as the resumption of high-level dialogue comparable to the summit meetings held during Trump's first term—had been observed by the end of 2025.

South Korea also signaled a shift in its approach toward North Korea since the change of government in September 2025. President Lee Jae-myung proposed negotiations with North Korea for the partial easing or lifting of sanctions, advocating a three-step process as a condition: suspension of North Korea's nuclear weapons development, reduction of its nuclear arsenal, and ultimately denuclearization.[22] In a statement delivered during the UN General Assembly High-Level Week in September 2025, President Lee clarified that South Korea respects North Korea's current regime, does not pursue unification by absorption, and has no intention of engaging in hostile acts. He also outlined a vision for comprehensive dialogue focused on exchange, normalization, and denuclearization as a framework for improving inter-Korean relations. Regarding North Korea's nuclear and missile capabilities, he stated: "The international community must gather its wisdom in a pragmatic and phased solution beginning with a 'stop' in the sophistication of nuclear and missile capabilities, going through a 'reduction' process and reaching 'dismantlement'."[23]

Additionally, regarding the possibility that the United States and North Korea might agree on a freeze in production rather than the abandonment of North Korea's nuclear weapons, President

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19 "White House Says Trump Committed to Denuclearization of North Korea," *Kyodo News*, January 29, 2024, https://english.kyodonews.net/news/2025/01/a50e96bd25d0-white-house-says-trump-committed-to-denuclearization-of-n-korea.html.

20 "Trump Wants to Meet North Korea's Kim This Year, He Tells South Korea," *Reuters*, August 26, 2025, https://www.reuters.com/world/china/trump-wants-meet-north-koreas-kim-this-year-he-tells-south-korea-2025-08-25.

21 White House, "Joint Fact Sheet on President Donald J. Trump's Meeting with President Lee Jae Myung," November 13, 2025, https://www.whitehouse.gov/fact-sheets/2025/11/joint-fact-sheet-on-president-donald-j-trumps-meeting-with-president-lee-jae-myung/.

22 "President Lee Jae-Myung's Plan to Reboot South Korea," *Time*, September 18, 2025, https://time.com/7317953/south-korea-president-lee-jae-myung-cover/.

23 "Full text: President Lee Jae Myung's speech at the United Nations General Assembly," *The Korean Herald*, September 24, 2025, https://www.koreaherald.com/article/10581929.

Lee stated: "So long as we do not give up on the long-term goal of denuclearization, I believe there are clear benefits to having North Korea stop its nuclear and missile development," indicating a willingness to view a production freeze as a step toward denuclearization.[24] He also suggested that, within the denuclearization process, the lifting of sanctions on North Korea could serve as an incentive for freezing nuclear weapons development.[25]

Iran

Nuclear Activities

The E3/EU+3—China, France, Germany, Russia, the United Kingdom, the United States, and the EU High Representative—and Iran agreed to the Joint Comprehensive Plan of Action (JCPOA) in July 2015. However, under the first Trump administration, the United States withdrew from the JCPOA in May 2018 and reimposed on Iran sanctions that had been lifted under the agreement. In response, since May 2019, Iran has progressively suspended its implementation of JCPOA obligations related to uranium enrichment levels, stockpiles of enriched uranium, and the number of centrifuges (for details on the suspension of monitoring and verification measures, including IAEA safeguards, see Section (2) of this chapter.)[26]

The JCPOA reached the 10-year milestone from its adoption in 2015 and arrived at its termination day on October 18, 2025.[27] In the period leading up to the termination day, the United States, European countries, and Iran engaged in frequent negotiations aimed at rebuilding the JCPOA or establishing a new framework; however, no agreement was reached in 2025. Discussions were also held on adopting a resolution to extend the validity of UN Security Council Resolution 2231, which endorsed the JCPOA, but such a resolution was not adopted. As a result, the "snapback" mechanism was triggered, leading to the reinstatement of previous UN Security Council resolutions related to Iran's nuclear program. (For details on negotiations concerning the revival of the JCPOA and the development of a successor framework in 2025, see the section below on "Iran: Efforts to Restore the Nuclear Deal." For information on the reimposition of sanctions, see Section (5)C), "Iran.")

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[24] "South Korea Would Accept a Trump-Kim Deal to Freeze Nuclear Programme, President Tells BBC," *BBC*, September 22, 2025, https://www.bbc.com/news/articles/cwy91w0e1z2o.

[25] "Lee Outlines Three-stage Denuclearization Calls for Sanctions Relief," *The Dong-a Ilbo*, September 19, 2025, https://www.donga.com/en/article/all/20250919/5857168/1.

[26] Iran justifies that its suspension of obligations was in accordance with Articles 26 and 36 of the JCPOA. Foreign Minister Mohammad Javad Zarif also stated, "Iran has significantly increased its nuclear capabilities since May 2019—but it has done so in full conformity with paragraph 36 of the nuclear agreement, which allows Iran to 'cease performing its commitments' under the deal should another signatory stop performing its own. If the new U.S. administration hopes to alter the current trajectory, it needs to promptly change course." Mohammad Javad Zarif, "Iran Wants the Nuclear Deal It Made: Don't Ask Tehran to Meet New Demands," *Foreign Affairs*, January 22, 2021, https://www.foreignaffairs.com/articles/iran/2021-01-22/iran-wants-nuclear-deal-it-made.

[27] On the termination day, UN Security Council Resolution 2231, which endorsed the JCPOA, will expire. This will conclude the UN Security Council's handling of Iran's nuclear development issue, and the six previous UN Security Council resolutions related to Iran's nuclear development issue (Resolutions 1696 (2006), 1737 (2006),1747 (2007), 1803 (2008), 1835 (2008), and 1929 (2010)) will also expire. The EU will also terminate the provisions of its related Council decisions. Joint Comprehensive Plan of Action, Annex V.

Amid this situation, Israel launched attacks on uranium enrichment facilities and other targets on June 13, 2025, followed by the United States on June 21, with the aim of preventing Iran's nuclear weapons development. On June 13, Iran submitted a letter to the IAEA stating that it would take "special measures to protect our nuclear facilities and nuclear materials." It has been suggested that as part of these measures, Iran may have relocated some highly enriched uranium or related equipment, although there was no clear evidence.[28] In July, the IAEA withdrew its inspectors from Iran.[29] Furthermore, as discussed later, Iran enacted legislation in July suspending its cooperation with the IAEA.[30]

Due to the attacks on Iran's enrichment-related facilities and subsequent suspension of cooperation with the IAEA regarding these facilities, verification of Iran's nuclear-related activities remains difficult. (For details on Iran's safeguards implementation and cooperation with the IAEA, see Section (2) B) "Iran" in this chapter.)

Centrifuges

Under the JCPOA, Iran was limited to using 5,060 IR-1 centrifuges and conducting uranium enrichment only at the Fuel Enrichment Plant (FEP) in Natanz. Additionally, at the Fordow Fuel Enrichment Plant (FFEP), 1,044 centrifuges remained and were to be maintained in a non- operating state. Since September 2019, however, Iran has been violating these restrictions.

An IAEA report issued in May 2025, prior to the attacks, described the status of centrifuge installations as follows:[31]

- FEP: In addition to the 30 cascades of IR-1 centrifuges provided for under the JCPOA, a further 71 cascades (IR-1, IR-2m, IR-4, and/or IR-6) have been installed.
- Pilot Fuel Enrichment Plant (PFEP): Iran installed a total of 8 cascades of IR-4, IR-6, and IR-4/IR-6 centrifuges.
- FFEP: 6 cascades of IR-1 and 10 cascades of IR-6 centrifuges were installed.

Since the June 2025 attacks, various assessments have been made regarding the extent of damage to Iran's enrichment facilities. In his opening remarks at the IAEA Board of Governors meeting on June 23, IAEA Director General Rafael Grossi stated that while no one, including the IAEA, was in a position to fully assess the damage at Fordow, "given the explosive payload utilized, and the extreme vibration-sensitive nature of centrifuges, very significant damage

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[28] "Iran: Return to Inspections Top Priority for UN Nuclear Agency," *UN News*, June 25, 2025, https://news.un.org/en/story/2025/06/1164931.

[29] Francois Murphy, "IAEA Pulls Inspectors from Iran as Standoff over Acceess Drags on." *Reuters*, July 4, 2025, https://www.reuters.com/world/middle-east/iaea-pulls-inspectors-iran-standoff-over-access-drags-2025-07-04/.

[30] "President Pezeshkian Enforces Law to Suspend Cooperation with U.N. Nuclear Watchdog," *The Islamic Republic News Agency*, July 2, 2025, https://en.irna.ir/news/85878764/President-Pezeshkian-enforces-law-to-suspend-cooperation-with.

[31] IAEA, GOV/2025/24, May 31, 2025; an U.S. research institute analyzed the IAEA report and estimated the total number of centrifuges to be approximately 21,900. David Albright, Sarah Burkhard, and Spencer August Faragasso, "Analysis of IAEA Iran Verification and Monitoring Report - May 2025," *Institute for Science and International Security*, June 9, 2025, https://isis-online.org/isis-reports/analysis-of-iaea-iran-verification-and-monitoring-report-may-2025.

is expected to have occurred."[32] He also reported that the centrifuge manufacturing plant in Isfahan, which had been monitored by the IAEA under the JCPOA, had also been targeted in the attack.[33]

The September 2025 report of the IAEA Director General assessed the status of the above-mentioned enrichment facilities as follows:[34]

- FEP: Analysis of available commercial satellite imagery by the IAEA indicates that the FEP was extensively damaged because of the military attacks conducted between June 13 and 24, 2025, including indications of direct impacts on the underground enrichment halls.
- PFEP: The underground part of PFEP was extensively damaged, with indications of direct impacts, while the above-ground portion was destroyed because of these attacks.
- FFEP: The FFEP is expected to have suffered very significant damage because of these attacks.

Enriched Uranium

The JCPOA limited Iran's stockpile of enriched uranium to no more than 300 kilograms of uranium hexafluoride (UF_6), with a maximum enrichment level of 3.67%. The IAEA reported that, as of June 10, 2025, Iran's total stockpile of enriched uranium amounted to 9,874.9 kg, of which 9,040.5 kg consisted of UF_6-enriched uranium. This UF_6 stockpile comprised 2,391.1 kg enriched up to 2%, 6,024.4 kg enriched up to 5%, 181.4 kg enriched up to 20%, and 440.9 kg enriched up to 60%.[35] Iran's total stockpile of enriched uranium has increased by more than 3,200 kg since the IAEA report of November 2024, which recorded a total of 5,807.2 kg.[36]

No clear assessment has been made regarding Iran's uranium enrichment capacity following the June 2025 military attacks on enrichment facilities and other sites. Meanwhile, Iran has indicated its intention to continue uranium enrichment. Shortly before the attacks, Mohammad Eslami, head of the Atomic Energy Organization of Iran, said a new enrichment site was "already built, prepared, and located in a secure and invulnerable place."[37] Later press reporting identified the site as Pickaxe Mountain, near Natanz.[38] Iranian Foreign Minister

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32 IAEA, "IAEA Director General's Introductory Statement to the Board of Governors," June 23, 2025, https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-23-june-2025.

33 IAEA, "Update on Developments in Iran (2)," June 21, 2025, https://www.iaea.org/newscenter/pressreleases/update-on-developments-in-iran-2.

34 IAEA, GOV/2025/50, September 3, 2025.

35 Ibid. Iran has shut down its online enrichment monitors and other equipment, and the IAEA has provided estimates because it is unable to determine its real-time enriched uranium holdings.

36 IAEA, GOV/2024/61, November 19, 2024.

37 Stephanie Liechtenstein, Jon Gambrell and Aamer Madhani, "Iran Announces a New Nuclear Enrichment Site After UN Watchdog Censure," *Associated Press*, June 12, 2025, https://apnews.com/article/iran-nuclear-iaea-sanctions-728b811da537abe942682e13a82ff8bd.

38 Patrice Taddonio, "Inside the Discovery of New Activity at Pickaxe Mountain, Iran's Deep-Underground Suspected Nuclear Site," *PBS*, December 16, 2025, https://www.pbs.org/wgbh/frontline/article/iran-suspected-nuclear-site-pickaxe-mountain-us-israel-war/.

Abbas Araghchi stated in a speech in November that Iran had not conducted uranium enrichment at any location within the country since the June attacks by Israel and the United States. He nevertheless reaffirmed that Iran retains the right to do so.[39]

Other Activities

A report released by the IAEA's Director General in September mentioned that analysis of commercially available satellite imagery indicated that the Khondab Heavy Water Research Reactor (KHRR) which the Agency last accessed on 14 May, 2025, was hit during the military attacks of 13-24 June 2025.[40] The Heavy Water Production Plant (HWPP) was also reported to have sustained damage during the attacks and has not operated thereafter.[41]

Breakout time

The uranium enrichment limits in the JCPOA were formulated to ensure that Iran's potential breakout time—the time required to produce enough weapons-grade fissile material for one nuclear weapon—would be no less than 12 months. In July 2024, then-U.S. Secretary of State Antony Blinken stated that this breakout time had been reduced to one or two weeks.[42] Estimates from U.S. research institutions also indicated that enriching uranium from 60% to weapons-grade levels (90%) could be achieved within a few weeks. The same estimates projected that Iran could produce weapon-grade uranium for a second nuclear bomb within one month, based on existing stocks of 20% enriched uranium, followed by a third bomb from lower-enriched uranium within an additional month and a half. Consequently, the research institute concluded that Iran's breakout time was effectively zero.[43]

Following the June 2025 attacks by Israel and the United States, assessments from the U.S. military and government regarding the attack's effectiveness indicated that Iran's breakout time had been expanded to years. The U.S. Department of Defense stated at a press conference on July 2: "We have degraded their program by one to two years."[44]

Reactions to the Attacks on Iran's Enrichment Facilities

Israel and the United States cited the prevention of Iran's acquisition of nuclear weapons as a key objective of the June 2025 attacks. With respect to this operation, which was framed as a non-proliferation measure, the countries surveyed in this report articulated the following

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39 "Iran Claims It's Not Enriching Uranium After US, Israeli Strikes," *Radio Free Europe*, November 16, 2025, https://www.rferl.org/a/iran-enrichment-uranium-iaea-israel-us-strikes-nuclear/33593181.html.

40 IAEA, GOV/2025/50, September 3, 2025.

41 Ibid.

42 Jennifer Hansler and Kylie Atwood, "Blinken Says Iran's Nuclear Weapon Breakout Time Is Probably Down to 1-2 Weeks," *CNN*, July 19, 2024, https://edition.cnn.com/2024/07/19/politics/blinken-nuclear-weapon-breakout-time/index.html.

43 David Albright and Sarah Burkhard, "Iranian Breakout Timeline Now at Zero," *Institute for Science and International Security*, June 1, 2025, https://isis-online.org/uploads/isis-reports/documents/Current_Iranian_Breakout_Estimates_June_1_2022_Final.pdf.

44 Phil Stewart and Idrees Ali, "Iranian Nuclear Program Degraded by Up to Two Years, Pentagon Says," *Reuters*, July 3, 2025, https://www.reuters.com/world/middle-east/iranian-nuclear-program-degraded-by-up-two-years-pentagon-says-2025-07-02/.

positions.

Israeli Prime Minister Benjamin Netanyahu explained the purpose of this military operation as the removal of "both the nuclear threat and the ballistic missile threat to Israel."[45] On June 24, he also stated the following: "For decades, I have promised you that Iran would not have nuclear weapons. And indeed, in all of the swift actions that our soldiers carried out, we sent Iran's nuclear project to oblivion. And if anyone in Iran tries to rebuild this project – we will act with the same determination and the same force to cut off any such attempt."[46]

At the UN Security Council meeting held on June 13, following the attacks, Israel's UN Ambassador Danny Danon stated that the dismantlement of Iran's nuclear program was one of the objectives of the attack. He explained that Israel had targeted Iran's command structure, military infrastructure, and enrichment facilities.[47]

Meanwhile, Iran's Ambassador Amir Saeid Iravani stated that "those actions stand in direct violation of numerous legal instruments, including the IAEA statute, the Treaty on the Non-Proliferation of Nuclear Weapons, the Geneva Conventions and multiple Security Council and IAEA General Conference resolutions, all of which prohibit attacks or threats against nuclear facilities under safeguards."[48]

The United States stated: "As President Trump has repeatedly said, that dangerous regime cannot be allowed to have nuclear weapons," claiming the attack was an exercise of Israel's right to self-defense. It also mentioned the possibility of pursuing future negotiations with Iran.[49] France and the United Kingdom each urged restraint among the relevant parties while emphasizing the need to continue diplomatic efforts.[50] France also mentioned issues concerning Iran's implementation of safeguards and its compliance with the JCPOA.[51]

China condemned Israel's attacks: "As a State party to the Treaty on the Non-Proliferation of Nuclear Weapons, Iran's right to the peaceful uses of nuclear energy should be fully respected."[52] Pakistan also condemned Israel's attacks: "It is highly regrettable that these attacks occurred while the International Atomic Energy Agency (IAEA) was continuing its verification activities in Iran. Such actions threaten the IAEA's technical work," adding that the attacks posed a serious threat to the entire IAEA safeguards system.[53] Russia also condemned the legitimacy of Israel's attacks and criticized the negotiating stance of the United States and

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45 "Israel Emergency Services: 7 Injured After Iranian Strike; U.S. Forces Helping Israel Intercept Attacks," *CNN*, June 13, 2025, https://transcripts.cnn.com/show/cnc/date/2025-06-13/segment/12.

46 "Statement by PM Netanyahu - June 24, 2025," Ministry of Foreign Affairs, Israel, June 24, 2025, https://www.gov.il/en/pages/statement-by-pm-netanyahu-24-jun-2025.

47 United Nations Security Council, "S/PV.9936," June 13, 2025, pp.21-3.

48 Ibid., pp.19-21.

49 Ibid., p. 17.

50 Ibid., pp. 15-8.

51 Ibid., pp. 17-8.

52 Ibid., pp. 12-3.

53 Ibid., pp. 14-5.

others toward Iran.[54]

The United States explained its attack against Iran at an emergency meeting of the IAEA Board of Governors held the day after the June 22 attacks:

> The urgent threat from Iran's enrichment program cannot be ignored or explained away. As reported by the Director General less than a month ago, Iran has significantly accelerated production of 60% enriched uranium since December 2024 and has accumulated over 400 kilograms of highly enriched material. This massive stockpile is sufficient for several nuclear weapons and represents an urgent proliferation concern. This massive stockpile is sufficient for several nuclear weapons and represents an urgent proliferation concern. [...] The grave and growing threat to Israel and the region created by Iran's enrichment program necessitated strong and decisive action. [...] We did not take this action lightly, and we are confident that it is consistent with the inherent right of self-defense under the UN Charter.[55]

At the same time, the Iranian Foreign Ministry stated the following on June 22: "The U.S. military assault on Iran's peaceful nuclear facilities is not only a blatant and unprecedented violation of the UN Charter—particularly the principles prohibiting the use of force and requiring respect for states' territorial integrity and national sovereignty—but also a violation of UN Security Council Resolution 2231 and a devastating blow to the nuclear non-proliferation regime, committed by a permanent member of the Security Council itself."[56]

Among other countries surveyed in this report, Australian Prime Minister Anthony Albanese stated the following at a press conference held on June 23, clearly expressing support for this attack: "The world has long agreed that Iran cannot be allowed to get a nuclear weapon. And we support action to prevent that. That is what this is. The US action was directed at specific sites central to Iran's nuclear program. We don't want escalation and a full-scale war. We continue to call for dialogue and for diplomacy."[57]

France, Germany, the United Kingdom (E3), and Japan, while referring to the goal of preventing Iran from acquiring nuclear weapons, stated their commitment to continuing diplomatic efforts and did not mention support for or opposition to the attack itself. In a joint statement released on June 23, the E3 reaffirmed its support for Israel's security and clarified that its goal remained preventing Iran from acquiring nuclear weapons. It also stated that it would continue diplomatic efforts to prevent further escalation and expansion of the conflict.[58]

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54 Ibid., pp. 5-7.

55 U.S. Mission to International Organization in Vienna, "The USA at the Extraordinary Session of the IAEA Board of Governors- June 23, 2025," June 23, 2025, https://vienna.usmission.gov/the-usa-at-the-extraordinary-session-of-the-iaea-board-of-governors-june-23-2025.

56 Ministry of Foreign Affairs, Islamic Republic of Iran, "Iran strongly condemns US brutal aggression against nuclear sites holds warmongering US government responsible for dangerous consequences," June 22, 2025, https://en.mfa.gov.ir/portal/newsview/769064.

57 Prime Minister of Australia, "Press Conference- Parliament House, Canberra," June 23, 2025, https://www.pm.gov.au/media/press-conference-parliament-house-canberra-35.

58 Prime Minister's Office, "E3 leaders' declaration on the situation in the Middle East," Gov.UK, June 22, 2025, https://www.gov.uk/government/news/e3-leaders-declaration-on-the-situation-in-the-middle-east-declaration-des-dirigeants-des-e3-sur-la-situation-au-moyen-orient.

The Minister of Foreign Affairs of Japan stated that "Japan believes that the most important thing, above all, is to de-escalate the situation as soon as possible. At the same time, Iran's acquisition of nuclear weapons must be prevented. Amidst the extremely difficult circumstances surrounding Iran's nuclear issue, the United States has been seriously pursuing dialogue, and Japan understands that the US action demonstrates its determination to de-escalate the situation while preventing Iran from acquiring nuclear weapons."[59]

Meanwhile, China strongly condemned the U.S. attacks on Iran and the bombing of nuclear facilities under IAEA safeguards during a press conference of the Foreign Ministry spokesperson: "The actions of the U.S. seriously violate the purposes and principles of the UN Charter and international law, and have exacerbated tensions in the Middle East."[60] In a statement issued on June 22, Brazil's Ministry of Foreign Affairs also strongly condemned the "military attacks by Israel and, more recently, the United States, against Iran's sovereignty and nuclear facilities, in violation of international law. Any armed attack on nuclear facilities represents a blatant transgression of the United Nations Charter and the norms of the International Atomic Energy Agency."[61] Saudi Arabia also stated that it "is closely monitoring with deep concern the U.S. attack on Iran's nuclear facilities."[62]

Assessments indicate that the Israeli and U.S. attacks, aimed at preventing Iran from acquiring nuclear weapons, delayed Iran's breakout time by damaging its uranium enrichment capabilities. However, as discussed below, the attacks also affected the implementation of safeguards that had previously ensured Iran's nuclear non-proliferation and the transparency of its uranium enrichment activities. This included the departure of IAEA inspectors from the country and Iran's enactment of legislation suspending cooperation with the IAEA. Furthermore, the attacks cast a shadow over dialogue between Iran, the United States, and European countries.

Iran: Efforts to Restore the Nuclear Deal

As mentioned above, the JCPOA reached its termination day on October 18, 2025. One issue arising from reaching this date was the expiration of the "snapback" mechanism for reimposing restrictions and sanctions under past UN Security Council resolutions related to Iran. In light of this deadline, the United States and European countries had sought to reach an agreement with Iran to either revive the JCPOA or establish a new framework. However, progress toward resuming negotiations remained elusive.

The second Trump administration, which took office in January 2025, announced in February

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59 Ministry of Foreign Affairs of Japan, "U.S. Strikes on Iranian Nuclear Facilities (Statement by Foreign Minister IWAYA Takeshi)," June 23, 2025, https://www.mofa.go.jp/press/statement/pressite_000001_00002.html.

60 Ministry of Foreign Affairs of China, "Foreign Ministry Spokesperson's Remarks on the U.S. Strikes on Iran's Nuclear Facilities," June 22, 2025, https://www.fmprc.gov.cn/eng/xw/fyrbt/fyrbt/202506/t20250622_11654698.html.

61 Ministry of Foreign Affairs of Brazil, "Attack on Iran's Nuclear Facilities," June 22, 2025, https://www.gov.br/mre/en/contact-us/press-area/press-releases/attacks-on-irans-nuclear-facilities.

62 "Saudi Arabia Expresses Deep Concern Over US Strikes on Iranian Nuclear Facilities, Urges De-escalation," *Saudi Press Agency*, June 22, 2025, https://www.spa.gov.sa/en/N2344168.

that it would resume the policy of "maximum pressure on Iran" adopted during the first administration.[63] Meanwhile, on March 7, it was revealed that President Trump had sent a letter to Iran requesting the resumption of negotiations[64] and setting a two-month deadline for reaching a new agreement.[65]

On April 12, indirect negotiations between senior Iranian and U.S. officials resumed in Oman.[66] Subsequently, following indirect negotiations between senior officials in Rome on April 19, talks including expert-level discussions took place.[67]

One of the key points of contention in the negotiations between Iran and the United States was the U.S. demand that Iran abandons its uranium enrichment program. Steve Witkoff, the U.S. special envoy for the negotiations, initially suggested that Iran might be permitted low-level uranium enrichment, but it was reported in April that he had retracted that statement.[68] Furthermore, in May, Secretary of State Marco Rubio stated: "They have to walk away from enrichment."[69] He also said that Iran must obtain uranium for nuclear power through imports rather than enrichment, allow Americans to participate in any inspection regime, and grant inspectors access to all facilities, including military ones.[70]

Iran rejected the demand to abandon uranium enrichment. On June 4, Ayatollah Ali Khamenei stated that the U.S. proposal "contradicts our nation's belief in self-reliance and the principle of 'We Can'," reaffirming Iran's position that uranium enrichment remains a key element of its energy independence.[71] Iran's Foreign Ministry reportedly submitted a counterproposal to the United States via Oman on June 9, addressing issues including economic sanctions.[72] Additionally, during these negotiations, Iran proposed establishing a joint uranium enrichment

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63 White House, "Fact Sheet: President Donald J. Trump Restores Maximum Pressure on Iran," February 4, 2025, https://www.whitehouse.gov/fact-sheets/2025/02/fact-sheet-president-donald-j-trump-restores-maximum-pressure-on-iran/.

64 "Trump Says He Sent Letter to Iran Leader to Negotiate Nuclear Deal," *Reuters*, March 8, 2025, https://www.reuters.com/world/trump-says-he-sent-letter-iran-leader-negotiate-nuclear-deal-2025-03-07/.

65 "Scoop: Trump's Letter to Iran included 2-month Deadline for New Nuclear Deal," *AXIOS*, May 19, 2025, https://www.axios.com/2025/03/19/trump-letter-iran-nuclear-deal.

66 Parisa Hafezi, "Iran, US hold 'positive' talks in Oman, agree to resume next week," *Reuters*, April 13, 2025, https://www.reuters.com/world/middle-east/iran-us-start-talks-oman-under-shadow-regional-conflict-2025-04-12/.

67 Parisa Hafezi, "Iran, US task experts with framework for a nuclear deal after 'progress' in talks," Reuters, April 20, 2025, https://www.reuters.com/world/iran-us-hold-talks-rome-bid-reach-nuclear-deal-2025-04-19/.

68 Michael R. Gordon et al., "Witkoff in Apparent Reversal Says Iran Must Halt Nuclear Enrichment," *The Wall Street Journal*, April 15, 2025, https://www.wsj.com/world/middle-east/u-s-softens-position-on-iranian-uranium-enrichment-5bf0953a.

69 "Iran must 'Walk Away' from All Uranium Enrichment, Rubio Says," *Reuters*, May 3, 2025, https://www.reuters.com/world/iran-must-walk-away-all-uranium-enrichment-rubio-says-2025-05-02/.

70 Ibid.

71 "Iran's Khamenei slams US nuclear proposal, vows to keep enriching uranium," *Aljazeera*, June 4, 2025, https://www.aljazeera.com/news/2025/6/4/irans-khamenei-slams-us-nuclear-proposal-vows-to-keep-enriching-uranium.

72 "Iran to Submit Counter-proposal to U.S. via Oman," *Xinhua*, June 10, 2025, https://english.news.cn/20250610/f8069501feae4865be2c2595355d74db/c.html.

project involving Middle Eastern countries. This proposal envisaged Iran enriching uranium to a concentration of 3.67% (the level needed to fuel nuclear power plants) and transferring it to Arab countries for civil purposes.[73] Under this plan, Saudi Arabia and the United Arab Emirates would provide funding and gain access to Iran's technologies. It was also expected that this would increase the transparency of Iran's uranium enrichment activities.[74]

Parallel to U.S.-Iran negotiations, Iran also held talks with European countries (France, Germany, the United Kingdom, and the EU) to revive the JCPOA. On April 30, Iranian Foreign Minister Araghchi announced that negotiations with the European parties to the JCPOA would take place within the week.[75] Although the meeting was postponed, negotiations took place in mid-May. That same month, Foreign Minister Araghchi stated in a contribution to a French magazine: "We have officially warned all JCPOA (nuclear pact) signatories that abuse of the snapback mechanism will lead to consequences—not only the end of Europe's role in the agreement, but also an escalation of tensions that could become irreversible."[76]

While ongoing negotiations between the United States, European countries, and Iran have made no progress towards a resolution, attacks on Iran's uranium enrichment facilities were carried out by Israel on June 14 and by the United States on June 21.

Following the attacks, Foreign Minister Araghchi stated in an interview that some progress had been made in the negotiations prior to the strikes:

> "In only five meetings over nine weeks, US special envoy Steve Witkoff and I achieved more than I did in four years of nuclear negotiations with the failed Biden administration. We were on the cusp of a historic breakthrough. To address US concerns that Iran may one day divert its peaceful nuclear programme, we held detailed, frank discussions — including on the future of Iranian uranium enrichment. Several win-win solutions were proposed by both sides and by Oman. Equally important, we also focused on the termination of sanctions and US involvement in wider economic cooperation that constituted a trillion-dollar opportunity. Iran was open to mutually beneficial collaboration that would electrify the Iranian economy and address US President Donald Trump's priority to revive dying American industries, such as the nuclear energy sector.[77]

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73 Farnaz Fassihi, "Iran Proposes Novel Path to Nuclear Deal with U.S.," *The New York Times*, May 13, 2025, https://www.nytimes.com/2025/05/13/world/middleeast/iran-us-nuclear-talks.html.

74 "Iran Proposes Partnership with UAE and Saudi Arabia to Enrich Uranium," *The Guardian*, May 13, 2025, https://www.theguardian.com/world/2025/may/13/iran-proposes-partnership-with-uae-and-saudi-arabia-to-enrich-uranium.

75 Parisa Hafezi and John Irish, "Iran to Meet 3 European Powers Ahead of Next Nuclear Talks with US," *Reuters*, April 30, 2025, https://www.reuters.com/world/iran-uk-france-germany-hold-nuclear-talks-friday-2025-04-30/.

76 John Irish, "Iran Warns Europeans that Reimposing Sanctions Could Have Irreversible Consequences," *Reuters*, May 13, 2025, https://www.reuters.com/world/iran-warns-europeans-that-reimposing-sanctions-could-have-irreversible-2025-05-12/.

77 Embassy of the Islamic Republic of Iran in Sweden, "Iran's Foreign Minister: Israel's War Sabotaged Diplomacy. The US can Revive it," July 11, 2025, https://sweden.mfa.gov.ir/en/newsview/771380/Iran%E2%80%99s-foreign-minister-Israel%E2%80%99s-war-sabotaged-diplomacy-The-US-can-revive-it.

Then stated as following:

> Although Iran has in recent days received messages indicating that the US may be ready to return to negotiations, how can we trust further engagement? Iran signed a comprehensive nuclear deal with six countries in 2015, including the US, which Washington unilaterally abrogated three years later. And after agreeing to new negotiations in good faith, we have seen our goodwill reciprocated with an attack by two nuclear-armed militaries. Iran remains interested in diplomacy but we have good reason to have doubts about further dialogue. If there is a desire to resolve this amicably, the US should show genuine readiness for an equitable accord. Washington should also know that its actions in recent weeks have changed the situation."[78]

On July 18, the E3 Foreign Ministers and the EU High Representative for Foreign Affairs and Security Policy (E3/EU) held their first telephone conversation with the Iranian Foreign Minister since the attacks. The European side urged Iran to immediately resume diplomacy to reach a verifiable and lasting agreement, while warning that the snapback mechanism would be activated if this did not occur.[79] In response, Foreign Minister Araghchi stated: "If EU/E3 [sic] want to have a role, they should act responsibly, and put aside the worn-out policies of threat and pressure, including the 'snap-back' for which they lack absolutely [any] moral and legal ground."[80]

On July 25, following the telephone conversation, a meeting between Iran and the three European countries and the EU was held in Türkiye at the level of Deputy Foreign Ministers. Iran's Deputy Foreign Minister Kazem Gharibabadi stated in a post on social media after the meeting: "The latest developments regarding the issue of sanctions lifting and the nuclear issue were discussed and reviewed. While seriously criticizing their stances regarding the recent war of aggression against our people, we explained our principled positions, including on the so-called snapback mechanism. Both sides came to the meeting with specific ideas, the various aspects of which were examined. It was agreed that consultations on this matter will continue."[81]

On August 26, the E3/EU and Iran held talks in Geneva, Switzerland. The E3/EU proposed that Iran resume cooperation with IAEA inspections, allow an investigation into its stockpile of enriched uranium, and engage in talks with the United States as conditions for delaying the activation of the snapback mechanism.[82] However, two days after these negotiations, on August 28, the three European countries notified the UN Security Council of the activation of the snapback mechanism, thereby initiating the start of the 30-days process for the reimposition of

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78 Ibid.

79 John Irish, "Europeans Warn Iran of UN Sanctions if no Concrete Progress on Nuclear Issue," *Reuters*, July 18, 2025, https://www.reuters.com/world/europe/europeans-warn-iran-un-sanctions-if-no-concrete-progress-nuclear-issue-2025-07-17.

80 Ibid.

81 Kazem Gharibabadi on X, July 25, 2025, https://x.com/Gharibabadi/status/1948704983794270515.

82 Emma Farge, John Irish, Parisa Hafezi and Michelle Nichols, "Iran, Europeans Meet in Geneva as Sanctions Threat Looms," *Reuters*, August 27, 2025, https://www.reuters.com/world/middle-east/iran-europeans-meet-geneva-sanctions-threat-looms-2025-08-26/.

sanctions.[83]

On September 19, the UN Security Council discussed a resolution proposed by South Korea, which held the Council's presidency that month, regarding the continuation of the suspension of sanctions against Iran. Russia criticized the United Kingdom, France, and Germany for suggesting the activation of the snapback mechanism, stating: "Attempts on the part of the European countries to present the situation as though they have the right to activate the punitive provisions of prior resolutions, while themselves failing to fulfil their own obligations... cannot hold water." China stated that significant differences exist among Security Council members regarding snapback, warning that a hasty vote risks exacerbating State confrontation. Meanwhile, the United Kingdom stated that the snapback invoked by the three European countries was "entirely legal, justified, wide and consistent with the requirements of resolution 2231."

The resolution on continuing sanctions relief failed to pass, with nine countries opposing it—including France, the United Kingdom, and the United States—against four in favor, including China, Russia, and Pakistan. Two countries, including South Korea, which chaired the session, abstained.[84] On September 27, a resolution submitted by China and Russia to extend the JCPOA and UN Security Council Resolution 2231 until April 2026 was debated and submitted to a vote, but it was rejected by the same vote count as the previous week's resolution.[85] This confirmed the procedures for triggering the snapback mechanism.

The E3 foreign ministers issued a statement after the snapback took effect. They welcomed the reinstatement of past UNSC resolutions and called on Iran and all countries to fully comply with these resolutions. Regarding Iran, the statement noted that the month following its August 28 notification to the UNSC of the snapback activation was an opportunity to address concerns about its nuclear program. During this period, "Iran did not take the necessary actions to address our concerns, nor to meet our asks on extension, despite extensive dialogue. […] Iran has not authorised IAEA inspectors to regain access to Iran's nuclear sites, nor has it produced and transmitted to the IAEA a report accounting for its stockpile of high-enriched uranium." While condemning Iran, the statement also mentioned the possibility of continuing negotiations, stating that "the reimposition of UN sanctions is not the end of diplomacy."[86]

Following the reinstatement of sanctions, U.S. Secretary of State Rubio stated: "President Trump has been clear that diplomacy is still an option—a deal remains the best outcome for

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[83] Foreign, Commonwealth & Development Office, "Iran Nuclear: E3 Foreign Ministers' Letter Announcing Triggering of Snapback, 28 August 2025," Gov.UK, August 28, 2025, https://www.gov.uk/government/publications/iran-nuclear-e3-foreign-ministers-letter-announcing-triggering-of-snapback-28-august-2025.

[84] Vibhu Mishra, "UN Security Council rejects bid to continue Iran sanctions relief," *UN News*, September 19, 2025, https://news.un.org/en/story/2025/09/1165891.

[85] "UN Security Council blocks China-Russia resolution on Iran sanctions," *UN News*, September 26, 2025, https://news.un.org/en/story/2025/09/1165974.

[86] Foreign, Commonwealth & Development Office, "E3 Joint Statement on Iran: Activation of the Snapback," Gov.UK, September 28, 2025, https://www.gov.uk/government/news/e3-joint-statement-on-iran-activation-of-the-snapback.

the Iranian people and the world. For that to happen, Iran must accept direct talks, held in good faith, without stalling or obfuscation. Absent such a deal, it is incumbent on partners to implement snapback sanctions immediately in order to pressure Iran's leaders to do what is right for their nation, and best for the safety of the world."[87]

On October 2, the G7 issued a Foreign Ministers' Statement on the snapback, stating that the trigger for its activation was Iran's continued non-compliance. It further stated that "Iran must fully cooperate with the IAEA without any further delay and fully implement its obligations under its NPT-required Comprehensive Safeguards Agreement. This includes allowing for IAEA inspections to resume in all its nuclear facilities and accounting for all of the nuclear material it holds, in particular its stockpile of highly enriched uranium for which no credible civilian justification exists."[88]

On September 27, Iranian Foreign Minister Araghchi condemned the E3 countries and the United States in a post on his social media, stating that the invocation of the snapback mechanism was "a blatant abuse of process."[89]

Even after the snapback was invoked, Iran, the United States, and the E3 countries continued to signal room for negotiation. In a speech to the Israeli Parliament on October 13, U.S. President Trump stated: "The hand of friendship and cooperation is open. I'm telling you, they (Iran) want to make a deal."[90] Furthermore, following the November IAEA Board of Governors resolution, a French Foreign Ministry spokesperson indicated the E3 countries' desire to resume diplomacy over Iran's nuclear program.[91]

In response, Iranian Foreign Minister Araghchi stated: "If we receive a reasonable, balanced, and fair proposal from the Americans for negotiations, we will certainly consider it,"[92] while also telling the E3 countries that since they had led the snapback activation, "we see no reason to negotiate."[93]

On December 23, the UN Security Council held its first discussion on Iran's nuclear issue

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87 U.S. Department of State, "Completion of UN Sanctions Snapback on Iran," September 27, 2025, https://www.state.gov/releases/office-of-the-spokesperson/2025/09/completion-of-un-sanctions-snapback-on-iran/.

88 Ministry of Foreign Affairs of Japan, "G7 Foreign Ministers Statement on Iran Sanctions Snapback," October 2, 2025, https://www.mofa.go.jp/press/release/pressite_000001_01707.html.

89 Abbas Araghchi on X, September 27, 2025, https://x.com/araghchi/status/1972027368098439472.

90 Jana Choukeir and Ahmed Elimam, "US in Ready for Deal with Iran when Teheran is, Trump Says," *Reuters*, October 13, 2025, https://www.reuters.com/world/middle-east/trump-says-ready-deal-with-iran-when-tehran-is-2025-10-13/.

91 "IAEA Passes Resolution Demanding Nuclear Access from Iran; Tehran Rejects," *Aljazeera*, November 20, 2025, https://www.aljazeera.com/news/2025/11/20/iaea-passes-resolution-demanding-nuclear-access-from-iran-tehran-rejects.

92 Brian Osgood, "Reviving US-Iran Diplomacy Difficult Despite Trump's 'Hand of Friendship'," *Aljazeera*, October 13, 2025, https://www.aljazeera.com/news/2025/10/13/reviving-us-iran-diplomacy-difficult-despite-trumps-hand-of-friendship.

93 "Iran says restrictions on nuclear programme 'terminated' as deal expires," *Aljazeera*, October 13, 2025, https://www.aljazeera.com/news/2025/10/18/iran-says-restrictions-on-nuclear-programme-terminated-as-deal-expires.

since the snapback was activated. France condemned Iran: "The lack of implementation by Iran of its international obligations related to its nuclear programme constitute a grave threat to international peace and security." Russia took aim at the Slovenian presidency of the Security Council, regretting that they did not "find the courage to impartially uphold your obligation not to act at the behest of those who insisted on holding a Security Council meeting on a non-existent agenda item." Iran also asserted that UN Security Council Resolution 2231 "ceased to have any legal effect or operative mandate" The EU, participating as an observer, stated that "the snapback of sanctions and nuclear restrictions must not be the end of diplomacy."[94]

Thus, while both sides have indicated the possibility of negotiations, discussions on reviving the JCPOA or establishing a successor framework had not progressed as of the end of 2025.

Withdrawal from the NPT

While Article X, paragraph 1, of the NPT provides for withdrawal from the Treaty, there remains a lack of clarity over certain aspects of this process. Since North Korea's declaration of withdrawal from the NPT, Japan, South Korea, and other Western states have advocated stricter requirements for withdrawal in order to prevent NPT signatories from acquiring nuclear weapons capabilities in violation of the Treaty and subsequently withdrawing. At the 10th NPT Review Conference in 2022, the Non-Proliferation and Disarmament Initiative (NPDI) argued for the need to "Reaffirm that the procedures in article X must be fully and strictly followed by any State party that makes the decision to withdraw from the Treaty. The Treaty provides for the requirements to exercise the right of withdrawal, which means that any notice of withdrawal without completing these requirements is not valid." It proposed principles and requirements for withdrawal.[95] At the 2025 NPT PrepCom, the Vienna Group of Ten proposed principles for exercising the right of withdrawal under Article X of the NPT, including that the right may only be exercised when an exceptional event relating to the subject matter of the Treaty endangers the supreme interests of the State, and that nuclear material acquired by a State Party under Article IV of the Treaty prior to withdrawal must remain subject to IAEA safeguards or equivalent safeguards after withdrawal.[96]

At the same time, the Chinese and Russian positions on this issue seem more cautious than the above-mentioned countries. Furthermore, NAM countries along with Brazil have been critical of the tightening of withdrawal requirements, arguing that withdrawal from the treaty is a right of the states parties.[97]

Following the June 2025 attacks by Israel and the United States on Iran's uranium enrichment facilities, discussions emerged within Iran regarding withdrawal from the treaty. Some

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94 "Security Council Remains Divided Over Iran Nuclear Programme, Sanctions Stay in Place," *UN News*, December 23, 2025, https://news.un.org/en/story/2025/12/1166660.

95 NPT/CONF.2020/WP.58, June 3, 2022.

96 NPT/CONF.2026/PC.III/WP.15, March 5, 2025.

97 For example, see: Emmanuelle Maitre, "Withdrawing from the NPT – Legal and Strategic Considerations," Foundation pour la recherche strategique, March 21, 2023, https://www.frstrategie.org/en/publications/notes/withdrawing-npt-legal-and-strategic-considerations-2023.

members of the Iranian parliament prepared a bill urging withdrawal from the NPT.[98] In response to these developments, the Iranian government made clear that it has no intention of withdrawing from the treaty.[99] During the September IAEA General Conference, in remarks related to the law passed in July suspending cooperation with the IAEA, Iran stated that "this does not amount to withdrawal from the NPT. Iran remains a State Party to the Treaty and stands ready to continue its cooperation once its legitimate security concerns are credibly addressed through new arrangements."[100]

Alleged Interest in Acquiring Nuclear Weapons

Amid North Korea's rapid nuclear and missile development, as well as its repeated references to an offensive nuclear posture, South Korea has at times shown indications of interest in acquiring nuclear weapons, particularly among conservative lawmakers.[101]

Cho Tae-yul, foreign minister under the then Yoon Suk-yeol administration, stated during a National Assembly session on February 27, 2025, in reference to the development of nuclear weapons to counter North Korea: "It's premature to talk about such a Plan B, but that doesn't mean it's off the table." "Given that international situations are developing in unpredictable directions, this is a principled response that we must prepare for all possible scenarios."[102]

Regarding trends in South Korean public opinion, the Asan Institute for Policy Studies released survey results indicating that while 76.2% of respondents support the acquisition of an indigenous nuclear weapons capability, this level of support declines when specific conditions are presented, although it remained well above 50%. Under various conditions, support dropped to 68.1% if the acquisition were to trigger international sanctions, 59.2% if U.S. forces withdrew from South Korea, and 57.2% if it required the construction of nuclear storage facilities and the conduct of nuclear tests.[103]

At the October 2025 U.S.-ROK summit, the bilateral agreement included the following

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98 "Iran Says Parliament is Preparing Bill to Leave Nuclear Non-Proliferation Treaty," *Reuters*, June 16, 2025, https://www.reuters.com/world/middle-east/iran-foreign-ministry-says-parliament-is-preparing-bill-leave-npt-2025-06-16.

99 "Iran Says No Plan to Leave Nuclear Non-Proliferation Treaty," *Iran International*, October 15, 2025, https://www.iranintl.com/en/202510157751.

100 "Statement by Iran," 69th General Conference of the IAEA, September 15, 2025.

101 For example, see follows: "North Korea Neighbor Calls for Nuclear Weapons," *Newsweek*, July 8, 2024, https://www.newsweek.com/south-korean-politician-calls-nuclear-weapons-1922204; Jeongmin Kim, "After a Lull, South Korea is Suddenly Talking about Going Nuclear Again," *NK News*, July 5, 2024, https://www.nknews.org/2024/07/after-a-lull-south-korea-is-suddenly-talking-about-going-nuclear-again/.

102 "In Shift, South Korea's Top Diplomat Says Nuclear Armament 'Not off the Table'," *NK News*, February 27, 2025, https://www.nknews.org/2025/02/in-shift-south-koreas-top-diplomat-says-nuclear-armament-not-off-the-table/.

103 Peter K. Lee and Kang Chungku, "Worth the Squeeze: A Conditions-based Analysis of South Korean Public Support for Nuclear Deterrence," *The Asan Institute for Policy Studies, Issue Brief*, May 28, 2025, https://asaninst.org/data/file/s1_1_eng/f15af67c43af11afd7a990dc4f32fd2b_ykDOonbu_85ad19703b39f23c28665dbbe95ee65d4abc530b.pdf.

statement: "Consistent with the bilateral 123 agreement[104] and subject to U.S. legal requirements, the United States supports the process that will lead to the ROK's civil uranium enrichment and spent fuel reprocessing for peaceful uses."[105] As discussed below, the summit also reached agreement on South Korea's acquisition of nuclear-powered submarines (see this chapter (2)B) "Acquisition of Naval Nuclear Propulsion by Non-Nuclear-Weapon States.")

In Japan, on December 18, a senior official of the Prime Minister's Office reportedly stated, while clarifying it was his personal view, that "Japan should possess nuclear weapons" against the backdrop of a deteriorating security environment.[106] The statement also mentioned that the government is not considering nuclear weapons possession, that revising the Three Non-Nuclear Principles is politically difficult, and that Japan's status as an NPT signatory makes it difficult.[107] On the same day, Chief Cabinet Secretary Minoru Kihara, while not commenting directly on the remarks, stated: "The government maintains the Three Non-Nuclear Principles as a policy guideline."[108]

In Saudi Arabia, statements suggesting interest in acquiring nuclear weapons have been made repeatedly since the mid-2010s. More recently, in September 2023, Crown Prince Muhammad bin Salman stated in an interview that if Iran acquired nuclear weapons, Saudi Arabia would have no choice but to acquire them itself.[109] However, in 2025, no statements were reported to that effect.

Negotiations between the United States and Saudi Arabia over a nuclear cooperation agreement granting access to U.S. nuclear technology had stalled for several years due to U.S. insistence on conditions prohibiting Saudi Arabia from acquiring uranium enrichment and plutonium reprocessing capabilities. On November 19, 2025, U.S. Energy Secretary Chris Wright and Saudi Energy Minister Abdulaziz bin Salman Al Saud signed the "Joint Declaration on the Completion of Negotiations on Civil Nuclear Cooperation." Secretary Wright stated: "Together, with bilateral safeguard agreements, we want to grow our partnership, bring American nuclear

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[104] The United States requires the inclusion of nonproliferation safeguards provisions (such as restrictions or prohibitions on enrichment and reprocessing) stipulated under Section 123 of its Nuclear Nonproliferation Act as a condition for concluding the agreement, hence it is called the 123 Agreement.

[105] White House, *Joint Fact Sheet on President Donald J. Trump's Meeting with President Lee Jae Myung*, November 13, 2025, https://www.whitehouse.gov/fact-sheets/2025/11/joint-fact-sheet-on-president-donald-j-trumps-meeting-with-president-lee-jae-myung/.

[106] "Senior official at Prime Minister's Office: Japan should possess nuclear weapons," *NHK World Japan*, December 19, 2025, https://www3.nhk.or.jp/nhkworld/en/news/20251219_01/.

[107] "Senior official at Prime Minister's Office says off the record, 'Japan should also possess nuclear weapons'; Chief Cabinet Secretary Kihara states, 'We will adhere to the Three Non-Nuclear Principles'... Koumeito leader says, 'This warrants dismissal.'," *Yomiuri Shinbun*, December 19, 2025, https://www.yomiuri.co.jp/politics/20251219-GYT1T00222/. (In Japanese)

[108] "Chief Cabinet Secretary 'Upholds Three Non-Nuclear Principles' Regarding Senior Official's 'Nuclear Possession' Remarks," *NHK*, December 19, 2025, https://news.web.nhk/newsweb/na/na-k10015008061000. (In Japanese)

[109] For example, see, Sarah Fortinsky, "Saudi Crown Prince on Iran Acquiring Nuclear Weapons: 'If They Get One, We Have to Get One,'" *The Hill*, September 20, 2023, https://thehill.com/policy/international/4215594-saudi-crown-prince-on-iran-acquiring-nuclear-weapons-if-they-get-one-we-have-to-get-one/.

technology to Saudi Arabia and keep a firm commitment to nonproliferation."[110] Regarding the technologies to be transferred under this agreement, he added: "It is about civilian, civil use of nuclear power. It's not about enrichment. It's not about anything related to weapons."[111] However, even after the release of the joint declaration, arguments were made in the U.S. Congress that the nuclear agreement with Saudi Arabia should be a "gold standard" agreement that includes bans on uranium enrichment and plutonium reprocessing.[112]

Iran continued to deny any intention to develop nuclear weapons as discussions were intensifying about its potential development of nuclear weapons.[113] On April 7, an Iranian government-affiliated newspaper published an article stating that the Supreme Leader's fatwa on nuclear weapons only prohibits their use, not their production or stockpiling.[114] On September 22, 71 Iranian parliamentarians affirmed in a letter addressed to Iran's National Security Council and others that while the Supreme Leader's fatwa prohibits the use of nuclear weapons, their development and their possession as a deterrent were separate issues.[115]

C) Nuclear-Weapon-Free Zones

To date, nuclear-weapon-free zone treaties have been concluded in Latin America (the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean [Treaty of Tlatelolco], signed in 1967 and entered into force in 1968), the South Pacific (the South Pacific Nuclear Free Zone Treaty [Treaty of Rarotonga], signed in 1985 and entered into force in 1986), Southeast Asia (the Southeast Asia Nuclear Weapon-Free Zone Treaty [Treaty of Bangkok], signed in 1995 and entered into force in 1997), Africa (the African Nuclear-Weapon-Free Zone Treaty [Treaty of Pelindaba], signed in 1996 and entered into force in 2009), and Central Asia (the Central Asian Nuclear-Weapon-Free Zone Treaty, signed in 2006 and entered into force in 2009). In addition, Mongolia declared its territory a single-State nuclear-weapon-free zone at the UN General Assembly in 1992, and in 1998 the General Assembly adopted a resolution welcoming Mongolia's declaration of its "nuclear-weapon-free status."[116]

In 2025, following the January ASEAN Foreign Ministers' Retreat statement indicating the

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[110] U.S. Department of Energy, "U.S. Energy Secretary and Saudi Arabia's Energy Minister Announce Deal on Civil Nuclear Cooperation," November 19, 2025, https://www.energy.gov/articles/us-energy-secretary-and-saudi-arabias-energy-minister-announce-deal-civil-nuclear.

[111] "Uranium Enrichment not Part of Civil Nuclear Deal with Saudi Arabia, US Energy Secretary Says," *Reuters*, November 19, 2025, https://www.reuters.com/business/energy/uranium-enrichment-not-part-civil-nuclear-deal-with-saudi-arabia-us-energy-2025-11-19.

[112] Kelsey Davenport, "U.S., Saudi Arabia Announce Nuclear Cooperation," *Arms Control Today*, December 2025, https://www.armscontrol.org/act/2025-12/news/us-saudi-arabia-announce-nuclear-cooperation.

[113] Javad Heiran-Nia, "Iranians Debate Whether It's Time to Develop Nuclear Weapons," The Stimson Center, November 8, 2024, https://www.stimson.org/2024/iranians-debate-whether-its-time-to-develop-nuclear-weapons/.

[114] Mardo Soghom, "Official Daily Says Khamenei Banned Use, not Production of Nuclear Weapons," *Iran International*, April 7, 2025, https://www.iranintl.com/en/202504074040.

[115] "Iranian Lawmakers Urge Review of Defense Doctrine, Call for Nuclear Weapons," *Iran International*, September 22, 2025, https://www.iranintl.com/en/202509229643.

[116] A/RES/53/77D, December 4, 1998.

possibility of individual nuclear-weapon states signing the protocol of the Treaty of Bangkok,[117] several nuclear-weapon states signaled their intention to sign. (See Chapter 1, Nuclear Disarmament (6) D) for developments regarding signatures to the Protocol to the Southeast Asia Nuclear-Weapon-Free Zone Treaty.)

At the 2025 NPT PrepCom, NAM countries presented a working paper on nuclear-weapon-free zone treaties that referred to issues related to the "Conference on the Establishment of a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction (WMD)" (hereafter, the "Middle East Conference"). They called on Israel to participate in and engage constructively with the Middle East Conference, while also urging non-participating nuclear-weapon states to join the conference.[118] Furthermore, in their national statements, NAM countries reaffirmed their support for establishing a Middle East zone free of WMD based on the 1995 resolution on the Middle East[119] and urged Israel to participate.[120] NAM countries also mentioned the United States: "We acknowledge that two of the three co-sponsors of the resolution […] and the other two nuclear-weapon States, attend the Conference and support its important work and we urge the United States to act likewise."[121]

Iran stated that Israel's nuclear weapons remain the primary cause of nuclear proliferation and pose a serious threat to regional security and stability.[122] Regarding the Middle East resolution, it emphasized "the responsibility of all States Parties, particularly the Nuclear-Weapon States and the depositary States of the Treaty, to fulfill the objectives of the 1995 resolution on the Middle East. Progress toward establishing a nuclear-weapon-free zone in the region remains urgent."[123]

Russia, while emphasizing its contribution to the Middle East Conference as an observer state, stated: "It is vitally important to ensure the engagement of all the invited States in the work of the Conference."[124]

Furthermore, Morocco, as the chair of the Sixth Middle East Conference in 2025, and speaking on behalf of the participating States, reiterated its call to Israel "to attend the future sessions and engage with its work with an open mind and good faith."[125]

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117 ASEAN, "Press Statement by the Chair of the ASEAN Foreign Ministers' Retreat," January 19, 2025, para. 10, https://asean.org/wp-content/uploads/2025/01/FINAL-Press-Statement-by-the-Chair-AMM-Retreat-2025.pdf.

118 NPT/CONF.2026/PC.III/WP.24, April 1, 2025, para. 4.

119 NPT/CONF.1995/32, 1995.

120 "Statement by Group of the Non-Aligned States Parties," Cluster 2, Regional Issues, Third Preparatory Committee for the 11th NPT Review Conference, May 2, 2025.

121 Ibid.

122 "Statement by Iran," Cluster 2, Nuclear Non-Proliferation, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

123 Ibid.

124 "Statement by Russia," Cluster 2, Nuclear Non-Proliferation, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

125 "Statement by Morocco," General Debate, Third PrepCom for the 11th NPT RevCon, April 28, 2025.

The Sixth Middle East Conference was held from November 17 to 21, 2025, with the participation of 22 States from the region, as well as four observer States—China, France, Russia, and the United Kingdom.[126] As in previous sessions, Israel and the United States did not participate. According to the conference report, the general debate addressed a wide range of issues, including the importance and validity of the resolution on the Middle East adopted at the 1995 Review and Extension Conference of the NPT; the need to address the elements of the aspired zones and to elaborate common understandings and building blocks that can support negotiating a legally binding instrument establishing the zone; the reaffirmation by States Parties of their inalienable right to peaceful uses in nuclear, biological and chemical materials and technology without discrimination; and the fact that nuclear threats clearly demonstrated the urgent and indispensable need to establish a Middle East zone that was free of nuclear weapons and other weapons of mass destruction. They also reiterated their call on Israel to promptly accede to the NPT as a non-nuclear-weapon state and to apply comprehensive IAEA safeguards.[127]

The continued absence of Israel from the sessions was identified as a key challenge for the Middle East Conference, while the fact that the United States remained the only invited observer State that had not yet participated was noted with regret.[128]

Thematic discussions covered: (a) negative security assurances; (b) cooperation, consultation and clarification, and dispute settlement; and (c) promotion of cooperation between nuclear-weapon-free zones and the Middle East conference.

Regarding negative security assurances, point (a), participants emphasized that they are "indispensable elements for ensuring the credibility and the integrity of the future Middle East and should be elaborated in a dedicated protocol to the future treaty." They also stressed the importance of learning from the experience and best practices of existing nuclear-weapon-free zones regarding the negotiation and implementation of protocols on negative security assurances.[129] Regarding point (b), discussions focused on the importance of "cooperation, consultation and clarification mechanisms in resolving disputes related to the interpretation of and compliance with the future treaty, as well as procedural concerns, and emerging regional developments that may affect its implementation."[130] Regarding point (c), discussions recognized "the value in learning from the experiences of existing nuclear-weapon-free zones, their negotiation processes and implementation."[131]

From 1980 to 2017, the resolution entitled "Establishment of a Nuclear-Weapon-Free Zone in the Region of the Middle East"[132] was adopted by the UN General Assembly without a vote. Since 2018, the resolution has been put to a vote. In 2025, 173 states voted in favor, 3 against

[126] A/CONF.236/2025/3, November 21, 2025.

[127] Ibid., pp.3-6.

[128] Ibid., para.16.

[129] Ibid., paras.36, 38.

[130] Ibid., para.45.

[131] Ibid., paras.53-54.

[132] A/RES/80/17, December 1, 2025.

(Israel, the United States, and Argentina), and 3 abstained (Cameroon, Fiji, and Paraguay).[133]

In 2025, a framework complementing the establishment of a Middle East Nuclear-Weapon-Free Zone was also put forward. Iran's former Foreign Minister Javad Zarif proposed the "Middle East Network for Atomic Research and Advancement (Menara)" aimed at promoting peaceful nuclear cooperation among participating countries in the Middle East and North Africa region. The proposal outlined support for joint ventures among participating countries in areas including uranium enrichment, waste management, and medicine. Menara would include robust mutual safeguards to prevent the diversion of nuclear materials for military use. Additionally, refusal to develop and deploy nuclear weapons was listed as one of conditions for participation in Menara.[134]

Regarding the establishment of nuclear-weapon-free zones in Northeast Asia and South Asia, although proposals have been advanced by researchers and other stakeholders, no concrete intergovernmental initiatives have emerged to date. In the case of Northeast Asia, Mongolia has occasionally expressed interest, including in a report submitted to an NPT Review Conference, which stated that Mongolia would "play an active role in promoting the idea of establishing a nuclear-weapon-free zone in Northeast Asia."[135]

(2) IAEA Safeguards Applied to the NPT NNWS

A) Conclusion of IAEA Safeguards Agreements

To prevent and detect the diversion of nuclear material from peaceful uses to nuclear weapons and other explosive devices, Article III(1) of the NPT obligates NNWS to conclude and implement a comprehensive safeguards agreement (CSA) with the IAEA and to accept its safeguards. As of June 2025, three non-nuclear-weapon States Parties to the NPT had not yet concluded CSAs with the IAEA.[136]

Furthermore, as of June 30, 2025, 144 non-nuclear-weapon States Parties to the NPT had ratified the Additional Protocol to the IAEA safeguards agreement, although not an obligation under the NPT.[137] Iran began provisional application of the Additional Protocol in January 2016 but terminated its application in February 2021 in response to the U.S. withdrawal from the JCPOA.

A state's faithful implementation of the Additional Protocol, along with the CSA, allows the

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133 UN General Assembly, Resolution A/RES/79/16, Establishment of a Nuclear-Weapons-Free Zone in the Region of the Middle East, December 2, 2024, https://digitallibrary.un.org/record/4068510.

134 Javad Zarif, "In This Time of Rancour, Fear and War, Peaceful Nuclear Cooperation in the Middle East is Still Possible," *The Guardian*, July 31, 2025, https://www.theguardian.com/commentisfree/2025/jul/31/iran-nuclear-middle-east-war-israel.

135 NPT/CONF.2020/18, March 20, 2020.

136 IAEA, "Status List: Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols," June 30, 2025, https://www.iaea.org/sites/default/files/20/01/sg-agreements-comprehensive-status.pdf. All three countries—Equatorial Guinea, Guinea, and Somalia—either possess only small amounts of nuclear material or do not engage in activities related to the peaceful use of nuclear energy.

137 IAEA, "Status List: Conclusion of Additional Protocols," June 30, 2025.

IAEA Secretariat to draw a so-called "broader conclusion" that "all nuclear material in the State has remained in peaceful activities." This conclusion states that the Agency finds no indication of diversion of declared nuclear material from peaceful nuclear activities, misuse of the facilities for purposes other than those for which it was declared, or the presence of any undeclared nuclear material or activities in that country. At the end of 2024, such a conclusion was drawn for 75 countries. Subsequently, the IAEA implements so-called "integrated safeguards," a term defined as the "optimized combination of all safeguards measures available to the Agency under [CSAs] and [Additional Protocols], to maximize effectiveness and efficiency within available resources." According to the IAEA's "Safeguards Statement for 2024," published in June 2025 and describing the situation in 2024, as of the end of 2024, 71 NNWS had applied integrated safeguards.[138]

The current status of signature and ratification of the CSAs and the Additional Protocols and implementation of integrated safeguards by the NPT NNWS studied in this project is presented in Table 2-1. In addition to the IAEA safeguards, EU countries accept safeguards conducted by EURATOM, and Argentina and Brazil conduct mutual inspections under the bilateral Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC).[139]

Table 2-1: Status of Conclusion and Implementation of IAEA Safeguards Agreements by Non-Nuclear-Weapon States that are NPT Signatories (among countries surveyed) and North Korea

(as of December 2024)

	Comprehensive Safeguards Agreement (Year)*	Additional Protocol (Year)*	Extended Conclusions	Integrated Safeguards
Australia	1974	1997	○	○
Austria	1996	2004	○	○
Brazil	1994			
Canada	1972	2000	○	○
Egypt	1982			
Germany	1977	2004	○	○
Indonesia	1980	1999	○	○
Iran	1974	Signed**		
Japan	1977	1999	○	○
Kazakhstan	1995	2007	○	○
South Korea	1975	2004	○	○
Mexico	1973	2011		
Netherlands	1977	2004	○	○

[138] IAEA, "Safeguards Statement for 2024."

[139] The ABACC stated at the NPT PrepCom, "ABACC has carried out more than 3,600 inspections at nuclear facilities in both countries, including more than 350 unannounced inspections." "Statement of the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC)," Third PrepCom for the 11th NPT RevCon, May 1, 2025.

	Comprehensive Safeguards Agreement (Year)*	Additional Protocol (Year)*	Extended Conclusions	Integrated Safeguards
New Zealand	1972	1998	○	○
Norway	1972	2000	○	○
Poland	2007	2007	○	○
Saudi Arabia	2009			
South Africa	1991	2002	○	○
Sweden	1995	2004	○	○
Switzerland	1978	2005	○	○
Syria	1992			
Türkiye	1981	2001	○	○
North Korea***	1992			

* "(Year)" indicates the year of entry into force for the Comprehensive Safeguards Agreement and the Additional Protocol, respectively.

** Iran signed the Additional Protocol in 2003 and accepted its provisional application under the 2015 JCPOA agreement, but terminated its application in February 2021.

*** Since declaring its withdrawal from the NPT in 1993, North Korea has refused to accept IAEA monitoring and verification, including comprehensive safeguards.

Source: IAEA, "Safeguards Statement for 2024."

For NPT States Parties that conduct only small-scale nuclear activities and have concluded a Small Quantities Protocols (SQPs), revisions or amendments to the Protocol are being requested.[140]

The Director General's report "Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards," submitted to the IAEA General Conference in September 2025, reported that as of June 2025, SQP based on the revised standard texts had entered into force for 86 countries.[141] Among countries that have expressed an intention to introduce nuclear power, Saudi Arabia terminated the application of the SQP in 2024 and began preparations to fully implement a Comprehensive Safeguards Agreement. The IAEA reported Saudi Arabia's termination of the SQP in 2024.[142] Saudi Arabia's Energy Minister Salman stated at the IAEA General Conference in September that, through cooperation with the IAEA to terminate the application of the SQP, the necessary procedural preparations had been completed and that the Comprehensive Safeguards Agreement was fully implemented as of early 2025.[143]

[140] IAEA, GC (68)/RES/12, September 19, 2024.

[141] IAEA, GC (69)/18, August 8, 2025.

[142] Adem Mutluer, "IAEA Applied Safeguards for 190 States - IAEA Report," IAEA, July 21, 2025, https://www.iaea.org/newscenter/news/iaea-applied-safeguards-for-190-states-iaea-report.

[143] Ministry of Energy, the Kingdom of Saudi Arabia, "Saudi Arabia Reaffirms Importance of Strengthening Nuclear and Radiological Emergency Preparedness at IAEA General Conference in Vienna," September 15, 2025. https://www.moenergy.gov.sa/en/media-center/news/69th-iaea-general-conference-held-in-vienna.

B) Compliance with IAEA Safeguards Agreement

According to the "Safeguards Statement for 2024," as of the end of 2024, 137 countries were subject to both CSAs and Additional Protocols (excluding Iran, which suspended provisional application of the Additional Protocol in 2021). Of these, the IAEA concluded that all nuclear material remained in peaceful activities in 75 countries. For the remaining 61 countries, evaluations regarding the absence of undeclared nuclear material and activities were still ongoing; therefore, the IAEA concluded only that declared nuclear material remained in peaceful activities. Among the 45 countries with a CSA in force but without an Additional Protocol, the IAEA concluded that declared nuclear material in 31 countries remained under safeguards for peaceful purposes. However, for the 14 countries parties to the original SQP, no safeguards conclusion could be drawn.[144]

North Korea

In an annual report titled "Application of Safeguards in the Democratic People's Republic of Korea" published in August 2025, the IAEA Director General reported that "since 1994, the Agency has not been able to conduct all necessary safeguards activities provided for in the NPT Safeguards Agreement and since April 2009, Agency inspectors have not been present in the DPRK."[145] The report also described the observations made during the reporting period (August 2024 to August 2025) through remote monitoring and other means as follows.

- Uranium mining and concentration: there were indications of ongoing mining, milling, and concentration activities at the Pyongsan Uranium Mine and the Pyongsan Uranium Concentrate Plant, consistent with activities observed by the Agency during previous years.
- The report also stated the following: "On January 29, 2025, [...] DPRK State media published photographs of General Secretary Kim's visit to 'the nuclear-material production base'. Based on a comparison of these photographs to Dr. Hecker's report and to commercially available satellite imagery of the buildings and annex under construction, the Agency has identified the location as the reported Yongbyon Centrifuge Enrichment Facility. During the reporting period, the Agency observed indications that the Yongbyon Uranium Enrichment Facility continued to operate."
- During the reporting period, the Agency "observed the start of construction work in December 2024 at a location south-west of the 50MW(e) Nuclear Power Plant at the Yongbyon site. [...] The two-story building has dimensions and features, including internal layout, similar to those of the Kangson Uranium Enrichment Facility. The building was externally completed by May 2025, but the construction of support buildings and related infrastructure was still ongoing at the end of the reporting period."
- Kangson Uranium Enrichment Complex: "During the reporting period, there were indications of ongoing activities at the undeclared Kangson Uranium Enrichment Facility. There were also indications of an increase in the cooling capacity of the facility, with additional cooling cells delivered in 2025."

[144] IAEA, "Safeguards Statement for 2024."

[145] IAEA, GOV/2025/51-GC (69)/13, August 18, 2025.

- Graphite Reactor: "The Agency has continued to observe indications of the operation of the 5MW (e) Experimental Nuclear Power Plant, including the discharge of cooling water, throughout the reporting period, with occasional shutdowns of a few days' duration. The Agency observed that the reactor was also shut down for approximately 60 days between mid-August and mid-October 2024. The Agency notes that this shutdown period is of sufficient duration to have enabled the reactor to have been refueled and then to start its seventh operational cycle."
- Other graphite reactors: While some support structures for the 50MW (e) reactor had been demolished previously, more extensive demolition commenced in April 2025 and was ongoing at the end of the reporting period. The 200MW (e) reactor remains in an unfinished and derelict state."
- Light Water Reactor (LWR): "Periods of shutdowns were observed in both September and October 2024, then from early November 2024 to early April 2025, there were indications that the LWR was in stable operation. The LWR was shut down for much of April 2025. Operation resumed during May 2025 and was ongoing at the end of the reporting period, though with occasional, brief periods of shutdown."
- Radiochemical Laboratory (Reprocessing Facility): "Since late January 2025, almost continuous operation of the steam plant has been observed, along with occasional deliveries of chemicals to the Radiochemical Laboratory. These indicators are consistent with a campaign to reprocess the irradiated fuel from the 5MW(e) reactor's sixth operational cycle.[146]

As in the previous year's report, the IAEA stated that "once a political agreement has been reached among the countries concerned, the Agency is ready to return promptly to the DPRK, if requested to do so by the DPRK and subject to approval by the Board of Governors. The DPRK Team within the Department of Safeguards continues to undertake activities to maintain the Agency's enhanced readiness to play its essential role in verifying the DPRK's nuclear programme."[147]

Furthermore, following the suspension of activities by the UN Security Council Panel of Experts on North Korea sanctions after May 2024, the Multilateral Sanctions Monitoring Team (MSMT) established by 11 countries (including Australia, Canada, France, Germany, Japan, the Netherlands, South Korea, the United Kingdom, and the United States) reported on North Korea's nuclear-related activities in its May report as follows:[148]

- In September 2024 and January 2025, the DPRK publicly revealed images of Kim Jong Un inspecting uranium enrichment sites. The Yongbyon nuclear power plant and its 5 MW (e) reactors were observed to be operating throughout 2024, except for intermittent interruptions between August and October.
- The reprocessing operation has likely restarted at the Radiochemical Laboratory at Yongbyon in January 2025.

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[146] Ibid.

[147] Ibid.

[148] Multilateral Sanctions Monitoring Team (MSMT), "Unlawful Military Cooperation including Arms Transfers between North Korea and Russia," May 29, 2025, pp. 26-7.

Iran

Verification and Monitoring

In accordance with domestic legislation enacted in December 2020, Iran suspended the implementation of JCPOA verification measures that exceeded the requirements of its Comprehensive Safeguards Agreement with the IAEA, including the provisional application of the Additional Protocol, in February 2021. Furthermore, in June 2022, Iran decided to remove all equipment for monitoring and surveillance related to the Agency's JCPOA verification measures. In a report published in September 2025, the IAEA stated: "The Agency lost continuity of knowledge in relation to the production and current inventory of centrifuges, rotors and bellows, heavy water and uranium ore concentrate (UOC), which it will not be possible to restore."[149]

Furthermore, Iran continues to fail to implement modified Code 3.1 of the Subsidiary Arrangements to the Safeguards Agreement, which aims to provide the Agency with necessary design information for the organization. The IAEA Board of Governors' June resolution on Iran's safeguards stated that Iran's non-implementation of modified Code 3.1 "obstructs the Agency's visibility of Safeguards relevant activities and thereby undermines the effective implementation of Safeguards."[150]

In September 2023, Iran decided to refuse entry to several inspectors nominated by the IAEA. Discussions on this matter continued throughout 2024, but a new issue concerning the acceptance of inspectors arose in 2025. The IAEA Director General's September 2025 report stated that after an inspection at the FFEP on May 14, inspectors took back to the IAEA headquarters some of the documents used during the inspection. The IAEA returned these documents to Iran on May 26. However, in a letter submitted to the IAEA on August 14, Iran objected to the continued designation of the two inspectors involved in this matter, stating that their actions "constitute a breach of certain provisions under the Comprehensive Safeguards Agreement."[151]

Iran's Foreign Minister and the head of the Atomic Energy Organization of Iran (AEOI) issued a joint statement regarding the IAEA Director General's report, which stated: "As for the appointment of inspectors, while the IAEA currently has appointed 125 inspectors for Iran, the cancellation of the mandate of a small number of them based on the sovereign and indisputable rights of the Islamic Republic (Article 9 of the Comprehensive Safeguards Agreement) is a completely normal action and is in line with the rights of member states of the treaty."[152] The statement also noted that "despite this extensive cooperation by the Iranian side,

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[149] IAEA, GOV/2025/50, September 3, 2025.

[150] IAEA, GOV/2025/38, June 12, 2025.

[151] IAEA, GOV/2025/53, September 3, 2025.

[152] Ministry of Foreign Affairs, the Islamic Republic of Iran, "Joint Statement of the Iranian FM and the AEO of Iran regarding the report of the director general of the IAEA to the Board of Governors meeting," June 1, 2025, https://en.mfa.ir/portal/newsview/767399/Joint-Statement-of-the-Iranian-Foreign-Ministry-and-the-Atomic-Energy-Organization-of-Iran-regarding-the-report-of-the-director-general-of-the-Interna.

the report produced acknowledges Iran's cooperation but does not reflect the actual level of cooperation."[153]

Alleged undeclared activities

Iran maintains that it continues to implement comprehensive safeguards measures, but the issue of past undeclared activities remains unresolved.

In a report to the IAEA Board of Governors dated February 23, 2021, the IAEA Director General summarized the Agency's assessment of issues concerning the possible existence of undeclared nuclear material and activities at four locations potentially related to Iran's clandestine and systematic nuclear development program (the AMAD Plan) from 1989 to 2003. At one of these sites (reported elsewhere as a warehouse in Turquzabad), environmental sampling revealed artificially-produced uranium particles indicating possible uranium conversion, along with low-enriched uranium (LEU) containing U-236 and depleted uranium with a slightly lower proportion of U-235 than natural uranium. At two other locations (Varamin and Marivan), analysis of environmental sampling suggested the presence of artificially-produced uranium particles. At the remaining location (Lavisan-Shian), extensive traces had been erased and the site leveled, leading the IAEA to assess that complementary access would not be worthwhile.[154]

On March 4, 2023, the IAEA and Iran's AEOI issued a joint statement regarding the unresolved safeguards issues at the three sites mentioned above. The statement included that "Iran expressed its readiness to continue its cooperation and provide further information and access to address the outstanding safeguards issues."[155] However, to date, Iran has not provided information that would resolve these issues.

The IAEA's 2024 Safeguards Statement, published in 2025, noted that while the IAEA had proposed reactivating the 2023 joint statement, no significant progress had been made throughout 2024.[156] Furthermore, the IAEA Director General's February 2025 report also stated that no progress had been made towards resolving the outstanding safeguards issues related to Baramin and Turquzabad.[157]

In a resolution adopted on June 12, the IAEA Board of Governors stated that Iran has failed to cooperate fully with the Agency as required by its Safeguards Agreement. The resolution pointed to the following undeclared activities by Iran and called for cooperation with the IAEA:[158]

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153 Ibid.

154 IAEA, GOV/2021/15, February 23, 2021.

155 IAEA, "Joint Statement by the Atomic Energy Organization of Iran (AEOI) and the International Atomic Energy Agency (IAEA)," March 4, 2024, https://www.iaea.org/newscenter/pressreleases/joint-statement-by-the-atomic-energy-organization-of-iran-aeoi-and-the-international-atomic-energy-agency-iaea.

156 IAEA, "The Safeguards Statement for 2024," para. 22.

157 IAEA, GOV/2025/10.

158 IAEA, GOV/2025/38, June 12, 2025.

- Iran has failed to provide the co-operation required under its Safeguards Agreement, [...] repeatedly failing to provide the Agency with technically credible explanations for the presence of uranium particles of anthropogenic origin at several undeclared locations in Iran.
- Iran did not declare nuclear material and nuclear-related activities at three undeclared locations in Iran, specifically, Lavisan-Shian, Varamin, and Turquzabad, and that, because of the lack of technically credible answers by Iran, the Agency is not in a position to determine whether the nuclear material at these undeclared locations in Iran has been consumed, mixed with other declared material, or is still outside of Safeguards.
- Noting with concern the Agency's conclusion that these undeclared locations were part of an undeclared, structured programme carried out by Iran until the early 2000s, and that some of these activities used undeclared nuclear material.
- The material balance of the uranium involved in undeclared uranium metal production experiments conducted at Jabr Ibn Hayan Laboratories (JHL) in 1995-2000 includes an amount of nuclear material still unaccounted for, and that the Agency is not in a position to determine whether this material has been consumed, mixed with other declared material, or is still outside of Safeguards.

Regarding these findings on Iran's undeclared activities, the Iranian government stated the following position in a joint statement published in June by the Foreign Minister and the Head of the AEOI: "In the report, the director general, by relying extensively on forged documents provided by the Zionist regime, has reiterated previous biased and unfounded accusations. The allegations leveled in the current report are based on a few claims about undeclared activities and locations from past decades. This is while Iran has repeatedly declared that it has had no undeclared nuclear sites or activities. At the same time, Iran has given the IAEA access to the alleged locations, allowing sampling, and providing detailed information and explanations on various occasions regarding the history of the alleged sites, providing the necessary cooperation with the agency."[159]

Developments Regarding Safeguards Implementation Following the Attacks on Iran's Enrichment Facilities

Following the June 2025 attacks by Israel and the United States on Iran's enrichment facilities and related sites, and in response to the Iranian government's subsequent policy, the IAEA's activities in Iran were significantly restricted compared to the pre-attack period. The Agency stopped conducting verification activities in Iran at the commencement of the military attacks and, by the end of June 2025, had decided to withdraw all of its inspectors from Iran for safety reasons.[160] Iran enacted legislation in July to suspend cooperation with the IAEA.[161] It included

[159] Ministry of Foreign Affairs, the Islamic Republic of Iran, "Joint Statement of the Iranian FM and the AEO of Iran regarding the report of the director general of the IAEA to the Board of Governors meeting," op. cit.

[160] IAEA, GOV/2025/65, November 12, 2025.

[161] "President Pezeshkian Enforces Law to Suspend Cooperation with U.N. Nuclear Watchdog," *The Islamic Republic News Agency*, July 2, 2025, https://en.irna.ir/news/85878764/President-Pezeshkian-enforces-law-to-suspend-cooperation-with.

halting IAEA on-site inspections, removing cameras monitoring nuclear material movements and the status of nuclear facilities, ceasing the exchange of data and reports with the IAEA, and denying IAEA inspectors access to nuclear facilities.[162] The conditions for resuming cooperation stipulated guarantees of Iran's national sovereignty and territorial integrity, respect for the safety of Iran's nuclear facilities and scientists, and full recognition of Iran's right to the peaceful use of nuclear energy, including uranium enrichment, based on Article IV of the NPT.[163]

The G7, in a joint foreign ministers' statement released on July 1, following the adoption of the law by the Iranian Parliament, called on Iran to "urgently resume full cooperation with the International Atomic Energy Agency (IAEA) as required by its safeguards obligations and to provide the IAEA with verifiable information about all nuclear material in Iran, including by providing access to IAEA inspectors."[164] Russian Foreign Minister Sergey Lavrov also stated after the Iranian parliament's approval of the law: "We are interested in Iran's cooperation with the IAEA continuing."[165]

IAEA Director General Grossi told that technical consultations between the IAEA and Iran have continued since the law's implementation. His statement at the September IAEA Board of Governors meeting indicated that future consultations could lead to the resumption of verification activities in Iran.[166] Meanwhile, Iranian Foreign Minister Araghchi expressed a desire for further consultations with the IAEA on inspection implementation methods and stated that the agreement would be nullified if economic sanctions were reinstated via the snapback.[167]

Despite these demands, on September 9, the Iranian Foreign Minister and the IAEA Director General reached an agreement on "Practical Steps on Safeguards Implementation in Iran pursuant to the NPT Safeguards Agreement following the armed attacks on its safeguarded

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[162] Rahim Farzam, "Iran's Suspension of IAEA Cooperation is a Political Gamble, not a Technical Decision," Center for Iranian Studies, July 3, 2025, https://iramcenter.org/en/irans-suspension-of-iaea-cooperation-is-a-political-gamble-not-a-technical-decision_en-2653.

[163] Darya Dolzikova, "Implications of Strikes on Iran's Nuclear Sites for IAEA Credibility," RUSI, July 2, 2025, https://www.rusi.org/explore-our-research/publications/commentary/implications-strikes-irans-nuclear-sites-iaea-credibility.

[164] U.S. Department of State, "Joint Statement of the G7 Foreign Ministers on Iran and the Middle East," July 1, 2025, https://www.state.gov/releases/office-of-the-spokesperson/2025/07/joint-statement-of-the-g7-foreign-ministers-on-iran-and-the-middle-east.

[165] "Russia Says it Wants Iran to Keep Cooperating with UN Nuclear Watchdog," *Reuters*, June 26, 2025, https://www.reuters.com/world/middle-east/russia-says-it-wants-iran-keep-cooperating-with-un-nuclear-watchdog-2025-06-26.

[166] IAEA, "IAEA Director General's Introductory Statement to the Board of Governors," September 8, 2025, https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-8-september-2025.

[167] "Iran Says More Talks Needed to Bring about IAEA Inspections," *Reuters*, September 10, 2025, https://www.reuters.com/world/middle-east/iran-says-more-talks-needed-bring-about-iaea-inspections-2025-09-10.

nuclear facilities" (Cairo Agreement).[168] The content of the agreement remains confidential.[169] The Director General's report submitted to the IAEA Board of Governors in November stated that "Iran agreed to provide a report for the affected facilities, including the associated nuclear material, at the earliest possible time. For facilities unaffected by the military attacks, the Agency would continue to provide advance notice for inspections and DIVs. It was also agreed that safeguards approaches for each facility would be reviewed at a technical level, consistent with the rights and obligations of Iran and the Agency under the NPT Safeguards Agreement, which remain unaltered."[170]

However, no improvement in Iran's situation was observed under the Cairo Agreement. The IAEA Director General's report noted that reports on facilities affected by the attacks and on nuclear material, as well as nuclear material accountancy reports and updated design information questionnaires for facilities not affected by the attacks, had not been submitted.[171]

The IAEA Board of Governors adopted a resolution on Iran's safeguards on November 20. The resolution requested the IAEA Director General to continue reporting on information such as the implementation of Iran's Safeguards Agreement and the verification of Iran's uranium inventory. The Board expressed its position that Iran must fully and unconditionally comply with the Safeguards Agreement, including the application of the modified Code 3.1, provide accurate information on facilities subject to safeguards without delay, and grant access to facilities to verify this information. The resolution also referred to Iran's legal obligations under relevant UN Security Council resolutions.[172]

Iran declared the termination of the Cairo Agreement following the adoption of the IAEA Board resolution.[173] The spokesperson for the Iranian Ministry of Foreign Affairs announced that Iran had formally notified the IAEA in writing that the Cairo Agreement was considered null and void.[174]

Syria

As for Syria, the IAEA assessed that the facility at Dair Alzour, which was destroyed by an Israeli air raid in September 2007, was very likely a clandestine, undeclared nuclear reactor. Although the IAEA has repeatedly called on Syria to cooperate fully with the Agency to resolve the outstanding issues, Syria had not responded to that request. However, following the collapse of the Bashar al-Assad regime in December 2024, there were signs that Syria's interim

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168 IAEA, GOV/2025/65, November 12, 2025.

169 IAEA, "Statement by IAEA Director General on Iran," September 10, 2025, https://www.iaea.org/newscenter/multimedia/videos/statement-by-iaea-director-general-on-iran.

170 IAEA, GOV/2025/65, November 12, 2025.

171 Ibid.

172 IAEA, GOV/2025/71, November 20, 2025.

173 "Araghchi: Cairo MoU is Officially Considered Terminated," *Islamic Republic News Agency*, November 20, 2025, https://en.irna.ir/news/86002570/Araghchi-Cairo-MoU-is-officially-considered-terminated.

174 "Tehran will React to Anti-Iran Resolution of IAEA BoG: Foreign Ministry Spokesperson," *Islamic Republic News Agency*, November 21, 2025, https://en.irna.ir/news/86002943/Tehran-will-react-to-anti-Iran-resolution-of-IAEA-BoG-Foreign.

government began cooperation with the IAEA. The IAEA's "2024 Safeguards Statement," published in 2025, included the IAEA Director General welcoming Syria's resumption of cooperation with the IAEA.[175] In June 2025, Syrian Interim President Ahmed al-Sharaa, during a meeting with IAEA Director General Grossi, granted the IAEA access to Dair Alzour.[176] In his report to the IAEA Board of Governors that same month, Director General Grossi stated: "Hopefully we are starting to turn the page for what has been one of the most complex issues on the non-proliferation agenda for many, many years."[177]

The "2024 Safeguards Statement" also reported on safeguards activities conducted in Syria, including the physical inventory verification and design information verification carried out at the Miniature Neutron Source Reactor (MNSR) near Damascus in 2024. It concluded that the nuclear material declared by Syria remained confined to peaceful activities.[178]

Acquisition of Naval Nuclear Propulsion by Non-Nuclear-Weapon States

Regarding acquisition of naval nuclear propulsion (specifically, for nuclear submarines) by NNWS, detailed plans were disclosed in terms of the provision of nuclear submarines to Australia at the AUKUS (Australia-U.K.-U.S. Security Cooperation Partnership) summit meeting on March 13, 2023. They included the delivery of three U.S. nuclear-powered attack submarines (Virginia-class) to Australia in the early 2030s, and delivery by the United Kingdom of the nuclear-powered attack submarine SSN-AUKUS in the late 2030s. In addition, Australia will deliver the first SSN-AUKUS built in Australia to the Royal Australian Navy in the early 2040s.[179] In 2025, investment in facilities and institutional preparations for the introduction of the SSN-AUKUS also moved forward.

On January 17, the trilateral AUKUS Naval Nuclear Propulsion Agreement (ANNPA) entered into force.[180] Under this agreement, the three nations communicate and exchange information on naval nuclear propulsion, while the United Kingdom and the United States agree to transfer nuclear propulsion-related equipment and nuclear materials to Australia.[181]

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175 IAEA, *The Safeguards Implementation Report for 2024*, para. 26.

176 Gavin Blackburn, "Syria to Give UN Inspectors Immediate Access to Former Nuclear Sites, IAEA says," *Euronews*, June 5, 2025, https://www.euronews.com/my-europe/2025/06/05/syria-to-give-un-inspectors-immediate-access-to-former-nuclear-sites-iaea-says.

177 Emma Midgley, "Director General Briefs Board on Iran Developments, Syria, Ukraine and More," IAEA, June 10, 2025, https://www.iaea.org/newscenter/news/director-general-briefs-board-on-iran-developments-syria-ukraine-and-more,

178 *The Safeguards Implementation Report for 2024*, paras. 26-30.

179 Prime Minister's Office, "Joint Leaders Statement on AUKUS: 13 March 2023," Gov.UK, March 13, 2023, https://www.gov.uk/government/publications/joint-leaders-statement-on-aukus-13-march-2023/joint-leaders-statement-on-aukus-13-march-2023.

180 Australian Government, "Joint Statement on Australia-UK Ministerial Consultations (AUKMIN) July 2025," July 25, 2025, https://www.minister.defence.gov.au/statements/2025-07-25/joint-statement-australia-uk-ministerial-consultations-aukmin-july-2025.

181 Parliament of Australia, Joint Standing Committee on Treaties, *Agreement among the Government of Australia, the Government of the U.K., and the Government of the U.S. for Cooperation Related to Naval Nuclear Propulsion, Report 224, Chapter 2 - AUKUS treaty*, November 2024, https://www.aph.gov.au/Parliam entary_Business/Committees/Joint/Treaties/NuclearPropulsion/Report/Chapter_2_-_AUKUS_treaty.

On July 26, Australia and the United Kingdom signed the Nuclear-Powered Submarine Partnership and Collaboration Treaty (the Geelong Treaty). This treaty aims to provide comprehensive cooperation on the design, build, operation, sustainment, and disposal of the SSN-AUKUS, as well as support for the personnel, infrastructure, and regulatory systems required for the program. A joint statement by the defense ministers of both countries issued at the treaty signing emphasized that this treaty is "consistent with Australia's and the UK's respective international nuclear non-proliferation obligations, including under the Treaty on the Non-Proliferation of Nuclear Weapons, the South Pacific Nuclear Free Zone Treaty and its Protocols, Australia's safeguards agreements with the International Atomic Energy Agency, and the trilateral AUKUS Naval Nuclear Propulsion Agreement."[182]

Regarding regulatory development, on November 1, 2025, Australia announced the establishment of the Australian Naval Nuclear Power Safety Regulator, responsible for regulating and overseeing the Navy's nuclear propulsion capabilities.[183]

Meanwhile, Australia continued consultations with the IAEA regarding safeguards for SSN-AUKUS-related activities. In a general debate speech delivered at the IAEA General Conference in September 2025, the Australian representative stated the following: "Bilateral technical consultations between Australia and the IAEA on a safeguards and verification approach are ongoing. Australia's program will be subject to a robust package of measures that will enable the IAEA to continue to meet its technical objectives for Australia at all stages of the submarines' lifecycle. We remain committed to keeping the international community updated on relevant developments, and support the Director General's ongoing commitment to report to the Board on naval nuclear propulsion programs as he judges appropriate."[184]

China, which has harshly criticized the provision of nuclear submarines by AUKUS as seriously undermining the international nuclear non-proliferation system, submitted to the IAEA Secretariat the summary of a workshop it hosted in April 2025.[185] The summary highlighted points emphasized by panelists and commentators, including that the AUKUS nuclear submarine plan could impact "the credibility, consistency, and universality of the IAEA's Comprehensive Safeguards regime," and that "it is essential that all Member States participate on an equal footing in the discussion and decision-making processes."[186]

Furthermore, at the 2025 IAEA General Conference, a session on this issue entitled "Transfer

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[182] Australian Government, "Joint Statement on the Australia United Kingdom Nuclear-Powered Submarine Partnership and Collaboration Treaty," July 26, 2025, https://www.minister.defence.gov.au/statements/2025-07-26/joint-statement-australia-united-kingdom-nuclear-powered-submarine-partnership-collaboration-treaty.

[183] Australian Government, "An AUKUS Milestone - Launch of the Australian Naval Nuclear Power Safety Regulator," November 1, 2025, https://www.minister.defence.gov.au/media-releases/2025-11-01/aukus-milestone-launch-australian-naval-nuclear-power-safety-regulator.

[184] Australian Embassy and Permanent Mission to the United Nation, Vienna, "69th Regular Session of the IAEA General Conference Australia's National Statement," September 17, 2025, https://vienna.mission.gov.au/vien/GC69NatStatement2025.html.

[185] IAEA, "Communication from the Permanent Mission of the People's Republic of China to the Agency (INFCIRC/1293)," May 27, 2025.

[186] Ibid., pp. 2-4.

of the nuclear materials in the context of AUKUS and its safeguards in all aspects under the NPT" was convened at China's request, as had been the case the previous year.[187] During the session, the Chinese representative asserted that "Member States must uphold the highest non-proliferation standards to prevent AUKUS from having a negative impact on the NPT and the comprehensive safeguards regime," presenting this as the consensus reached at the aforementioned April workshop. Moreover, he stated that "Member States should continue to hold open, inclusive, democratic, transparent, meaningful and sustainable intergovernmental discussions on AUKUS on the basis of equality and mutual respect."[188]

Pakistan and Russia also stated that this issue should be discussed more broadly. Pakistan argued that "there was a need for open and inclusive discussion concerning verification in relation to military naval nuclear propulsion."[189] Russia also stated that it "had not lost hope that the AUKUS partners would reconsider their position and transform their negotiations into a broad intergovernmental discussion." Russia also mentioned the possibility that the position that SSN-AUKUS would not carry nuclear weapons could change in the future.[190]

In response, Australia stated that "the AUKUS partners did not support the inclusion of that politically motivated and unnecessary item" in the IAEA General Conference session. It further stated: "It was regrettable that the current item, at meetings of both the General Conference and the Board, continued to be used to cast doubt on the Agency's clear authority to negotiate directly and in confidence with Member States on safeguards implementation. As confirmed by the Director General's clear statements on the topic, the Agency's engagement with Australia in that regard was entirely within its mandate under its Statute and safeguards agreements approved by the Board."[191]

Japan and South Korea expressed their support for the IAEA's efforts on this issue.[192] Egypt stated that the safeguards arrangement concerning SSN-AUKUS would set a precedent for the safeguards system and emphasized that the issue should "therefore be addressed in an institutional and inclusive manner, with the utmost transparency, objectivity and non-discrimination."[193] Other countries expressed concern that the acquisition of nuclear submarines through AUKUS could set a precedent, leading to the initiation of other similar plans.[194]

During the Board of Governors meeting preceding the IAEA General Conference, the United Kingdom, representing AUKUS, delivered a speech opposing the inclusion of this issue as an agenda item for the General Conference, stating that "it falsely implies an active compliance

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187 IAEA, GC (69)/1/Add.2, August 15, 2025.

188 IAEA, GC (69)/OR.10, December, 2025, p.1, https://www.iaea.org/sites/default/files/gc/gc69-or10.pdf.

189 Ibid., pp. 2-3.

190 Ibid., p. 4.

191 Ibid., pp. 5-6.

192 Ibid., p. 8.

193 Ibid., pp. 6-7.

194 For example, Cuba stated that "other programmes to build nuclear powered submarines might be initiated on the basis of the AUKUS model, raising serious proliferation concerns," Ibid., p. 7.

problem where none exists and continues to distract from other matters that require the Board's attention."[195]

Furthermore, at the 2025 NPT PrepCom, while Iran stated that the NPT and Comprehensive Safeguards Agreements do not prohibit the development and operation of naval nuclear propulsion reactors for non-prohibited activities by non-nuclear-weapon states, it asserted that "Australia's potential funding of nuclear-armed submarines for use by a Nuclear-Weapon State constitutes a clear breach of the spirit and letter of the Non-Proliferation Treaty (NPT), of which Australia is a member."[196]

Brazil, the first non-nuclear-weapon state to proceed with building a nuclear-powered submarine for its navy, has been cutting steel and prototyping the propulsion reactor since October 2023.[197] In a speech at the 2025 IAEA General Conference, it was stated that consultations are underway for a special verification procedure based on a quadripartite agreement between the IAEA, ABACC, Brazil, and Argentina. The purpose of this special verification procedure is to ensure the IAEA's ability to continuously fulfill its responsibilities for nuclear non-proliferation while protecting highly sensitive operational and technical information related to Brazil's nuclear submarine propulsion program. The speech also mentioned the establishment by Brazil in 2022 of the Naval Secretariat for Nuclear Safety and Quality (SecNSNQ) as a related initiative. SecNSNQ, alongside the National Nuclear Safety Authority (ANSN), Brazil's nuclear regulatory authority, is tasked with overseeing safeguards for the Navy's nuclear activities.[198]

Although discussions with the IAEA have not yet begun, it was reported in October 2025 that during a summit between South Korea and the United States, the United States agreed to supply nuclear submarines and nuclear material for propulsion to South Korea. During the summit, South Korean President Lee Jae-myung requested nuclear fuel for nuclear submarines from the United States, stating: "If you allow us to supply fuel [...] if we build several submarines equipped with conventional weapons [...] the U.S. military's burden could be significantly reduced."[199] President Trump posted the following on his social media after

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[195] Foreign, Commonwealth & Development Office, "Nuclear safeguards: AUKUS statement to the IAEA Board of Governors, September 2025," Gov.UK, September 11, 2025, https://www.gov.uk/government/speeches/nuclear-safeguards-aukus-statement-to-the-iaea-board-of-governors-september-2025.

[196] "Statement by Iran," Cluster 2, Third Preparatory Committee for the 11th NPT RevCon.

[197] In October 2023, steel cutting for nuclear submarines took place at a ceremony involving the Brazilian Navy and related companies. Reports indicated that steel cutting continued in 2025, and reports indicated that a prototype propulsion reactor was being developed. Richard Sterk, "Construction Starts on Brazil's First Nuclear Submarine," *Defense and Security Monitor*, November 13, 2023, https://dsm.forecastinternational.com/2023/11/13/construction-starts-on-brazils-first-nuclear-submarine; Valentina Angaramo Berrone, "PROSUB Program: implications of the development of the first nuclear-powered submarine of the Brazilian Navy and its impact on the region," *Zona Militar*, November 1, 2025, https://www.zona-militar.com/en/2025/11/01/prosub-program-implications-of-the-development-of-the-first-nuclear-powered-submarine-of-the-brazilian-navy-and-its-impact-on-the-region.

[198] Luiza Delaflora Cassol and James Revill, *Strengthening the NPT Safeguards Regime for Naval Nuclear Propulsion Development: Event* Summary, UNDIR, April 2025, p. 14, https://unidir.org/wp-content/uploads/2025/04/UNIDIR_Strengthening_NPT_Safeguards_Regime_Naval_Nuclear_Propulsion_Development_Event_Summary.pdf.

[199] "South Korea's Lee Asks Trump for Fuel Used by Nuclear-Powered Submarines," *Reuters*, October

the summit: "I have given them approval to build a Nuclear Powered Submarine, rather than the old fashioned, and far less nimble, diesel powered Submarines that they have now." In the same post, he mentioned that this submarine will be built at a Philadelphia shipyard acquired by a South Korean company in 2024.[200] Senior officials from the South Korean government and military have commented on the timeline for acquiring the nuclear submarine and the government's internal promotion structure.[201] On November 13, 2025, South Korea and the United States released a fact sheet regarding the previous month's summit. Under the section titled "Furthering Our Maritime and Nuclear Partnership," it stated: "The United States has given approval for the ROK to build nuclear-powered attack submarines. The United States will work closely with the ROK to advance requirements for this shipbuilding project, including avenues to source fuel."[202]

In response, Wi Sung-lac, Director of the National Security Office at the South Korean Presidential Office, stated: "The discussions between the leaders were conducted from start to finish on the premise that the submarines would be built in South Korea."[203] Regarding the developments to build nuclear-powered submarines in South Korea, Chinese Ambassador to South Korea Dai Bing stated: "South Korea-U.S. cooperation on nuclear-powered submarines is an issue directly related to the global nuclear nonproliferation regime, and to stability on the peninsula and in the region."[204]

In Japan, a report by the Ministry of Defense's "Expert Panel on Fundamental Strengthening

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29, 2025, https://www.reuters.com/world/china/south-koreas-lee-asks-trump-fuel-used-by-nuclear-powered-submarines-2025-10-29. Additionally, within South Korea, the development of nuclear submarines was considered during the 2003 Roh Moo-hyun administration, and its government officials also made statements regarding its possession of nuclear submarines under the Moon Jae-in administration. For past developments, see the following. Lami Kim, "Has South Korea Renounced 'Nuclear Hedging'?" *Bulletin of the Atomic Scientists*, June 27, 2017, https://thebulletin.org/2017/06/has-south-korea-renounced-nuclear-hedging.

200 Josh Smith, David Brunnstrom and Costas Pitas, "Trump Says South Korea Has Approval to Build Nuclear-Powered Submarine," *Reuters*, October 30, 2025. https://www.reuters.com/world/china/trump-says-south-korea-has-approval-build-nuclear-powered-submarine-2025-10-29/; Ethan Gossrow, "USA Gives South Korea Green Light to Build Nuclear Submarines," *Naval News*, October 31, 2025, https://www.navalnews.com/naval-news/2025/10/usa-gives-south-korea-green-light-to-build-nuclear-submarines/.

201 "S. Korea Likely Needs 10 Years to Build Nuclear-Powered Sub: Navy Chief," *The Korea Times*, October 30, 2025, https://www.koreatimes.co.kr/southkorea/defense/20251030/s-korea-likely-needs-10-yrs-to-build-nuclear-powered-sub-navy-chief; Jeong Jae-Hong, "For Korea's Ambitious Nuclear Submarine Project, it's Full Steam Ahead," *Korea JoongAng Daily*, October 31, 2025, https://koreajoongangdaily.joins.com/news/2025-10-31/national/defense/For-Koreas-ambitious-nuclear-submarine-project-its-full-steam-ahead-/2433889.

202 White House, "Joint Fact Sheet on President Donald J. Trump's Meeting with President Lee Jae Myung," November 13, 2025, https://www.whitehouse.gov/fact-sheets/2025/11/joint-fact-sheet-on-president-donald-j-trumps-meeting-with-president-lee-jae-myung/.

203 Park Sang-ki, "South Korea, US Agree on Nuclear Submarine Framework," *The Chosun Daily*, November 14, 2025, https://www.chosun.com/english/national-en/2025/11/14/EL4MBFCH65GATKZWIDBCYRWNCA/.

204 Park Boram, "Chinese Envoy Voices Concerns, Calls for Prudence in Seoul's Pursuit of Nuclear Submarine," *Yonhap News Agency*, November 14, 2025, https://en.yna.co.kr/view/AEN20251114002600315.

of Defense Capabilities" was published on September 19, 2025. The section on the introduction of submarines equipped with vertical launch systems (VLS) stated the following: "Necessary research and technological development should be conducted, including consideration of utilizing next generation propulsion systems."[205] In response to the report, then–Defense Minister Gen Nakatani stated at a press conference on September 26, when asked about the necessity, challenges, advantages, and disadvantages of introducing nuclear submarines, that no specific studies were being conducted at that time.[206]

At a press conference on October 22, Defense Minister Shinjiro Koizumi responded to a question about utilizing nuclear power as propulsion for VLS-equipped submarines, stating: "We wish to consider measures to enhance deterrence and response capabilities without excluding any options."[207] Furthermore, at a press conference on November 7, he stated: "My view is that we should not dismiss discussion simply because it involves nuclear power."[208]

Issues concerning Ukraine

Ukraine has adhered to its Comprehensive Safeguards Agreement and Additional Protocol with the IAEA. According to the IAEA Safeguards Statement 2019, integrated safeguards were applied to Ukraine. While the "Safeguards Statement 2020" indicated that a broader conclusion could not be drawn for Ukraine, the United States and the EU noted that this was not Ukraine's fault, but rather that Russia's occupation of Crimea and the activities of Russian-backed armed groups in eastern Ukraine prevented the IAEA from obtaining the information and access necessary to draw a broader conclusion.[209]

In 2022, the IAEA's safeguards implementation was repeatedly challenged by Russia's aggression against Ukraine and its armed attacks against and occupation of the Chernobyl and Zaporizhzhia nuclear power plants. Following previous statements, the IAEA "Safeguards Statement 2024" indicated that "the armed conflict in Ukraine that began in late February 2022 created unprecedented challenges for the Agency in the implementation of safeguards in Ukraine under the CSA (INFCIRC/550) and the AP (INFCIRC/550/Add.1). Nevertheless, the Agency continued to undertake its vital verification role in Ukraine throughout the year and was able to conduct sufficient in-field verification activities necessary to draw the safeguards conclusion for Ukraine for 2024."[210]

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[205] Japan Ministry of Defense, "Summary of Recommendations from the 'Expert Panel on Fundamental Reinforcement of Defense Capabilities'," September 19, 2025, https://www.mod.go.jp/j/policy/agenda/meeting/drastic-reinforcement/pdf/siryo06_01_en.pdf.

[206] Japan Ministry of Defense, "Defense Minister Press Conference," (In Japanese) September 26, 2025, https://www.mod.go.jp/j/press/kisha/2025/0926a.html.

[207] Japan Ministry of Defense, "Defense Minister Press Conference," (In Japanese) October 22, 2025, https://www.mod.go.jp/j/press/kisha/2025/1022a_r.html.

[208] Japan Ministry of Defense, "Defense Minister Press Conference," (In Japanese) November 7, 2025, https://www.mod.go.jp/j/press/kisha/2025/1107a.html.

[209] "Statement by the United States," IAEA Board of Governors, June 9, 2021, https://vienna.usmission.gov/iaea-bog-2020-safeguards-implementation-report/; "Statement by the EU," IAEA Board of Governors, June 7-11, 2021.

[210] IAEA, "Safeguards Statement for 2024."

The resolution on "Nuclear Safety, Security and Safeguards in Ukraine" adopted at the IAEA General Conference in September 2025 called for "the urgent withdrawal of all unauthorized military and other unauthorized personnel from Ukraine's ZNPP and for the plant to be immediately returned to the full control of the competent Ukrainian authorities to ensure its safety and security and in order for the Agency to conduct safe, efficient, full and effective safeguards implementation, including physical verification activities at the ZNPP, in accordance with Ukraine's comprehensive safeguards agreement and additional protocol."[211]

(3) IAEA Safeguards Applied to NWS and Non-Parties to the NPT

Under the NPT, NWS are not required to conclude a CSA with the IAEA. However, to alleviate concerns about the discriminatory nature of the NPT, the NWS have voluntarily agreed to apply safeguards (VOA) to some of their nuclear facilities and fissile material that are not involved in military activities.

According to the 2024 IAEA Annual Report published in July 2025, the number and types of facilities in NWS that were under the IAEA safeguards or contained nuclear material subject to safeguards in 2024 are as follows (the Agency does not publish the number of inspections):[212]

- China: 1 power reactor, 1 enrichment facility
- France: 1 fuel fabrication plant, 1 reprocessing plant, 1 enrichment facility
- Russia: 1 separate storage facility
- United Kingdom: 1 enrichment facility, 2 separate storage facilities
- United States: 1 separate storage facility

In its "2024 Safeguards Statement," the IAEA stated the following with regard to the five NWS: "Safeguards were implemented with regard to declared nuclear material in selected facilities in all five States. For these States, the Secretariat found no indication of the undeclared withdrawal from safeguards of nuclear material to which safeguards had been applied. On this basis, the Secretariat concluded that, for these States, nuclear material in selected facilities to which safeguards had been applied remained in peaceful activities or had been withdrawn from safeguards as provided for in the agreements."[213]

Each NWS has already concluded an IAEA Additional Protocol. Among these, the U.S. Additional Protocol contains provisions on complementary access similar to those in Additional Protocols concluded by NNWS, making the United States the first nuclear-weapon state to accept such provisions. The Additional Protocols of France and the United Kingdom contain provisions on complementary access, albeit limited. In contrast, compared to the above three nuclear-weapon states, the application of IAEA safeguards to nuclear facilities in China and Russia is limited, and their Additional Protocols do not contain provisions on complementary access.

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[211] IAEA, GC (69)/RES/14, September 18, 2025.

[212] *IAEA Annual Report for 2024 Annex Information*, GC (69)/3, Table A42(a), pp. 58-59.

[213] IAEA, "Safeguards Statement for 2024."

France stated in its national report submitted to the 10th NPT Review Conference (2022) that all facilities possessing civilian nuclear material are subject to EURATOM safeguards inspections, and that certain nuclear fuel cycle facilities (such as uranium enrichment plants, reprocessing plants, and MOX fuel fabrication plants) are subject to IAEA safeguards in addition to EURATOM safeguards.[214] In 2024, France had 17 facilities (comprising 38 Material Balance Areas) subject to regular IAEA inspections. Among these, inspections were conducted at three facilities selected by the IAEA: the reprocessing facility at La Hague, the enrichment facility at Georges Besse, and the MOX fabrication plant at Marcoule. In addition, inspections that year totaled 10 visits and 61 man-days.[215]

The U.K. also stated in its national report that since 1998, all enrichment and reprocessing activities have been conducted under safeguards. It further noted that the safeguards agreement with the IAEA permits the application of safeguards to all nuclear material or special fissionable material at facilities within the United Kingdom, except for exceptions based on national security reasons.[216] The U.K. Office for Nuclear Regulation (ONR) explained in its 2024 Safeguards Annual Report that 37 inspections were conducted by the IAEA during the reporting period.[217] Due to the United Kingdom's withdrawal from the EU, EURATOM safeguards are no longer implemented in the United Kingdom.

Among the non-NPT states, India has concluded an India-specific safeguards agreement (INFCIRC/754), under which India has designated all civilian nuclear facilities subject to the safeguards, and the declared nuclear materials and facilities have been inspected by the IAEA. Israel and Pakistan have concluded facility-specific safeguards agreements based on INFCIRC/66.Rev.2. These non-NPT states have accepted IAEA inspections of the facilities that they declare are subject to these agreements.

According to the IAEA Annual Report 2024, the facilities placed under IAEA safeguards or containing safeguarded nuclear material in non-NPT states as of December 31, 2023, are as listed below. The IAEA does not publish the number of inspections conducted in those countries.[218]

- India: 11 power reactors, 3 fuel fabrication plants, 2 separate storage facilities
- Israel: 1 research reactor
- Pakistan: 7 power reactors, 2 research reactors, 1 separate storage facility

Regarding these countries' activities in 2024, the IAEA "concluded that nuclear material, facilities or other items to which safeguards had been applied remained in peaceful

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214 NPT/CONF.2020/42/Rev.1, August 1, 2022.

215 "IAEA Safeguards," Euratom Technical Committee, May 27, 2025, https://www.cte.gouv.fr/ english/ Pages/IAEA-and-Euratom-controls/iaeasafeguards.aspx.

216 NPT/CONF.2020/33, November 5, 2021. The UK is not subject to EURATOM safeguards due to its withdrawal from the EU.

217 Office for Nuclear Regulation, *Safeguards Annual Report 2024*, p. 3, https://www.onr.org. uk/media/ hjabr0jc/onr-safeguards-annual-report-2024.docx.

218 *IAEA Annual Report for 2024*, GC (69)/3, Table A42(a), pp. 58-59.

activities."[219]

In terms of protocols additional to non-NPT states' safeguards agreements (which differ significantly from the model Additional Protocol), the India-IAEA Additional Protocol entered into force in July 2014. This Additional Protocol is similar to those the IAEA concluded with China and Russia, with provisions on providing information and protecting classified information, but not on complementary access. No negotiation has begun to date on similar protocols with Israel or Pakistan. Some NNWS, including the NPDI members, have called on the NWS for further application of the IAEA safeguards to their nuclear facilities to alleviate a discriminative nature that NNWS are obliged to accept full-scope safeguards whereas NWS are not.[220] At the 2025 NPT PrepCom, a working paper submitted by NAM countries called on NWS to accept comprehensive safeguards.[221]

(4) Cooperation with the IAEA

One of the most important measures to strengthen the effectiveness of the IAEA safeguards system is to promote the universal application of the Additional Protocol. Among the countries surveyed in this project, Australia, Austria, Canada, France, Germany, Japan, South Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, Türkiye, the UAE, the United Kingdom and the United States consider the Additional Protocol "an integral part" of the current IAEA safeguards system and have expressed their support for the universalization of the Additional Protocol.[222]

On the other hand, the NAM countries (with some exceptions) argue that the conclusion of the Additional Protocol should remain a voluntary measure for the NPT states parties, and they oppose making its conclusion a standard for the IAEA safeguards system. A working paper on safeguards submitted by NAM countries to the 2025 NPT PrepCom stated that "it is fundamental to make a clear distinction between legal obligations and voluntary confidence-building measures and that such voluntary undertakings shall not be turned into legal safeguards obligations."[223]

Furthermore, Brazil stated that "the Additional Protocol is a voluntary measure, and its adoption is a sovereign decision of a State. Article III of the NPT cannot be overturned." On that basis, Brazil referred to Action 30 of the Action Plan adopted at the 2010 NPT Review Conference, noting that "on that note, it is worth recalling that [...] 'comprehensive safeguards and additional protocols should be universally applied once the complete elimination of nuclear weapons has been achieved.'"[224]

Iran has also consistently argued that the standardization and calls for acceptance of the

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219 IAEA "Safeguards Statement for 2024."

220 NPT/CONF.2015/PC. II/WP.23, April 5, 2013.

221 NPT/CONF.2026/PC.III/WP.27, April 1, 2025.

222 NPT/CONF.2026/PC.III/WP.15, March 5, 2025.

223 NPT/CONF.2026/PC.III/WP.27, April 1, 2025.

224 "Statement by Brazil," Third PrepCom for the 11th NPT RevCon, May 5, 2025.

Additional Protocol are unacceptable.[225] At the 2025 NPT PrepCom, Iran stated that "any demand for Non-Nuclear-Weapon States with comprehensive safeguards agreements to accept additional commitments beyond their obligations is unacceptable."[226]

Indonesia stated that it has "consistently met its non-proliferation obligations, including through the implementation of a Comprehensive Safeguards Agreement (CSA) with the IAEA and the attainment of a broader conclusion under the Additional Protocol (AP)." At the same time, Indonesia pointed to challenges related to the Additional Protocol, noting that "for states with an Additional Protocol (AP) in force, the focus should also be on addressing the fundamental incompatibility of exempting any nuclear material or facilities from safeguards under the AP."[227]

This position was also supported by Russia: "We note the significance of the Additional Protocol to the IAEA Safeguards Agreement for ensuring confidence in the peaceful nature of all nuclear material in the country and the country's nuclear activities. At the same time, it is our firm belief that concluding such additional protocols remains a voluntary step."[228]

The 2025 IAEA General Conference resolution entitled "Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards" referred to the Additional Protocol as follows, consistent with the previous year's resolution:[229]

- It is the sovereign decision of any State to conclude an additional protocol, but once in force, the additional protocol is a legal obligation, encourages all States which have not yet done so to conclude and to bring into force an additional protocol as soon as possible and to implement them provisionally pending their entry into force in conformity with their national legislation.
- In the case of a State with a comprehensive safeguards agreement supplemented by an additional protocol in force, these measures represent the enhanced verification standard for that State.

The IAEA has developed and approved the "state-level approach (SLA)" based on a state-level concept (SLC) under which the Agency considers a broad range of information about a country's nuclear capabilities and tailors its safeguards activities in each country accordingly, to make IAEA safeguards more effective and efficient.

According to the report on "Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards," during the reporting period from July 1, 2024, to June 30, 2025, the IAEA developed new SLAs for three countries where extended conclusions were drawn and updated SLAs for 12 countries. As a result, the number of countries in which SLAs based on improved methodologies have been implemented increased to 45 countries.[230]

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[225] For example, "Statement of Iran," Cluster 2, First PrepCom for the 11th NPT RevCon, August 7, 2023.

[226] "Statement by Iran," Third PrepCom for the 11th NPT RevCon, May 5, 2025.

[227] "Statement by Indonesia," Third PrepCom for the 11th NPT RevCon, May 5, 2025.

[228] "Statement by Russia," Cluster 2, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

[229] IAEA, GC (69)/RES/18, August 8, 2025.

[230] Ibid.

Regarding research and development on safeguards technologies, an interim program entitled "Development and Implementation Support Programme for Nuclear Verification 2024-2025" has been implemented under the IAEA's Long-Term Plan.[231] Twenty-four countries—including Australia, Brazil, Canada, China, France, Germany, Japan, the Republic of Korea, the Netherlands, Norway, Russia, South Africa, Sweden, Switzerland, the United Kingdom, and the United States—as well as the European Commission (EC), have participated in this program.[232]

According to data published by the IAEA in September 2025, as of September 12, Indonesia, Iran, and Syria were the only countries under review in this *Report* that had not paid their 2025 contributions to the IAEA.[233]

(5) Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies

A) Establishment and Implementation of the National Control Systems

Regarding the establishment and implementation status of national control systems for nuclear-related export controls, no significant developments were observed in 2025. Among the countries surveyed, Australia, Austria, Canada, France, Germany, Japan, South Korea, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, the United Kingdom and the United States participate in four international export control regimes, including the Nuclear Suppliers Group (NSG).[234] All of these countries have established national control systems, including relevant legislation and enforcement structures. In addition to list-based controls, they have implemented catch-all controls applicable where goods or services (including technology) not listed could be used in the development or production of weapons of mass destruction or conventional weapons. These countries have therefore steadily and appropriately implemented nuclear-related export controls.

In these countries, reviews of regulatory frameworks are also being conducted. For example, Canada announced a review of its "Nuclear Non-proliferation Import and Export Control Regulations" as part of its 2024–2026 regulatory plan. This revision is intended to align control lists with international export control regimes, introduce license exemptions, and modify the information required to be submitted in export and import applications.[235]

Efforts to strengthen export controls through outreach to countries not participating in export control regimes are also underway. For example, Japan has annually hosted the Asia Export

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231 IAEA, "IAEA Department of Safeguards Long-Term R&D Plan, 2012-2023," January 2013.

232 IAEA, "Development and Implementation Support Programme for Nuclear Verification 2024-2025," January 2024.

233 GC (69)/INF/7, September 12, 2025.

234 Aside from the NSG, Australia Group (AG), Missile Technology Control Regime (MTCR), and Wassenaar Arrangement (WA).

235 "Regulations Amending Certain Regulations Made Under the Nuclear Safety and Control Act (Imports, Exports and Safeguards)," *Canada Gazette*, Part I, Volume 158, Number 13, March 30, 2024. https://canadagazette.gc.ca/rp-pr/p1/2024/2024-03-30/html/reg1-eng.html.

Control Seminar, inviting Asian countries and major non-regional states to promote Asian and international non-proliferation efforts (the 2021 seminar was canceled due to the COVID-19 pandemic). Approximately 170 participants from 32 countries and regions and six international organizations attended the 31st Asia Export Control Seminar in February 2025. Discussions covered export control efforts in Asia, outreach regarding intangible technology transfers at universities and research institutions, and best practices in law enforcement.[236]

Furthermore, in a working paper submitted to the 2025 NPT PrepCom, the Vienna Group of Ten reaffirmed that "each State party to the Non-Proliferation Treaty is responsible for ensuring that its nuclear-related exports do not directly or indirectly assist in the development of nuclear weapons or other nuclear explosive devices and that such exports are conducted in full conformity with the objectives and undertakings of the Treaty."[237]

Among the countries under review other than those mentioned above, the Nuclear Suppliers Group (NSG) member states are Brazil, China, Kazakhstan, Mexico, Russia, South Africa and Türkiye. These seven countries have also established domestic implementation systems for nuclear-related export controls, including the application of catch-all controls.

Türkiye published new regulations on the import and export of nuclear-related materials and equipment on October 9, 2025. It is said to have established a framework covering the import, export, and re-export of related technologies.[238]

Regarding the countries covered by this survey that are not members of the NSG, Egypt, Indonesia and Saudi Arabia have not yet established export control systems or frameworks aligned with international export control regimes. In Indonesia, discussions were held in August 2024 at the country's nuclear regulatory authority on developing an institutional framework for strategic trade controls on nuclear-related equipment. One of the objectives of these discussions was explained as follows: since Indonesia signed the Additional Protocol on September 29, 1999, which requires the submission of quarterly declarations on export and import activities involving specified equipment (dual-use nuclear equipment and materials) pursuant to Annex II of the Additional Protocol, an export control mechanism for dual-use equipment and materials is therefore necessary.[239]

India, Israel and Pakistan, all non-NPT signatories, have established export control systems that include catch-all regulations. Discussions regarding India's participation as a member of the NSG have continued, but no consensus among NSG member states was reached in 2025.

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[236] Ministry of Economy, Trade and Industry of Japan, "31st Asian Export Control Seminar Held," February 28, 2025, https://www.meti.go.jp/english/press/2025/0228_002.html; Ministry of Foreign Affairs of Japan, "The 31st Asian Export Control Seminar," February 28, 2025, https://www.mofa.go.jp/dns/n_s_ne/pageite_000001_00002.html.

[237] NPT/CONF.2026/PC.III/WP.15, March 3, 2025.

[238] "Türkiye's New Nuclear Rules Raise Transparency Concerns as Key Decisions Remain Behind Closed Doors," *Nordic Monitor*, October 14, 2025, https://nordicmonitor.com/2025/10/Türkiyes-new-nuclear-rules-raise-transparency-concerns-as-key-decisions-remain-behind-closed-doors/.

[239] "FGD Strategic Trade Management of Materials and Equipment Annex II Additional Protocol," Bandan Pengawas Tenaga Nuklir, August 15, 2024, https://www.bapeten.go.id/berita/fgd-strategic-trade-management-of-materials-and-equipment-annex-ii-additional-protocol-094923.

China has maintained the principled position that there is no precedent for NPT non-signatories being admitted to the NSG.[240] Additionally, it is reported that China unofficially argued that if India's participation is permitted, Pakistan's participation should be also allowed.[241] Pakistan, for its part, has asserted that it qualifies for NSG membership, citing its exemplary conduct regarding nuclear safety and security.[242]

No reports or materials were found indicating that proliferation-concerned countries such as North Korea, Iran and Syria have established effective domestic implementation systems for export controls. Cooperation, at least concerning ballistic missile development, is believed to have occurred among these countries, as discussed later. North Korea is also suspected of involvement in the construction of a graphite-moderated reactor in Syria.

The Issue of Access to Technology for Peaceful Purposes

While there are calls for the universalization of export control regimes, others have questioned the universality and comprehensiveness of existing arrangements. In this context, the 2024 UNGA adopted a resolution proposed by China entitled "Promoting International Cooperation on Peaceful Uses in the Context of International Security," with the support of NAM countries and others. The resolution characterizes export controls and other regulatory measures as unjustified restrictions—particularly on exports to developing countries—and calls for greater comprehensiveness and transparency in agreed non-proliferation management efforts. Discussions on this resolution are scheduled to resume at the 2026 UNGA.

Related discussions also took place at the 2025 NPT PrepCom. China, which proposed the aforementioned UN General Assembly resolution, stated, "We should firmly oppose the attempt of certain countries to stretch the national security concept, take export control as tools for geopolitical game, and undermine the right of non-nuclear-weapon States for peaceful uses of nuclear energy."[243]

NAM countries have also expressed, "deep concern on the continued imposition and/or maintaining of limitations and restrictions on exports to developing countries of nuclear material, equipment and technology for peaceful purposes, which is inconsistent with the provisions of the Treaty." They further argued, "the elimination of constraints inconsistent with the requirements of the Treaty would ensure that Article IV of the Treaty is fully implemented with regard to the facilitation of the transfer of nuclear material, equipment and technological information for peaceful purposes among the States Parties," asserting that export controls

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[240] Ministry of Foreign Affairs of China, "Foreign Ministry Spokesperson Geng Shuang's Regular Press Conference," January 31, 2019, http://ag.china-embassy.gov.cn/eng/fyrth/201901/t20190131_3487343.htm.

[241] "China 'coordinating' with Pakistan to Block India's Entry into NSG," *Hindustan Times*, May 13, 2016, https://www.hindustantimes.com/india/china-coordinating-with-pakistan-to-block-india-s-entry-into-nsg/story-wrwpjWezo4ciijvdjx2iRO.html.

[242] Ministry of Foreign Affairs, Government of Pakistan, "Pakistan's Positions & Policies on Arms Control, Non-Proliferation & Disarmament Related Issues," https://mofa.gov.pk/arms-control-and-disarmament.

[243] "Statement by China," Cluster 2, Third PrepCom for the 11th NPT RevCon, May 5, 2025.

hinder the peaceful use of nuclear energy by developing countries.[244]

In response to such criticism, states participating in export control regimes have encouraged NPT States Parties to make use of control lists and best practices, asserting that these regimes play an important role in preventing the proliferation of weapons of mass destruction and their means of delivery.[245]

The United Kingdom also stated at the NPT PrepCom, "in strengthening international non-proliferation, export controls remain a critical enabler for the transfer of nuclear technology for peaceful uses and development—providing confidence for suppliers while minimising proliferation risks. The United Kingdom continues to be active participants in the meetings of the Nuclear Suppliers Group and the Zangger Committee and urges all States to adhere to NSG Guidelines."[246] New Zealand stated that it will "continue to uphold our national export controls as a member of the international export control regimes, intended to give effect to our non-proliferation obligations including under the NPT. Export control regimes and related key instruments are critical to countering the proliferation of WMD and the preservation of peace and security. These regimes also facilitate legitimate trade. Any claims that export controls place undue restrictions on trade are baseless and do damage to the regimes."[247]

B) Making the conclusion of the Additional Protocol a condition of supply

Under the NSG Guidelines Part I, one of the conditions for supplying materials and technology designed specifically for nuclear use is to accept the IAEA comprehensive safeguards. In addition, NSG member states agreed on the following principle in June 2011: "suppliers should authorize transfers, pursuant to this paragraph, only when the recipient has brought into force a Comprehensive Safeguards Agreement, and an Additional Protocol based on the Model Additional Protocol or, pending this, is implementing appropriate safeguards agreements in cooperation with the IAEA, including a regional accounting and control arrangement for nuclear materials, as approved by the IAEA Board of Governors."[248]

The NPDI and the Vienna Group of Ten have argued that comprehensive safeguards agreements and additional protocols are the current standard for IAEA safeguards and should be a condition for new supply agreements with non-nuclear-weapon states.[249] Bilateral nuclear cooperation agreements concluded by Japan and the United States respectively stipulate the conclusion of an IAEA Additional Protocol by the partner country as a requirement for

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244 NPT/CONF.2026/PC.III/WP.25, April 1, 2025.

245 "EU Statement on Cluster III (peaceful uses of nuclear energy)," Cluster 3, Second PrepCom for the 11th NPT RevCon, July 29, 2024; "Nuclear Non-Proliferation Déclaration prononcée par l'Ambassadeur Julien Thöni Représentant Permanent de la Suisse auprès de la Conférence du Désarmement," July 29, 2024.

246 "Statement by the United Kingdom," Cluster 2, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

247 "Statement by New Zealand," Cluster 2, Third PrepCom for the 11th NPT RevCon, May 2, 2025.

248 INFCIRC/254/Rev.12/Part 1, July 26, 2011.

249 NPT/CONF.2026/PC.III/WP.15, March 3, 2025; "Statement of New Zealand," Cluster 2, First PrepCom for the 11th NPT RevCon, August 4, 2023.

supplying nuclear-related materials.

In contrast, NAM countries have stated, "States Parties to the Treaty are called upon to refrain from imposing or maintaining any restrictions or limitations on the transfer of nuclear equipment, materials and technology to States Parties with comprehensive safeguards agreements being the universal standard for verification,"[250] and have argued that no restrictions should be imposed on the transfer of nuclear-related equipment, materials or technology to parties to the NPT and to IAEA comprehensive safeguards agreements.

In addition, among the countries covered by this survey, Brazil, Egypt and South Africa supported the view that the conclusion of the Additional Protocol should be voluntary for each country, as well as any restrictions imposed by its additional obligations.[251]

Uranium enrichment and spent fuel reprocessing—among the most sensitive activities from a nuclear non-proliferation perspective—are not prohibited under the NPT for NNWS, provided they are conducted for peaceful purposes and subject to IAEA safeguards. At the same time, the spread of such technologies could enable a larger number of NNWS to acquire latent capabilities to manufacture nuclear weapons. As noted above, the NSG has made the conclusion of an IAEA Additional Protocol a condition for the transfer of enrichment and reprocessing technologies.

In addition, the nuclear cooperation agreement concluded between the United States and the UAE in 2009 explicitly obliges the UAE not to engage in any enrichment or reprocessing activities on its territory, a commitment that drew attention and was referred to as the "Gold Standard." However, in other nuclear cooperation agreements concluded or renewed by the United States thereafter—such as the 2014 agreement with Vietnam—similar obligations are not included, except in the case of the U.S.-Taiwan agreement.[252]

As mentioned earlier, during the U.S.-South Korea summit in October 2025, the United States conveyed its support for South Korea's uranium enrichment and spent fuel reprocessing for peaceful purposes (see in this chapter (1)B) "Interest in Acquiring Nuclear Weapons"). This issue was also raised during follow-up consultations between U.S. and South Korean officials held after the release of the fact sheet from the summit the following month.[253]

Furthermore, the nuclear cooperation agreements that Japan concluded with the UAE and Jordan respectively prohibit the enrichment or reprocessing of nuclear materials transferred, recovered or generated under the agreements.[254]

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[250] "Statement by NAM," Third PrepCom for the 11th NPT RevCon, May 2, 2025.

[251] "Statement by Egypt," Cluster 2, Third PrepCom for the 11th NPT RevCon, May 2, 2025; "Statement by South Africa," Third PrepCom for the 11th NPT RevCon, May 2, 2025.

[252] The U.S.-Mexico Nuclear Cooperation Agreement concluded in May 2018, and it is stated in the preamble that Mexico will not conduct sensitive nuclear activities, which is referred to as a "silver standard."

[253] Lee Minji, "Top Security Adviser to Discuss Possibility of Deal with U.S. for S. Korea's Push for Nuclear-powered Subs," *Yonhap News Agency*, December 17, 2025, https://en.yna.co.kr/view/AEN20251217000600315.

[254] Ministry of Foreign Affairs of Japan, "Agreement Between the Government of Japan and the

In recent years, developments regarding nuclear cooperation between the United States and Saudi Arabia have attracted attention. In negotiating a bilateral nuclear cooperation agreement, the United States has required Saudi Arabia to forgo enrichment and reprocessing activities on its territory. However, Saudi Arabia has not agreed. As noted earlier, a civil nuclear cooperation agreement between the United States and Saudi Arabia was concluded in 2025, but the United States issued a statement clarifying that the agreement does not cover uranium enrichment (see Section (1)B "Interest in Acquiring Nuclear Weapons" in this chapter).

C) Implementation of Security Council Resolutions on North Korea and Iran

North Korea

Regarding North Korea's nuclear and missile activities, successive Security Council resolutions have been adopted demanding their cessation and imposing stringent non-military sanctions. All UN member states are obligated under these resolutions to prevent the transfer of items and technologies that could contribute to WMD-related programs, including nuclear weapons.

In May 2024, the UN Security Council Panel of Experts on North Korea sanctions suspended its activities due to Russia's veto of its mandate extension. In response, 11 countries established the Multilateral Sanctions Monitoring Team (MSMT). In May 2025, the MSMT published its first report titled "Unlawful Military Cooperation including Arms Transfers between North Korea and Russia." The report primarily documented sanctions violations, including arms transfers between North Korea and Russia, methods of transportation between the two countries, as well as the supply of petroleum products, the dispatch of workers to North Korea, and financial transactions.[255]

The deepening of North Korea-Russia relations has become one of the challenges in implementing sanctions measures based on UN Security Council resolutions. In 2023, concerns were raised regarding Russia's provision of military technology, including rocket technology, to North Korea, as well as North Korea's supply of weapons and ammunition, including missiles, to Russia. Furthermore, in December 2024, the "Comprehensive Strategic Partnership Treaty" between North Korea and Russia entered into force. This treaty includes military cooperation prohibited by Security Council resolutions, as well as cooperation in nuclear-related and space-related technologies.

The MSMT's first report documented the following developments:[256]

- North Korea deployed over 1,000 troops in late 2024. North Korea subsequently

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Government of the Hashemite Kingdom of Jordan for Cooperation in the Peaceful Use of Nuclear Energy," February 7, 2012, https://www.mofa.go.jp/policy/treaty/submit/session176/pdfs/agree-1_1.pdf; Meanwhile, the agreement with India permits enrichment below 20 percent and reprocessing, Ministry of Foreign Affairs of Japan *Agreement between the Government of Japan and the Government of the Republic of India for Cooperation in the Peaceful Uses of Nuclear Energy*, October 4, 2017, https://www.mofa.go.jp/mofaj/files/000241570.pdf.

[255] Multilateral Sanctions Monitoring Team (MSMT), "Unlawful Military Cooperation including Arms Transfers between North Korea and Russia," May 29, 2025, https://www.mofa.go.jp/mofaj/files/100853978.pdf.

[256] Ibid.

acknowledged publicly its deployment of troops to Russia on April 28, 2025. In exchange, Russia is believed to have provided North Korea with air defense equipment and anti-aircraft missiles, as well as advanced electronic warfare systems. It has also supplied refined oil without requisite reporting to the 1718 Committee and employed North Korean workers, both in violation of relevant UNSCRs.

- Russia has supported North Korea's ballistic missile programs by providing data feedback on ballistic missiles, leading to improvements in missile guidance performance.
- North Korea and Russia conducted unlawful transfers of arms and military equipment through actors and networks that evaded sanctions by using front companies.
- More than a dozen different North Korean oil tankers arrived at an oil terminal in Russia's Far East a total of 43 times between March and October 2024, supplying North Korea with more than a million barrels of oil.
- North Korea also intends to send information technology (IT) workers and medical personnel to Russia. Furthermore, according to MSMT participating state, North Korea possibly dispatched 481 workers to Russia (198 people in the construction industry and 283 people in the textile industry).

In addition to the content reported by the MSMT, the following information was observed regarding developments related to cooperation between Russia and North Korea during 2025:

- A North Korean source in Russia told *Daily NK* that "North Korea sent a technical cooperation request to the Russian federal government in February, and the Research Institute of Technical Physics under the Russian Federal Nuclear Center (RFNC) and Mayak Production Association delivered an official response to North Korea on April 23." The North Korean requests focus on two areas: "implosion design technology" for small missile-mounted nuclear warheads and advanced processing techniques for reactor dismantling and intermediate storage of radioactive waste.[257]
- The director of Kim Il Sung University's AI Research Institute stated in an interview that North Korea is sending AI researchers and students to Russia and other countries to strengthen its domestic technology sector. The director noted, "information technology, particularly AI, is a core area subject to UN Security Council sanctions, so such cooperation faces significant obstacles."[258]
- Kyrylo Budanov, head of Ukraine's Defense Intelligence Directorate (GRU), stated, "Russia is supplying technology and knowledge to help North Korea build long-range kamikaze drones and drastically improve the accuracy of its KN-23 short-range ballistic missiles."[259]

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[257] Jeong Tae Joo, "Race against Time: N. Korea's Push for Advanced Russian Nuclear Warhead Technology," *Daily NK*, May 2, 2025, https://www.dailynk.com/english/race-against-time-north-korea-push-advanced-russian-nuclear-warhead-technology/.

[258] "North Korea Seeks AI Collaboration with Russia – Reports," *The Moscow Daily*, July 23, 2025, https://www.themoscowtimes.com/2025/07/23/north-korea-seeks-ai-collaboration-with-russia-reports-a89927.

[259] Howard Altman, "Russia Giving North Korea Shahed-136 Attack Drone Production Capability: Budanov," *The War Zone*, June 9, 2025, https://www.twz.com/news-features/russia-giving-shahed-136-attack-drone-production-capabilities-to-north-korea-budanov.

- South Korea's Joint Chiefs of Staff Chairman, Chen Yong Cheng, stated that Russian technology may have been utilized in North Korea's intercontinental ballistic missile development. He noted that North Korea's nuclear and missile programs are progressing rapidly and that Russian support is highly likely.[260]
- In December 2025, the Spanish daily newspaper *La Verdad* reported that the Russian cargo ship Ursa Major, which sank in 2024, was suspected of carrying components for a nuclear reactor for a North Korean nuclear submarine.[261]

Trade and labor dispatch between China and North Korea also poses challenges for sanctions implementation. Beyond what is mentioned in the second MSMT report, the following trends were reported in 2025:

- Chinese fishing fleets employed North Korean crew members from 2019 to 2024. Meanwhile, many crew members were forced to work at sea for years without being allowed to disembark.[262]
- In the first half of 2023, tungsten ore ranked as the second-largest export item from North Korea to China. The export value reached $13.5 million, accounting for 7.7% of the total.[263]
- In a report published in May 2025, the U.K.-based research organization Open Source Center (OSC) revealed that since September 2024, at least six foreign-flagged vessels have violated UN Security Council resolutions by loading coal and iron ore at North Korean ports and exporting these cargoes overseas. According to satellite imagery and Automatic Identification System (AIS) data analyzed by the OSC, these vessels departed to unload North Korean coal and iron ore at foreign ports (mostly in China).[264]

The second MSMT report titled "The DPRK's Violation and Evasion of UN Sanctions through Cyber and Information Technology Worker Activities" was published in October 2025.[265] The report detailed North Korea's theft and use of cryptocurrency, activities of North Korean IT workers, and North Korea's theft of information on nuclear facilities and submarines, among

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260 "N. Korea may Have Used Russian Technology for New Long-range Missile, S. Korea Says," *TVP World*, October 14, 2025, https://tvpworld.com/89463356/south-korea-north-korea-may-have-used-russian-tech-for-new-icbm.

261 Micah McCartney, "Sunken Russian Ship Was Carrying Nuclear Reactor Parts: Report," *Newsweek*, December 30, 2025, https://www.newsweek.com/sunken-russian-ship-carrying-nuclear-reactor-parts-11286480.

262 "Chinese Fishing Vessels Used North Korean Crews in Breach of UN Bans, a Report Says," *Associated Press*, February 25, 2025, https://apnews.com/article/north-korea-fishermen-chinese-vessels-80f49d6eb3d84431121b67fc15a4321c.

263 "Tungsten, a strategic mineral from North Korea, continues to be exported to China... Active trade revealed," *Korea Wave*, June 6, 2025, https://www.afpbb.com/articles/-/3584167. (In Japanese)

264 James Byrne, Joe Byrne, Alessio Armenzoni, and Hamish Macdonald, "Back in Black: North Korea's Resurgent Coal Trade," *Open Source Centre*, May 7, 2025, https://stories.opensourcecentre.org/back-in-black/.

265 Ministry of Foreign Affairs of Japan, "Release of the Second Report of the Multilateral Sanctions Monitoring Team (MSMT)," October 22, 2025, https://www.mofa.go.jp/press/release/pressite_000001_01758.html.

other matters.[266]

- According to analysis developed by MSMT Participating States in coordination with Mandiant and Chainalysis, in 2024, North Korea stole at least $1.19 billion in cryptocurrency—about 50 percent more than in 2023. From January 2025 to September 2025, the DPRK stole at least $1.645 billion in cryptocurrency, already surpassing estimates of its 2024 total.
- In 2024, North Korea likely earned around $350-800 million from its IT workers worldwide—a modest decrease from the prior year.
- The overwhelming majority of DPRK IT workers were based in China (1,000 to 1,500 workers), though MSMT Participating States found that the DPRK planned to dispatch a new deployment of 40,000 laborers to Russia, including several delegations of IT workers. Like DPRK cyber actors, DPRK IT workers also relied on foreign facilitators, including in Japan, Ukraine, the United Arab Emirates and the United States to secure employment, provide support and remit earnings back to DPRK actors.
- North Korea has attempted to obtain information on nuclear power plants, facilities, and materials, military drones, submarines, and shipbuilding from the U.S., UK, the ROK, and other MSMT Participating States and UN Member States. […] North Korea has stolen designs for and subsequently introduced technology on semiconductors, uranium processing, air defense, missiles, and submarine launched ballistic missiles from the ROK and the UK. Stolen ROK optical equipment and launch vehicle technology was observed on a North Korean reconnaissance satellite launched in 2023. North Korea used stolen ROK cold launch technology to shorten development timelines of submarine launched ballistic missiles.

The report also listed 11 recommendations for the international community, including considering actions to detect, deter and prevent North Korea's use of cyber capabilities to evade sanctions, developing capabilities to track cryptocurrency transactions, and developing and implementing legal authority to freeze and seize stolen and laundered cryptocurrency.

In June, following the release of the first report, North Korea's Ministry of Foreign Affairs condemned the MSMT as "a political tool operating according to the geopolitical interests of the West and, therefore, it has no justification to investigate the exercise of sovereign rights of other countries."[267]

In South Korea, it was reported that Unification Minister Chung Dong-young stated in September 2025 that while halting North Korea's nuclear development is an urgent task, sanctions are ineffective and the only solution is a summit between the US and North Korea.[268] In December, he also stated, "all advances in North Korea's nuclear and missile capabilities

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[266] MSMT, *The DPRK's Violation and Evasion of UN sanctions through Cyber and Information Technology Worker Activities*, October 22, 2025. https://www.mofa.go.jp/files/100922718.pdf.

[267] "North Korea Criticizes 'Hostile' Monitoring Group's Report on Russia Ties," *Reuters*, June 2, 2025, https://www.reuters.com/world/asia-pacific/north-korea-criticises-hostile-monitoring-groups-report-russia-ties-2025-06-01.

[268] "North Korea Could Have Up to 2 Tonnes of Highly Enriched Uranium: Seoul," *TRT World*, September 25, 2025, https://www.trtworld.com/article/4f0188351218.

occurred during phases of sanctions, pressure, and isolation," expressing the view that sanctions and pressure should be abandoned to facilitate dialogue with North Korea.[269]

Iran

UN Security Council Resolution 2231, adopted in 2015 under the JCPOA and serving as the basis for lifting sanctions on Iran, was set to expire on October 18, 2025. After this date, the UN Security Council had intended for all previous resolutions related to Iran's nuclear non-proliferation to terminate. As mentioned earlier, the gap between Iran and the United States, the E3 countries (Germany, France and the United Kingdom) and the EU regarding transparency and the implementation of safeguards concerning Iran's nuclear development remained unresolved. Against this backdrop, the potential reinstatement of sanctions against Iran through the activation of the snapback mechanism, which would reimpose past UN Security Council resolutions, was also one of the key points of focus for 2025.

Following the lack of progress in negotiations with Iran, the E3 countries notified the Security Council on August 28 of their intention to initiate the snapback procedure (for details on negotiations between the E3 countries and Iran, including the snapback activation, see Section (1)B) "Iran: Developments Toward Rebuilding the Nuclear Deal" in this chapter). In response, the Security Council considered two resolutions in September: one proposed by South Korea, and another proposed by China and Russia to extend UN Security Council Resolution 2231. However, both failed to pass due to opposition from the E3 countries and the United States. On September 27, one month after the notification by the E3 countries to the Security Council, Iran was once again subject to UN Security Council sanctions based on the previous six resolutions.

Besides the E3 and the United States, among the countries under this survey, Australia, Canada, Japan, Türkiye and the EU expressed support for triggering the snapback or resuming sanctions.[270]

The UN Iran Sanctions Committee and Panel of Experts was wound up in 2015 after the conclusion of the JCPOA, at Iran's insistence, and the UN Security Council is now responsible

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[269] Ji Da-gyum, "Unification Minister Rejects Sanctions, Pressure as Answer to N. Korean Nuclear Issue," *The Korea Herald*, December 11, 2025, https://www.koreaherald.com/article/10634672.

[270] Australian Department of Foreign Affairs and Trade, "Iran Country Brief," https://www.dfat.gov.au/geo/iran/iran-country-brief; Global Affairs Canada, "Canada announces implementation of UN sanctions against Iran over nuclear proliferation activities," Government of Canada, October 1, 2025, https://www.canada.ca/en/global-affairs/news/2025/09/canada-announces-implementation-of-un-sanctions-against-iran-over-nuclear-proliferation-activities.html; Ministry of Foreign Affairs of Japan, "Reapplication of United Nations Security Council Resolutions of sanctions against Iran (Statement by Foreign Minister IWAYA Takeshi)," September 28, 2025, https://www.mofa.go.jp/press/statement/pressite_000001_00004.html; "Turkey Freezes Assets of Iranian Entities After Activation of Snapback," *WANA News Agency*, October 2, 2025, https://wanaen.com/Türkiye-freezes-assets-of-iranian-entities-after-activation-of-snapback; Rt Hon Winston Peters, "NZ Reimposes UN Sanctions on Iran," The Official Website of the New Zealand Government, October 17, 2025, https://www.beehive.govt.nz/release/nz-reimposes-un-sanctions-iran; Council of the EU, "Iran Sanctions Snapback: Council Reimposes Restrictive Measures," September 29, 2025, https://www.consilium.europa.eu/en/press/press-releases/2025/09/29/iran-sanctions-snapback-council-reimposes-restrictive-measures/.

for overseeing the remaining limitations.[271]

Under the JCPOA, Iran's procurement of nuclear-related equipment and materials requires approval from the Procurement Working Group established under the JCPOA. The number of such approvals has been reported to the Security Council every six months. According to the June 2025 report, no proposals were reviewed during the reporting period.[272]

In 2025, the following information was presented regarding Iran's illicit nuclear procurement activities and technology transfers:

- Iranian nuclear experts linked to the Organization of Defensive Innovation and Research (SPND) visited a Russian company specializing in laser technology in November 2024. The delegation was organized and led by Ali Kalvand, the director of SPND-linked procurement broker DamavandTec. A Laser Systems researcher subsequently visited Tehran to meet DamavandTec representatives in February 2025.[273]
- It has been revealed that Imen Gostar Raman Kish, a subsidiary of SPND, is selling equipment including radiation detection tubes manufactured by a British company. This company also advertises the sale of products from relevant French and American firms. This indicates that Iranian companies are still procuring nuclear-related equipment.[274]

Since the beginning of Russia's full-scale invasion of Ukraine, Iran has been accused of supplying missiles and drones. In June 2025, it was reported that components related to Iranian-made electronic countermeasure technology were found in the wreckage of a drone discovered in Ukraine.[275] Some assessments suggest that Iran provided Russia with 600 to 3,000 drones from the start of the full-scale invasion, and that production in Russia has expanded in recent years.[276]

Furthermore, in January 2025, Iran and Russia signed the "Treaty on the Comprehensive Strategic Partnership."[277] The treaty mentions military-technical cooperation between the two countries. Regarding nuclear technology, Article 23 states that "the Contracting Parties shall promote the development of long-term and mutually beneficial relations for the purpose of implementing joint projects in the area of peaceful use of nuclear energy, including the

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[271] UN Security Council, Sanctions Committees, "Resolution 2231 (2015) on the Iran Nuclear Issue," Accessed March 5, 2026, https://main.un.org/securitycouncil/en/content/2231/background.

[272] S/2025/411, June 25, 2025.

[273] "Iranian Nuclear Experts Held Second Covert Meeting with Russian Weapons Institute," *Iran Watch*, November 18, 2025, https://www.iranwatch.org/news-brief/iranian-nuclear-experts-held-second-covert-meeting-russian-weapons-institute.

[274] "Iranian Nuclear Scientists Sell Products with Croydon-made Parts," *Iran Watch*, November 25, 2025, https://www.iranwatch.org/news-brief/iranian-nuclear-scientists-sell-products-croydon-made-parts.

[275] Emma Burrowa, "Drone Debris Found in Ukraine Indicates Russia is Using New Technology from Iran," *Associated Press*, June 62, 2025, https://apnews.com/article/russia-iran-drones-shahed-ukraine-israel-strikes-3ddeb853845f0ea5f81878165af07bfd.

[276] "The Evolution of Shaheds: How Russia Scaled Its Drone Warfare," *VGI-9*, October 13, 2025, https://vgi.com.ua/en/the-evolution-of-shaheds-how-the-enemys-weapon-developed.

[277] "Full text of Iran-Russia Comprehensive Strategic Partnership Treaty," Official Website of the President of the Islamic Republic of Iran, January 17, 2025, https://president.ir/en/156874.

construction of nuclear energy facilities."[278] This treaty entered into force on October 2.[279]

Transactions between Proliferation-Concerned Countries

The March 2021 report by the Panel of Experts of the North Korea Sanctions Committee stated that cooperation between North Korea and Iran on long-range missile development programs had resumed.[280] However, reports published between 2022 and 2024, when the Panel of Experts ceased its activities, contained no mention of cooperation between North Korea and Iran.

Concerns have also been raised about cooperation between North Korea and Iran in the nuclear field, but such claims remain unproven due to a lack of publicly available evidence.

D) Participation in the Proliferation Security Initiative (PSI)

A total of 116 countries—including 21 member states of the Operational Expert Group (Australia, Canada, France, Germany, Japan, South Korea, the Netherlands, New Zealand, Norway, Poland, Türkiye, the United Kingdom, the United States and others) as well as Israel, Kazakhstan, Saudi Arabia, Sweden, Switzerland and others—have expressed their support for the principles and objectives of the Proliferation Security Initiative (PSI). Many of them have also participated and cooperated in PSI-related activities.[281]

The interdiction activities carried out within the framework of the PSI are often based on information provided by intelligence agencies; therefore, most of them are classified. In the meantime, participating states have endorsed the PSI statement of interdiction principles and endeavored to reinforce their capabilities for interdicting WMD through exercises and outreach activities.

In December 2025, the Asia-Pacific Maritime Interdiction Exercise "Pacific Shield 25" and an Operational Experts Meeting to discuss PSI activities were held. In the countries surveyed, Australia, Japan, South Korea, New Zealand and the United States participated in the exercise, alongside observer participation from Canada, France, Germany, the Netherlands, Poland and the United Kingdom.[282]

The United States co-hosted the PSI Balkan Regional Dialogue with Slovenia from April 14 to 16, 2025. Participating countries included the United States, Austria, France, Poland, and South

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278 Ibid.

279 Ministry of Foreign Affairs of the Russian Federation, "Foreign Ministry statement in connection with the entry into force of the Treaty on Comprehensive Strategic Partnership between the Russian Federation and the Islamic Republic of Iran," October 2, 2025, https://mid.ru/en/foreign_policy/news/2050909/.

280 S/2021/211, March 4, 2021.

281 U.S. Department of State, "Endorsing States List," Proliferation Security Initiative, January 19, 2024, https://www.psi-online.info/psi-info-en/botschaft/2205942-2205942; U.S. Department of State, "Proliferation Security Initiative," https://www.state.gov/bureau-of-international-security-and-nonproliferation/proliferation-security-initiative.

282 Ministry of Foreign Affairs of Japan, "PSI Maritime Interdiction Exercise 'Pacific Shield 25' and Operational Experts Group (OEG) Meeting (Results)," December 5, 2025, https://www.mofa.go.jp/press/release/pressite_000001_01896.html.

Korea. The dialogue featured discussions on sharing information about WMD proliferation routes and methods, sharing experiences from case studies on counter-proliferation measures, and identifying gaps in legal frameworks. A day-long tabletop exercise was also conducted, including multiple complex proliferation-related scenarios.[283]

The United States also co-hosted a Nordic-Baltic Dialogue with Finland from June 3 to 5. Other participating countries included France, the Netherlands, Norway, Poland, Sweden and the United Kingdom. Discussions and a tabletop exercise similar to those in the Balkan Dialogue were conducted.[284]

Japan's Maritime Self-Defense Force destroyers and patrol aircraft have been conducting vigilance monitoring activities in the Sea of Japan and Yellow Sea since December 2017 against activities in violation of Security Council resolutions at sea, including seizures by North Korea. The seizures are posted on the Ministry of Foreign Affairs website.[285] The surveillance activities continued in 2024, and in addition to Japan and the United States, Australia, Canada, France, Germany, Italy, the Netherlands, New Zealand and the United Kingdom have participated so far.

E) Nuclear Cooperation with Non-NPT Signatories

In September 2008, the NSG agreed to grant India a waiver allowing nuclear trade with the member states under the condition that India would commit, inter alia, to concluding an IAEA Additional Protocol and to continuing its nuclear test moratorium. Since then, some countries have sought to engage in civil nuclear cooperation with India, and several countries, including Australia, Canada, France, Japan, Kazakhstan, South Korea, Russia and the United States, have concluded bilateral civil nuclear cooperation agreements with India.

In 2025, there were statements and declarations regarding the transfer of nuclear-related materials and equipment to India, regulatory approvals and changes by supplier countries for such transfers, and the expansion of nuclear cooperation.

Russia shipped the pressure vessel for Unit 6 of the Kudankulam Nuclear Power Plant under construction in January.[286] Additionally, Russia's state-owned nuclear company Rosatom announced that it had offered to work with India on localizing large- and small-scale nuclear

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283 U.S. Embassy in Slovenia, "United States and Slovenia Co-Host Proliferation Security Initiative (PSI) Balkans Regional Engagement in Ljubljana," April 18, 2025, https://si.usembassy.gov/united-states-and-slovenia-co-host-proliferation-security-initiative-psi-balkans-regional-engagement-in-ljubljana/.

284 U.S. Embassy in Finland, "U.S. and Finland Co-Host Proliferation Security Initiative Nordic/Baltic Regional Proliferation Security Initiative Engagement," June 5, 2025, https://fi.usembassy.gov/u-s-and-finland-co-host-nordic-baltic-regional-proliferation-security-initiative-engagement.

285 Ministry of Foreign Affairs of Japan, "Suspected Illegal Ship-to-Ship Transfers of Goods by North Korea-Related Vessels," November 18, 2025, https://www.mofa.go.jp/mofaj/fp/nsp/page4_003679.html. (In Japanese)

286 "The 320-tonne VVER-1000 Reactor Vessel is Travelling by Sea from Russia to India's Kudankulam Nuclear Power Plant," *World Nuclear News*, January 15, 2025, https://www.world-nuclear-news.org/articles/reactor-vessel-shipped-for-kudankulams-sixth-unit.

power plant projects.[287]

The U.S. Department of Commerce announced on January 15 that, as part of its revision of the Entity List—which identifies organizations subject to export control restrictions—it had removed three Indian entities that were previously included. The Department explained that the reason for the removal was: "The removal of Indian entities […] will support U.S. foreign policy objectives by reducing barriers to advanced energy cooperation, including joint research and development and science and technology cooperation, towards shared energy security needs and goals."[288]

In a joint statement issued at the U.S.-India leaders' meeting in February, one of the points on energy security stated that the two countries had "announced their commitment to fully realize the U.S.-India 123 Civil Nuclear Agreement by moving forward with plans to work together to build U.S.-designed nuclear reactors in India through large-scale localization and possible technology transfer."[289] On March 26, the U.S. Department of Energy granted authorization to U.S. nuclear-related companies for the construction of small modular reactors (SMRs) in India. Under this plan, U.S. companies' technology will be shared with three Indian companies for the construction of the SMRs, and this authorization effectively permits the transfer of technology to India.[290]

France also referenced bilateral nuclear cooperation with India, including the existing Jaitapur nuclear power plant project, in a joint statement announced at a summit in February.[291] A special task force on civil nuclear energy issues has been established between France and India, discussing cooperation on emerging nuclear technologies such as SMRs and Advanced Modular Reactors (AMRs).[292]

Meanwhile, China has faced criticism for its April 2010 agreement to export two nuclear power reactors to Pakistan, a move that may contravene the guidelines of the NSG. China has invoked the "grandfather clause" of the NSG guidelines to justify the transaction, arguing that the agreement was not subject to the rules because negotiations on the reactor supply had begun

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287 BRICS, "Russia Offers Localisation of Nuclear Plants in India," October 29, 2025, https://infobrics.org/en/post/62681.

288 U.S. Department of Commerce, "Commerce Makes Revisions to the Entity List to Strengthen U.S. National Security," January 15, 2025, https://www.bis.gov/press-release/commerce-makes-revisions-entity-list-strengthen-u.s.-national-security.

289 White House, "United States-India Joint Leaders' Statement," February 13, 2025, https://www.whitehouse.gov/briefings-statements/2025/02/united-states-india-joint-leaders-statement/.

290 "U.S. Firm Approved to Build Nuclear Reactors in India," *Arms Control Today*, May 2025, https://www.armscontrol.org/act/2025-05/news-briefs/us-firm-approved-build-nuclear-reactors-india.

291 Ministry of External Affairs, India, "India - France Joint Statement on the Visit of Shri Narendra Modi, Honorable Prime Minister of India to France (February 10-12, 2025)," February 12, 2025, https://www.mea.gov.in/bilateral-documents.htm?dtl%2F39071%2FIndia++France+Joint+Statement+on+the+visit+of+Shri+Narendra+Modi+Honble+Prime+Minister+of+India+to+France+1012+February+2025.

292 Ministry of External Affairs, India, "Second Meeting of the India-France Special Task Force on Civil Nuclear Energy (September 22, 2025)," September 22, 2025, https://www.mea.gov.in/press-releases.htm?dtl%2F40157%2FSecond_Meeting_of_the_IndiaFrance_Special_Task_Force_on_Civil_Nuclear_Energy_September_22_2025.

before China became a participating member of the NSG.[293] China will also supply enriched uranium to Pakistan for operating these reactors, located in Karachi.[294] Because all other Chinese reactors that were claimed to be excluded from NSG guidelines under the grandfather clause were built at Chashma, there remains a question as to whether or not the exemption can also apply to the Karachi plant. In June 2023, Pakistan and China signed a $4.8 billion deal to build the seventh Chinese nuclear power plant in Pakistan.[295]

NAM countries declared the following regarding nuclear cooperation with non-NPT signatories:

> "The Group of Non-Aligned States Parties to the Treaty emphasizes that non-proliferation must be pursued and implemented, without exception, through the strict observance of, and adherence to, IAEA comprehensive safeguards and to the Non-Proliferation Treaty as a condition for any cooperation in the nuclear area with States not parties to the Treaty. In view of the Group, new supply arrangements for the transfer of source or special fissionable material or equipment or material especially designed or prepared for the processing, use or production of special fissionable material to non-nuclear-weapon States should require, as a necessary precondition, acceptance of IAEA full-scope safeguards and internationally legally binding commitments not to acquire nuclear weapons or other nuclear explosive devices."[296]

Iran made the following statement regarding nuclear cooperation with Israel at the 2025 NPT PrepCom: "All States Parties to the NPT should prohibit nuclear cooperation with Israel unless it accedes to the Treaty as a Non-Nuclear-Weapon State and places all its nuclear facilities under the comprehensive safeguards of the IAEA."[297]

(6) Transparency in the Peaceful Use of Nuclear Energy

A) Efforts for Transparency

In addition to accepting IAEA full-scope safeguards, as described earlier, NNWS should aim to be fully transparent about their nuclear-related activities and future plans, in order to demonstrate that they have no intention of developing nuclear weapons. Every state that concludes an Additional Protocol with the IAEA is obliged to provide information on its general plans for the next ten-year period relevant to any nuclear fuel cycle development (including nuclear fuel cycle related research and development activities). Most countries that

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293 For example, see, Daniel Horner, "China, Pakistan Set Reactor Deal," *Arms Control Today*, June 2010, https://www.armscontrol.org/act/2010-06/china-pakistan-set-reactor-deal.

294 "Pakistan Starts Work on New Atomic Site, with Chinese Help," *Global Security Newswire*, November 27, 2013, http://www.nti.org/gsn/article/pakistan-begins-work-new-atomic-site-being-built-chinese-help/.

295 Ayaz Gul, "Pakistan Signs $4.8 Billion Nuclear Power Plant Deal with China," *Voa News*, June 20, 2023, https://www.voanews.com/a/pakistan-signs-4-8-billion-nuclear-power-plant-deal-with-china/7144967.html.

296 NPT/CONF.2026/PC.III/WP.25, April 1, 2025.

297 "Statement by Iran," Third PrepCom for the 11th NPT RevCon, May 5, 2025.

actively promote the peaceful use of nuclear energy have issued mid- or long-term nuclear development plans, including for the construction of nuclear power plants.[298] The international community may be concerned about the possible development of nuclear weapon programs when states conduct nuclear activities without publishing their nuclear development plans (as has happened with Israel, North Korea and Syria, for example), or that engaged in nuclear activities which seem inconsistent with their plans (e.g., allegedly, Iran).

From the standpoint of transparency, communications received by the IAEA from certain member states concerning their policies on the management of plutonium, including the amount of plutonium they held, are also important. Using the format of the Guidelines for the Management of Plutonium (INFCIRC/549) agreed in 1997, the five NWS plus Belgium, Germany, Japan and Switzerland publish data annually on the amount of civil unirradiated plutonium under their control. As of December 2024, however, China had not submitted a report since 2018. France and Germany reported their holdings of both civil plutonium and HEU.[299] The United States had also submitted annual reports but did not publish one for 2024, and no report had been released by the end of December 2025.[300]

The report submitted by Japan to the IAEA was based on the "The Status Report of Plutonium Management in Japan—2024" published by the Japan Atomic Energy Commission (JAEC) on August 5, 2025, which details the management status of separated plutonium.[301]

China has not disclosed details about its two reprocessing plants under construction, nor has it clearly stated that it does not intend to divert the two fast breeder reactors under construction to military purposes.[302] Japan has in recent years, likely with China in mind, called for maintaining transparency in civilian plutonium management and referred to the importance of implementing the Guidelines for the Management of Plutonium (INFCIRC/549).[303] At the 2025 NPT PrepCom, the NPDI, led by Japan and Australia, stated in its working paper that it "underscores the importance of the implementation of the Guidelines for the Management of Plutonium (INFCIRC/549), a transparency measure welcomed by NPT States Parties in 2000, and calls upon all States that committed to reporting annually their holdings of all plutonium

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[298] The World Nuclear Association website (http://world-nuclear.org/) provides summaries of the current and future plans of civil programs around the world.

[299] IAEA, "Communication Received from Certain Member States Concerning Their Policies Regarding the Management of Plutonium," https://www.iaea.org/publications/documents/infcircs/communication-received-certain-member-states-concerning-their-policies-regarding-management-plutonium.

[300] The UK published its 2024 report on the ONR website. Office for Nuclear Regulation, "2023 annual figures for holdings of civil unirradiated plutonium," September 11, 2024, https://www.onr.org.uk/publications/regulatory-reports/safeguards/annual-civil-plutonium-figures/2023-annual-figures-for-holdings-of-civil-unirradiated-plutonium.

[301] Office of Atomic Energy Policy, "The Status Report of Plutonium Management in Japan — 2024," Cabinet Office of Japan, August 5, 2025, https://www.aec.go.jp/bunya/04/plutonium/20250805_e.pdf.

[302] According to IPFM's analysis in 2024, China has started construction on one new reprocessing plant. Furthermore, one of three reprocessing plants is scheduled to begin operations in 2025. "China starts construction of a third demonstration reprocessing plant," *IPFM Blog*, December 24, 2024, https://fissilematerials.org/blog/2024/12/china_starts_construction_2.html.

[303] For example, see follows, "Statement by Japan," First PrepCom for the 11th NPT RevCon, July 31, 2023; "G7 Leaders' Hiroshima Vision on Nuclear Disarmament," May 19, 2023.

in peaceful nuclear activities to fulfil those commitments. Such concrete efforts could also be included in reporting."[304]

Other NNWS surveyed in the present *Report* have either publicized the amount of their fissile material holdings or at least have placed their declared nuclear material under IAEA safeguards. This allows the conclusion that these states have shown clear evidence of transparency regarding their civil nuclear activities.

B) Multilateral Approaches to the Nuclear Fuel Cycle

Several countries have sought to establish multilateral approaches to the fuel cycle, including nuclear fuel banks, as one way of dissuading NNWS from adopting indigenous enrichment technologies. Austria, Germany, Japan, Russia, the United Kingdom, the United States and the EU, as well as six countries acting jointly (France, Germany, the Netherlands, Russia, the United Kingdom and the United States), have made their respective proposals.

Among those proposals, nuclear fuel banks have made actual and concrete progress. Subsequent to the establishment of the International Uranium Enrichment Centre (IUEC) in Angarsk (Russia) and the American Assured Fuel Supply, the IAEA LEU Bank in Kazakhstan was inaugurated in August 2017.[305] The IAEA LEU Bank was funded mainly by the Nuclear Threat Initiative (NTI), Kuwait, Norway, the UAE, the United States and the EU.[306]

A concept proposed for the Middle East region in 2025 is the Menara initiative. One of the projects envisioned by participating countries under Menara includes uranium enrichment (see Section (1)C of this chapter). Furthermore, in May 2025, it was reported that Iran, during negotiations with the United States, proposed a joint uranium enrichment project with the UAE and Saudi Arabia (see Section (1)B of this chapter).

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[304] NPT/CONF.2026/PC.III/WP.30, April 3, 2025.

[305] Approximately $150 million in funds were allocated for establishment and operation for the next 20 years.

[306] In NTI's original proposal for a nuclear fuel bank, one of the conditions for receiving fuel was that a country must renounce the possession of facilities related to the nuclear fuel cycle. However, such a condition was included in neither the Russian center nor the Kazakhstan fuel bank.

Chapter 3

Nuclear Security[1]

(1) Physical Protection of Nuclear Materials and Facilities

According to the International Atomic Energy Agency (IAEA), nuclear security means "the prevention of, detection of, and response to, criminal or intentional unauthorized acts involving or directed at nuclear material, other radioactive material, associated facilities, or associated activities."[2] The scope of nuclear security primarily concerns the theft of nuclear materials and other radioactive materials as well as sabotage against related facilities by non-state actors.

A) Nuclear materials

Weapon-usable nuclear fissile materials, namely highly enriched uranium (HEU)[3] and separated plutonium, are generally thought to be attractive to those who have malicious intent, such as terrorists looking to produce nuclear explosive devices. In this regard, the amounts of these materials in a country as well as the number of facilities that contain such materials are considered to be among the important indicators for assessing that state's efforts in enhancing nuclear security. According to various publicly available data, the amount of weapons-usable nuclear fissile materials possessed by the countries surveyed in this report is shown in Tables 3-1 and 3-2 respectively.

Although the precise amount of HEU and separated plutonium possessed by each country is highly uncertain as it is mostly based on estimates, in 2025, the total quantity of these materials worldwide is estimated to have increased slightly, from the previous year's 1,819.7 tons to 1,820.1 tons approximately. This marginal increase reflects a decline in HEU stockpiles alongside a rise in separated plutonium holdings.

The Nagasaki University Research Center for Nuclear Weapons Abolition (RECNA) expresses the total quantity of these materials in terms of their equivalent weapon-production potential. On this basis, the global total is estimated at 113,600 nuclear weapons in 2025, representing an increase of approximately 720 weapons compared to the previous year's estimate of 112,880.

The total amount of HEU decreased to 1,252.9 tons from 1,256.3 tons in the previous year. However, HEU for military use rose slightly. In fact, India and Pakistan increased their holdings by 0.4 and 0.2 tons from the previous year respectively. India is believed to continue to be producing HEU (enriched to 30-45%) for naval propulsion (fuel for nuclear powered

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1 This chapter is authored by Umi Ariga. Reference was made to the corresponding chapter in the Hiroshima Report 2025 Edition (authored by Masahiro Okuda and Junko Horibe).

2 IAEA, "Nuclear Security Series Glossary Version 1.3 (November 2015) Updated," p. 18. Regarding targets of nuclear security threat and risk scenarios, see *Hiroshima Report 2023* edition, p. 134.

3 According to RECNA, the material that can be used for nuclear weapons typically includes HEU with an enrichment level 20 % or higher. The majority of military-grade HEU is estimated to have an enrichment level exceeding 90 %.

Table 3-1 Highly Enriched Uranium Holdings

Country	Military (Tons)	Non-military (Tons)	Total Amount
China	14.0	0.0 **	14.0
France	25.0	5.363	30.363
Russia	672.0	6.0	678.0
United Kingdom	21.9	0.6	22.5
United States	450.4	30.6	481.0
India	5.7	0.0**	5.7
Israel	0.3	0.02	0.32
Pakistan	5.3	0.0	5.3
North Korea	0.7	0.0	0.7
Others* (Non-nuclear weapon states)		15.0***	15.0
Total Amount	1,195.3	57.583	1,252.883

This table was created by the author based on the data mainly from Nagasaki University Research Center for Nuclear Weapons Abolition (RECNA) "Global Nuclear Material Data 2025," (data as of the end of 2023) and INFCIRC documents.

* Others: 13 countries, including 10 under this survey (Australia, Belgium, Canada, Germany, Iran, Japan, Kazakhstan, the Netherlands, Norway and South Africa).

** Inventory is less than 100 kilograms, but details are unknown.

*** Figure from RECNA's "Global Nuclear Material Data 2025." It noted that "according to the IAEA Annual Report for 2022, 3.9 tons was the amount obtained from back-calculation based on the total inventory of U235 under safeguards (159 significant quantities (U235: 25kg)), and the value has been adopted by the IPFM (2023). In fact, if the 100% enriched HEU is 3.9 tons then the 20% enriched HEU is 19.5 tons. Due to the fact that the average enrichment rate is unknown, the accurate amount is "between 3.9 to 19.5 tons." RECNA has decided to return to the figure shown by the IPFM in 2019 (15 tons). However, the details have not been disclosed, so the figure is uncertain."

Source: RECNA "Global Nuclear Material Data 2025"; International Panel on Fissile Material (IPFM), "Materials: Highly enriched uranium," April 28, 2025, https://fissilematerials.org/materials/heu.html; INFCIRC/549/Add.5/29, September 11, 2025 (France); INFCIRC/549/Add.8/27, June 11, 2025 (United Kingdom).

submarines).[4]

As for civilian use, inventory fell in Russia and the United States by 2 tons each. As for Iran, it continued to produce HEU at least until the attacks by Israel on Iran's nuclear facilities between 13-24 June 2025. According to IAEA's latest report issued in November 2025, Iran held a total of 440.9 kilograms of uranium hexafluoride enriched to around 60% as of 13 June[5]— an increase of 258.6 kilograms compared to the Agency's measurement on 26 October

[4] *SIPRI Yearbook 2025: Armaments, Disarmament and International Security*, Stockholm International Peace Research Institute, Oxford University Press, 2025, p. 265.

[5] IAEA, *NPT Safeguards Agreement with the Islamic Republic of Iran*, GOV/2025/65, November 12, 2025, p. 5.

Table 3-2 Separated Plutonium Holdings

Country	Military (Tons)	Non-military (Tons)	Total Amount
China	2.9	0.04	2.94
France	6.0	99.25**	105.25
Russia	88.0	104.9	192.9
United Kingdom	3.2	116.8	120.0
United States	38.4	49.2	87.6
India	10.6	0.4	11.0
Israel	0.9		0.9
Pakistan	0.58		0.58
Japan		44.4** (35.8 tons of which are held overseas)	44.4
North Korea	0.04		0.04
Others*		1.6	1.6
Total Amount	151	416.59	567.21

This table was created by the author based on the data from RECNA "Global Nuclear Material Data 2025," (data as of the end of 2023) and INFCIRC documents.

* Holdings of Belgium, Germany, Italy, the Netherlands, Switzerland, and Spain in foreign countries.

** Data from INFCIRC/549.

(Quotes from the RECNA website) "The stockpile of fissile materials includes estimated ones with large uncertainties and thus total quantities are expressed in rounded numbers. The figures are shown to the second decimal point for North Korea only, although the amount is 100 kg or less, in order to show that it does possess the material. Chinese inventory was as of the end of 2016, and no data has been published since then.

Military: Plutonium used in nuclear warheads or stored for use in weapons; plutonium that is reserved for possible military uses in the future.

Non-military: Plutonium separated from spent nuclear fuel from a nuclear reactor for non-military purposes; plutonium declared as surplus for nuclear weapons."

Sources: RECNA, "Global Nuclear Material Data 2025;" INFCIRC/549/Add.5/29, September 11, 2025 (France); INFCIRC/549/Add.1/28, August 14, 2025 (Japan); "Materials: Plutonium," *IPFM Blog*, April 28, 2025, https://fissilematerials.org/materials/plutonium.html.

2024.[6]

It should be noted that 34 countries and Taiwan that once had HEU for civilian use have completely eliminated these holdings through the Global Threat Reduction Initiative (GTRI) and other initiatives promoted by the United States. Such HEU minimization efforts (see (3) A) of this Chapter) continue to be underway contributing to a downward trend in the global stockpile of HEU. On the other hand, approximately 95% of the world stocks of HEU are dedicated to military purposes. Thus, ensuring the nuclear security of not only civilian but also military-use HEU remains critically important.

[6] IAEA, *Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015)*, GOV/2024/61, November 19, 2024, p. 9.

With respect to separated plutonium for military use, India's stockpile increased by an estimated 0.7 tons compared with the previous year, Israel's by about 0.05 tons, Pakistan by about 0.08 tons, and the United States' by 0.2 tons. For civilian use, the French stockpile increased by 3 tons. Russia and the United Kingdom's stockpiles also increased by 0.4 ton. The global inventory of this material for both military and civilian use has been on an upward trend in recent years, and this year too it gained 0.98 tons over the previous *Hiroshima Report*.

B) Radioactive materials

Since the September 11, 2001 terrorist attacks in the United States, the threat of radioactive dispersal devices (so-called "dirty bombs") has become a concern. Therefore, not only nuclear materials, but also other radioactive materials are included in the scope of nuclear security efforts. Among them, radioactive sources are widely used around the world in various fields ranging from medicine to agriculture. Since those materials are generally stored in locations where protection is not as stringent as for weapons-usable nuclear materials, the risk of theft is relatively high, and it is necessary to further strengthen international efforts for the security of those materials.

An important international document related to nuclear security of radioactive sources is the Code of Conduct on the Safety and Security of Radioactive Sources (hereafter referred to the "Code"), which was adopted at the IAEA Board of Governors in September 2003.[7] While this is not a legally binding document, as of August 2025, 153 countries, including all of the countries included in this survey except Iran and North Korea, have made a political commitment to implement it. Additionally, 140 out of 153 countries had notified the IAEA Director General of their intention to act in a harmonized manner in accordance with the Code's Supplementary Guidance document on the Import and Export of Radioactive Sources. 75 countries did the same for the Guidance document on the Management of Disused Radioactive Sources.[8] However, among the surveyed countries that have expressed political commitment to the Code, the extent of engagement with these supplementary guidance documents varies, with some countries having neither committed to certain guidance documents nor responded to related IAEA questionnaires.

The United Arab Emirates and Zimbabwe hosted two regional meetings organized by the IAEA to share experiences and lessons learned in implementing the Code and its supplementary documents.

As for the United States, in its report to the Congress on nuclear threat reduction, the Department of Energy's National Nuclear Security Administration (NNSA) reported that they eliminated 75 devices containing high-activity radioactive materials in the United States and

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7 The main objectives of this Code of Conduct are to achieve a high level of safety and security of radioactive sources; to deter unauthorized access, theft, and unauthorized transfer of radioactive sources, thereby causing harmful effects on individuals, society, and the environment; and to minimize radiation effects caused by accidents and malicious acts.

8 IAEA, *Nuclear Security Report 2025*, GOV/2025/41-GC(69)/8, July 24, 2025, p. 14; "List of States," IAEA, August 26, 2025, https://nucleus.iaea.org/sites/ns/code-of-conduct-radioactive-sources/Documents/Status_list%2026%20August%202025.pdf.

across the globe in fiscal year 2024.[9]

In July 2025, participants from 121 IAEA Member States attended the first in-person meeting since the publication of the Guidance of the Management of Disused Radioactive Sources, in 2018.[10] They discussed their experiences, challenges and lessons learned from the implementation of the Guidance. "We heard numerous examples of how the Code of Conduct and the Guidance play a crucial role in assisting national efforts to manage radioactive sources throughout their lifecycle, confirming the importance of sustainable implementation of both the Code of Conduct and Guidance," stated Hildegarde Vandenhove, Director of the IAEA' s Division of Radiation, Transport and Waste Safety.

C) Nuclear facilities

Facilities

Nuclear facilities that could potentially have serious radiological consequences in the event of sabotage include power reactors, research reactors, uranium enrichment facilities, reprocessing facilities, and spent fuel as well as radioactive waste storage facilities. Uranium enrichment and reprocessing facilities are considered to be the most attractive nuclear facilities for terrorists seeking to produce nuclear explosive devices because of the availability of nuclear materials that can be directly used for such devices. Table 3-3 shows the status of nuclear power reactors, research reactors, uranium enrichment facilities, and reprocessing facilities in the surveyed countries for the *Hiroshima Report*.

As of December 1, 2025, 438 (-1) power reactors worldwide were operational in 31 countries[11], 71 (+5) were under construction, 114 (+27) were in the planning stage, and 320 (-24) were proposed for construction (changes from the previous year in parentheses).[12] However, the data is updated from time to time so the figures are subject to change.

In recent years, there has been a growing interest in nuclear power generation from the perspective of countering global warming and energy security. Currently, about 30 countries are considering, planning, or newly starting nuclear power programs, and another 20 countries have expressed some form of interest.[13]

Under such circumstances, China and Russia have come to account for a significant share of the international market for nuclear power plant (NPP) exports. As of December 2025,

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9 National Nuclear Security Administration, *2024 Year in Review*, December 19, 2024, p. 10, https://www.energy.gov/sites/default/files/2024-12/2024%20NNSA%20Year%20in%20Review_508.pdf.

10 IAEA, "Management of Disused Radioactive Sources: IAEA Safety and Security Guidance," July 3, 2025, https://www.iaea.org/newscenter/news/management-of-disused-radioactive-sources-iaea-safety-and-security-guidance.

11 Taiwan's last reactor was shut down in May 2025.

12 "World Nuclear Power Reactors & Uranium Requirements," World Nuclear Association, December 1, 2025, https://world-nuclear.org/information-library/facts-and-figures/world-nuclear-power-reactors-and-uranium-requireme.

13 "Emerging Nuclear Energy Countries," World Nuclear Association, November 18, 2025, https://world-nuclear.org/information-library/country-profiles/others/emerging-nuclear-energy-countries.

Table 3-3: Nuclear facilities

	Nuclear Power Plant(s)	Research Reactor(s)	Uranium Enrichment Facility/Facilities	Reprocessing Facility/ Facilities
China	○	○	○ (b)	○
France	○	○	○	○
Russia	○	○	○	○ (b)
U.K.	○	○	○	△
U.S.	○	○	○	○
India	○	○	○ (a)	○ (b)
Israel		○		○ (a)
Pakistan	○	○	○ (a)	○ (a)
Australia		○		
Belgium	○	○		
Brazil	○	○	○	
Canada	○	○		
Finland	○	△ (d)		
Germany	△ (d)	○	○	
Iran	○	○	○	
Japan	○	○	○	△ (e)
Kazakhstan	△ (d)	○		
South Korea	○	○		
Mexico	○	○		
Netherlands	○	○	○	
Norway		△ (d)		
South Africa	○	○		
Sweden	○	△ (d)		
Switzerland	○	○		
Türkiye	△ (c)	△		
UAE	○			
North Korea		○ (a)	○	○ (a)

○ :Currently in operation △ : Not-in operation (a) Military use (b) Military and civilian use (c) Under construction (d) Under shut down and decommissioning (e) Under test operation.

Sources: IAEA, Power Reactor Information System, https://pris.iaea.org/pris/; IAEA, Research Reactor Database, https://nucleus.iaea.org/RRDB/RR/ReactorSearch.aspx?filter=0; "Facilities: Enrichment facilities," IPFM, April 28, 2025; "Facilities: Reprocessing Plants," International Panel on Fissile Materials, April 28, 2025; "Yongbyon Nuclear Scientific Research Center: Modernization and Expansion in 2025," 38 North, November 21, 2025, https://www.38north.org/2025/11/yongbyon-nuclear-scientific-research-center-modernization-and-expansion-in-2025/; "Enrichment plant in Rokkasho prepares to resume operations," IPFM, October 14, 2025, https://fissilematerials.org/blog/2025/10/enrichment_plant_in_rokka.html.

according to the World Nuclear Association (WNA), China is expected to export NPPs to 12 countries. In addition to traditional cooperation partners such as Pakistan, these countries include in the Middle East and Africa, such as Kenya, Sudan, and Egypt.[14] Russia is currently constructing NPPs in six countries, and is also in talks with 13 other countries, including Bangladesh, Egypt, and Uzbekistan, which are introducing NPP.[15]

As for research reactors, as of December 2025, there were 845 units (+5) worldwide, in 72 countries, broken down as follows:[16]

- Operational: 228 units (+1)
- Temporary shutdown: 7 units (±0)
- Under construction: 12 units (+1)
- Planned: 11 units (+10)
- Extended shut-down: 10 units (-2)
- Permanent shut-down: 56 units (+1)
- Decommissioned: 457 units (+6)
- Currently being dismantled: 68 units (-1)

(Figures in parentheses represent changes from the previous year)

Looking at HEU spent fuel assemblies for research reactors, there are 20,665 assemblies worldwide with an enrichment of more than 20%.[17] Of these, 9,390 have an enrichment of 90% or more, a decrease of 93 since last year. By region, there are 11,003 in Eastern Europe, 4,206 in Western Europe, 1,704 in the Far East, 1,623 in North America, 433 in Africa, 139 in the Middle East and South Asia, 1,450 in Southeast Asia and the Pacific, and 107 in Latin America.[18] This worldwide presence of such a large number of HEU spent fuel assemblies indicates the continued importance of strengthening measures to prevent sabotage, in addition to measures to prevent the theft of HEU at research reactor facilities.

Risks posed by emerging technologies

Unmanned aerial vehicle (Drone)

Regarding sabotage against nuclear facilities, as reported in previous issues of *Hiroshima Report*, there have been quite a few relevant incidents involving unmanned aerial vehicles (UAV), also known as drones. While drones are increasingly used at NPP for inspection, monitoring, and survey purposes, there are concerns about the threat to nuclear security. Although reactor buildings and containment structures are generally robust and small

[14] "Nuclear Power in China," World Nuclear Association, December 3, 2025, https://world-nuclear.org/information-library/country-profiles/countries-a-f/china-nuclear-power#nuclear-technology-exports.

[15] "Nuclear Power in Russia," World Nuclear Association, May 1, 2025, https://world-nuclear.org/information-library/country-profiles/countries-o-s/russia-nuclear-power.

[16] IAEA, "Research Reactor Database," February 12, 2026, https://nucleus.iaea.org/rrdb/#/home.

[17] IAEA, "Worldwide HEU and LEU Assemblies by Enrichment," February 12, 2026, https://nucleus.iaea.org/rrdb/#/ reports/summary-report/WorldwideHEUandLEUassembliesbyEnrichment.

[18] IAEA, "Regionwise Distribution of HEU and LEU," February 12, 2026, https://nucleus.iaea.org/rrdb/#/reports/ summary-report/RegionwisedistributionofHEUandLEU.

commercial drones alone are still judged unlikely to cause immediate, large-scale radiological releases, recent incidents show that drone attacks can nonetheless create serious nuclear safety and security risks.

In November 2025, five drones were spotted flying over Belgium's Doel NPP, prompting enhanced protective measures and public concern. Defense Minister Theo Francken said that "Russia is clearly a plausible suspect." [19] In South Korea, 155 cases of illegal drone incidents targeting NPPs were detected between January and November.[20] In July, in Japan, an incident at the Genkai NPP—initially reported as a possible drone intrusion—was later assessed by police as most likely involving aircraft lights rather than drones, though the possibility could not be entirely excluded.[21] The case triggered Japan's first public emergency notification related to nuclear material protection and prompted renewed scrutiny of detection, identification, and response arrangements. In Spain, in May 2025, monitoring systems at the Cofrentes NPP detected a drone intrusion into restricted airspace, enabling authorities to identify the launch location and take law-enforcement action against the operator.[22] In Germany, authorities launched investigations in 2024 into repeated drone flights over critical infrastructure in northern Germany, including the Brunsbüttel industrial area hosting a decommissioned NPP, citing suspicions of espionage and sabotage-related activity. [23] In Sweden, unauthorized drones were detected over three of the country's NPPs in 2022, prompting the national Security Service to take over the investigations.[24]

Against this backdrop, several countries have reassessed their detection, identification, and response arrangements for drone-related incidents at nuclear facilities. For instance, Japan's National Police Agency convened an expert panel following the above-mentioned incident. Their findings underscored challenges in distinguishing drones from aircraft, clarifying response authorities, and strengthening coordination between police and nuclear facility operators.[25] Additionally, the panel identified the growing ability of drones to be operated from outside existing restricted zones as a challenge for protecting critical facilities, including

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[19] Elena Giordano, "Belgium flounders as 5 drones buzz nuclear power plant," *Politico*, November 10, 2025, https://www.politico.eu/article/drones-spotted-belgium-nuclear-plant-doel-airspace-incursions/.

[20] Jung Min-hee, "Illegal Drones Detected 277 Times at Airports and Nuclear Plants Last Year," *Business Korea*, January 2, 2026, https://www.businesskorea.co.kr/news/articleView.html?idxno=260070.

[21] "玄海原発上空の光、航空機をドローンと勘違いか　県警本部長が答弁 [Lights Observed over the Genkai NPP May Have Been Aircraft Mistaken for Drones, Says Prefectural Police Chief]," *Asahi*, September 19, 2025, https://www.asahi.com/articles/AST9M2VKYT9MTTHB00DM.html.

[22] Alex Trelinski, "Pilot Arrested After Flying Drone Over Protected Nuclear Power Plant in Spain," *The Olive Press*, May 19, 2025, https://www.theolivepress.es/spain-news/2025/05/19/drone-flew-into-protected-airspace-over-nuclear-power-plant-in-spain/.

[23] "Germany investigates drone flights over industrial park," *DW*, August 22, 2024, https://www.dw.com/en/germany-investigates-drone-flights-over-industrial-park/a-70021895.

[24] "Swedish Security Service investigates drones at three nuclear plants," *Reuters*, January 17, 2022, https://www.reuters.com/world/europe/swedish-security-service-investigates-drones-three-nuclear-plants-2022-01-17/.

[25] Japan National Police Agency, "*技術の進展に伴う危険なドローン飛行への対策に関する報告書（案）[Draft Report on Countermeasures Against Dangerous Drone Flights Accompanying Technological Advancements]*," December 2025, https://www.npa.go.jp/bureau/security/kogatamujinki/council/kaighishiryou/3shiryou2.pdf.

nuclear sites, and is considering expanding protected airspace and strengthening response authorities and penalties.[26] Nuclear security strategies therefore increasingly focus not only on the robustness of reactor buildings themselves but also on protecting associated infrastructure (such as off-site power supply, spent fuel and waste facilities, and control and support buildings) against deliberate or reckless drone use.

In parallel, the U.S. Nuclear Regulatory Commission (NRC) has emphasized the growing challenge to NPP security posed by the widespread availability of commercial drones.[27] In 2024, the NRC updated its regulatory framework to require NPP licensees to report all drone sightings over their facilities, with reports shared not only with the NRC but also with the Federal Aviation Administration (FAA), the Federal Bureau of Investigation (FBI), and local law-enforcement authorities. While U.S. nuclear plant security forces do not have the authority to interdict or disable drones, the NRC underscored that NPPs are inherently robust and protected by layered security measures, including trained and armed security personnel, physical barriers, and surveillance systems designed to address established design-basis threats. The NRC further noted that it continuously reviews evolving terrorist and criminal tactics, including drone use, in coordination with intelligence and law-enforcement agencies, to assess whether existing security requirements remain adequate in light of emerging risks.

At the international level, responses have similarly focused on adapting regulatory and security frameworks. In May 2025, the IAEA launched a Coordinated Research Project (CRP) on "Nuclear Security Implications of Uncrewed Aerial, Ground, and Maritime Systems."[28] This 3-year project aims to offer actional insights and strategies to fortify security frameworks against risks arising from the rapid advancements in uncrewed systems, including drones.

Cyberattacks

In addition to these potential threats to nuclear facilities from UAVs, cyber threats are also becoming more diverse and complex, and dealing with them is a major challenge, even for those that are more technologically advanced. While digitization offers convenience and benefits, there is concern that reliance on digital components of safety and physical protection systems in nuclear facilities may increase cyber risks. Cyberattacks on those systems could also be used to facilitate theft of nuclear material or sabotage leading to the release of radioactive materials.[29] These concerns are being shared by many countries, and there is a growing demand for support in this area even among IAEA member states.[30] The IAEA provides support by holding training courses related to regulatory systems, incident responses,

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[26] Japan National Police Agency, "*第1回 違法なドローン飛行対策に関する検討会 [First Meeting of the Study Group on Countermeasures Against Illegal Drone Flights]*," October 7, 2025, https://www.npa.go.jp/bureau/security/kogatamujinki/council/kaighishiryou/1shiryou3.pdf.

[27] "Drones and Nuclear Power Plant Security," U.S. NRC, January 2025, https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-drone-pwr-plant-security.

[28] IAEA, "Nuclear Security Implications of Uncrewed Aerial, Ground, and Maritime Systems," May 2025, https://www.iaea.org/projects/crp/j02018.

[29] Van Dine, A. et al., "Outpacing Cyber Threats Priorities for Cybersecurity at Nuclear Facilities," *Nuclear Threat Initiative*, 2016, p. 10.

[30] IAEA, *Nuclear Security Review 2025*, p. 21.

and assessments. According to the IAEA's *Nuclear Security Report 2025*, France, Japan, South Korea, and Türkiye, among others, held IAEA training and workshops.[31]

Attempts at cyberattacks against nuclear facilities, as well as cases involving regulatory vulnerabilities at such facilities, have also been reported. In the United States, the NNSA was compromised through the hacking of Microsoft's document management software, SharePoint. Although no leakage of classified or sensitive information was confirmed, Microsoft indicated that the attack was carried out by hackers supported by the Chinese government.[32] In March and April 2025 a pro-Russian hacktivist group known as NoName057(16) claimed distributed denial-of-service (DDoS) attacks on nuclear sector entities including Framatome and the Doel and Tihange NPPs, though there is no indication that operational or safety systems were breached.[33] Europol and Eurojust subsequently coordinated an international law enforcement operation that dismantled much of NoName057(16)'s botnet infrastructure and pursued arrests in connection with its broader DDoS campaigns against critical infrastructure in Europe.[34]

Cybersecurity firms also reported an increase in targeted campaigns against energy and nuclear facilities worldwide, involving hacktivists and nation-state actors.[35] Some countries, such as Slovenia, have conducted comprehensive cyber security exercises with NPP operators to test readiness and coordination for potential cyber incidents.[36] In Japan, a data breach involving a subcontractor of the Japan Atomic Energy Agency (JAEA) highlighted that cyber risks extend beyond control systems to include sensitive information networks.[37]

Artificial Intelligence (AI)

Alongside the remarkable development of AI technologies, both risks and benefits of AI are considered in the context of nuclear security. At the IAEA's first International Symposium on Artificial Intelligence and Nuclear Energy (3–4 December 2025), Director General Rafael Grossi stressed that the rise of AI and the expansion of nuclear energy are "not unfolding separately" but are converging in ways that will reshape safety, security and safeguards.[38]

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31 IAEA, *Nuclear Security Report 2025*, op. cit., pp. 17-8.

32 Ari Natter, "Nuclear Weapons Agency Breached in Microsoft SharePoint Hack," *Bloomberg*, July 23, 2025, https://www.bloomberg.com/news/articles/2025-07-23/us-nuclear-weapons-agency-breached-in-microsoft-sharepoint-hack.

33 "Cyber Threats Against Energy Sector Surge as Global Tensions Mount," *Resecurity*, April 15, 2025, https://www.resecurity.com/ar/blog/article/cyber-threats-against-energy-sector-surge-global-tensions-mount.

34 "Global operation targets NoName057(16) pro-Russian cybercrime network," Europol, July 16, 2025, https://www.europol.europa.eu/media-press/newsroom/news/global-operation-targets-noname05716-pro-russian-cybercrime-network.

35 "Cyber Threats Against Energy Sector Surge as Global Tensions Mount," op. cit.

36 "KiVA2025 - Cyber Security Exercise at Nuclear Facilities," Slovenian Nuclear Safety Administration, December 5, 2025, https://www.gov.si/en/news/2025-12-05-kiva2025-cyber-security-exercise-at-nuclear-facilities.

37 "個人情報漏えいの可能性についてのお知らせ [Notification of a Possible Personal Data Breach]," JAEA, May 30, 2025, https://www.jaea.go.jp/news/newsbox/2025/053001.

38 IAEA, "The Atom and the Algorithm: Nuclear Energy and AI are Converging to Shape the Future," December 3, 2025, https://www.iaea.org/newscenter/statements/the-atom-and-the-algorithm-nuclear-energy-and-ai-are-converging-to-shape-the-future.

Highlighting AI's role in anomaly detection, surveillance analysis, and emergency planning, he cautioned that "despite its brilliance, AI still needs a human to make sure it is right and impartial," underscoring the need for robust governance and cyber-resilient infrastructures. The symposium initiated work toward an IAEA-supported framework for secure and trustworthy AI deployment in the nuclear sector.

Additionally, a new IAEA CRP entitled "Enhancing Computer Security of Artificial Intelligence Applications for Nuclear Technologies" was launched in May 2025.[39] The CRP aims to develop methodologies and frameworks that enhance computer security for AI-enabled technologies used in nuclear security regimes. It also seeks to strengthen existing computer security strategies and programs to support the safe and secure adoption of AI-enabled tools, helping facilities and states become informed users of such technologies.

In October 2025, the OECD Nuclear Energy Agency (NEA) convened its first workshop under the newly launched AIxpertise Joint Project, which aims to strengthen understanding of how artificial intelligence may affect nuclear research, safety, operations, and education. Participants from governments, regulators, industry and academia discussed both opportunities and risks associated with deploying advanced AI systems in the nuclear sector.[40] The NEA also continued its dedicated work on AI safety through its "Task Force on AI & Machine Learning," which held its Annual Workshop in June 2025 to examine regulatory and technical challenges posed by the increasing use of AI in nuclear applications, including questions of trustworthiness, verification, and cyber-resilience.[41]

National regulators also advanced their work in this area. In the United States, the NRC organized its 6th Annual Artificial Intelligence Workshop in September 2025, aimed at gathering input from industry, researchers, and other government agencies on how AI technologies could affect nuclear operations, oversight, and safety-critical systems.[42] Discussions included regulatory approaches for emerging AI applications and potential implications for the secure and reliable operation of nuclear facilities.

D) Armed attacks against nuclear facilities by countries

Armed attacks against nuclear facilities by states have emerged as one of the most serious and complex nuclear security challenges in recent years. Traditionally, nuclear security has been understood primarily in relation to threats posed by non-state actors, such as terrorism, sabotage, or illicit trafficking. However, the Russian invasion of Ukraine since February 2022 fundamentally challenged this assumption by demonstrating how interstate armed conflict can

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[39] IAEA, "New Research Project on Computer Security For Nuclear AI," October 20, 2025, https://www.iaea.org/newscenter/news/new-research-project-on-computer-security-for-nuclear-ai.

[40] NEA, "Joint Project on AI Platform for Nuclear Research and Education (AIxpertise)," https://www.oecd-nea.org/jcms/pl_100138/joint-project-on-ai-platform-for-nuclear-research-and-education-aixpertise.

[41] NEA, "Task Force AI & ML Meeting - Annual Workshop 2025," May 2025, https://oecd-nea.org/jcms/pl_105117/task-force-ai-ml-meeting-annual-workshop-2025.

[42] "NRC To Hold 6th Annual Artificial Intelligence Workshop," *NRC News*, September 2025, https://www.nrc.gov/sites/default/files/cdn/doc-collection-news/2025/25-055.pdf.

directly endanger the safety, security, and safeguards of nuclear installations.

In 2025, these challenges became even more pronounced. Continued military operations in and around Ukrainian NPPs, alongside attacks on energy infrastructure critical to their operation, underscored the vulnerability of nuclear facilities in high-intensity armed conflict. At the same time, the June 2025 military strikes by Israel and the United States against Iran's safeguarded nuclear facilities marked a significant escalation, bringing the issue of state-led attacks on nuclear sites beyond the Ukrainian context.

These developments raise difficult questions for the international nuclear security framework, including the scope of existing norms prohibiting attacks on nuclear facilities, the role of the IAEA during armed conflict, and the tension between nuclear safety and security principles and broader geopolitical and military considerations. The following section reviews key cases in 2025 involving armed attacks against nuclear facilities, focusing first on Ukraine and subsequently on Iran, as well as the responses of the IAEA and the wider international community.

Ukraine

In 2025, Russia continued large-scale missile and drone strikes against Ukraine's power system, repeatedly damaging thermal power plants and substations and forcing nationwide power restrictions. On 15 September 2025 the Ukrainian Minister of Energy told the IAEA General Conference that, since early 2025, there had been over 549 drone and missile fly-overs recorded within 30-km zones around Ukrainian NPPs.[43] She added that Russian deliberate air strikes on Ukrainian energy infrastructure led to the loss of external power supply to Ukrainian NPPs 13 times, since the start of the full-scale invasion.

For instance, in February 2025, a combat drone struck the protective New Safe Confinement at Chernobyl NPP— the shelter built over the 1986 disaster reactor — inflicting significant damage to its outer cladding and causing fires that damaged its insulation. Although radiation levels remained within normal limits initially, by December the IAEA concluded that the NSC had "lost its primary safety functions, including the confinement capability."[44]

Meanwhile, military attacks on energy substations continued to threaten the safe operation of other nuclear power sites. On October 31, 2025, Ukraine denounced "targeted strikes" by Russian forces on substations supplying external power to multiple NPPs, including Khmelnytskyi NPP, South Ukraine NPP and Rivne NPP.[45] According to the IAEA, those incidents forced two plants to lose external power, and forced a third plant to reduce output.[46]

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[43] "Statement by Minister of Energy of Ukraine Svitlana Grynchuk," General Debate, 69th General Conference of the IAEA, September 15, 2025.

[44] IAEA, "Update 331 – IAEA Director General Statement on Situation in Ukraine," February 27, 2025, https://www.iaea.org/newscenter/pressreleases/update-331-iaea-director-general-statement-on-situation-in-ukraine.

[45] "Ukraine denounces attacks on power substations vital to nuclear plants," *Reuters*, November 1, 2025, https://www.reuters.com/business/energy/ukraine-denounces-attacks-power-substations-vital-nuclear-plants-2025-10-31/.

[46] IAEA, "Update 324 – IAEA Director General Statement on Situation in Ukraine," October 30, 2025,

The most acute crisis remained at Zaporizhzhia Nuclear Power Plant (ZNPP), Europe's largest. Attacks on and around ZNPP continued to occur frequently in 2025. For instance, on 16 September 2025, the IAEA reported artillery shelling near the plant perimeter and black smoke rising from locations about 400 meters from the site.[47] Later in September, ZNPP lost external power for nearly a week, the longest lasting such event since the beginning of the war.[48] Following weeks of IAEA-led negotiations, Russia and Ukraine subsequently agreed to a temporary, site-specific cessation of hostilities around key locations near the frontline for approximately one month, enabling repair work on damaged external power lines critical to the plant's nuclear safety and security.[49]

In late November, the IAEA chief emphasized that ZNPP will need a special cooperative agreement between Russia and Ukraine — should there be a peace deal — because no single operator can guarantee safety in the current contested environment.[50] A draft version of the U.S.-backed 28-point peace plan for Ukraine proposes restarting the plant under IAEA supervision, with electricity output split equally between Russia and Ukraine.[51]

In parallel with Russian strikes on Ukrainian energy and nuclear infrastructure, Moscow also alleged that Ukrainian forces had carried out drone attacks against NPPs on Russian territory, notably at the Kursk and Novovoronezh facilities. In August, Russian authorities reported that a Ukrainian drone strike caused a fire at the Kursk NPP, damaging an auxiliary transformer and leading to a temporary 50% reduction in the operating capacity of one reactor, though no casualties or radiological releases were reported.[52] In October, Russia's state nuclear operator Rosenergoatom stated that a Ukrainian drone was suppressed before detonating near a cooling tower at the Novovoronezh plant, leaving minor surface damage but no impact on safety or radiation levels. Ukraine did not publicly comment on the alleged incidents.[53] In both cases,

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https://www.iaea.org/newscenter/pressreleases/update-324-iaea-director-general-statement-on-situation-in-ukraine.

47 IAEA, "Update 314 – IAEA Director General Statement on Situation in Ukraine," September 16, 2025, https://www.iaea.org/newscenter/pressreleases/update-314-iaea-director-general-statement-on-situation-in-ukraine.

48 IAEA, "Update 317 – IAEA Director General Statement on Situation in Ukraine," September 30, 2025, https://www.iaea.org/newscenter/pressreleases/update-317-iaea-director-general-statement-on-situation-in-ukraine.

49 IAEA, "Update 322 – IAEA Director General Statement on Situation in Ukraine," October 18, 2025, https://www.iaea.org/newscenter/pressreleases/update-322-iaea-director-general-statement-on-situation-in-ukraine; IAEA, "Update 335 – IAEA Director General Statement on Situation in Ukraine," December 30, 2025, https://www.iaea.org/newscenter/pressreleases/update-335-iaea-director-general-statement-on-situation-in-ukraine.

50 "Zaporizhzhia nuclear plant needs cooperation agreement in event of Ukraine peace, says IAEA," *Reuters*, November 25, 2025, https://www.reuters.com/business/energy/zaporizhzhia-nuclear-plant-needs-cooperation-agreement-event-ukraine-peace-says-2025-11-25/.

51 Mark F. Cancian and Marla Snegovaya, "The Unfinished Plan for Peace in Ukraine: Provision by Provision," CSIS, November 24, 2025, https://www.csis.org/analysis/unfinished-plan-peace-ukraine-provision-provision.

52 Angelique Chrisafis, "Russia accuses Ukraine of strike on nuclear plant in wave of drone attacks," *The Guardian*, August 24, 2025, https://www.theguardian.com/world/2025/aug/24/russia-accuses-ukraine-drone-strike-kursk-nuclear-power-plant.

53 Felix Lightand Mark Trevelyan, "Russia says Ukrainian drone crashed into nuclear plant, without

the IAEA confirmed that radiation levels remained normal and reiterated its longstanding warnings that military activities near nuclear facilities pose serious safety and security risks, underscoring the need to avoid any actions that could endanger nuclear installations amid ongoing hostilities.

International Community Responses

On 24 February 2025, the UN General Assembly adopted resolution A/RES/ES-11/7 on advancing a comprehensive, just and lasting peace in Ukraine, in which it "reiterate[d] its call for the immediate cessation of attacks against critical energy infrastructure, which increase the risk of a nuclear accident or incident" and "[u]rge[d] all Member States to cooperate in the spirit of solidarity to address the global impacts of the war on […] nuclear security and safety […]".

At the IAEA General Conference in September 2025, a resolution on nuclear safety, nuclear security and safeguards in Ukraine was adopted by a majority vote[54]. The resolution reiterated grave concern over the "precarious" situation at the ZNPP, noting that six of the Director General's 'Seven Pillars'[55] remained fully or partially compromised and recalling the nuclear safety risks posed by attacks on Ukraine's energy infrastructure and the February 2025 drone strike on the Chernobyl New Safe Confinement.

Compared to the 2024 resolution,[56] it newly took note of the February 2025 drone strike on the New Safe Confinement at the Chernobyl NPP and of the Director General's updated reporting on continued difficulties in implementing safeguards at ZNPP due to the ongoing military presence. It reaffirmed that all Ukrainian nuclear facilities must operate safely under Ukraine's sovereign control, called for the urgent withdrawal of all unauthorized Russian personnel from ZNPP, and demanded that the IAEA Support and Assistance Mission to Zaporizhzhia (ISAMZ) be granted unrestricted access to conduct safety, security and safeguards activities.

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causing damage," *Reuters*, https://www.reuters.com/world/europe/russia-says-ukrainian-drone-crashed-into-nuclear-plant-without-causing-damage-2025-10-07/.

54 IAEA, GC(69)/RES/14. 62 countries voted in favor of the resolution, 7 against, and 46 abstained. The resolution also recalled three resolutions adopted by the IAEA Board of Governors in 2022 and two adopted in 2024, and expressed serious concern that Russia had not responded to the Board's call for Russia to immediately cease all actions at and against Ukraine's nuclear facilities and to withdraw Russian military and other personnel from the ZNPP.

55 "Seven indispensable pillars to assess the nuclear safety and security situation in Ukraine to the context of the ongoing armed conflict" was developed in March 2022 to evaluate the nuclear safety and security of Ukraine's nuclear facilities under the armed conflict. The "Seven Pillars" are: 1. The physical integrity of facilities – whether it is the reactors, fuel ponds or radioactive waste stores – must be maintained; 2. All safety and security systems and equipment must be fully functional at all times; 3. The operating staff must be able to fulfill their safety and security duties and have the capacity to make decisions free of undue pressure; 4. There must be a secure off-site power supply from the grid for all nuclear sites; 5. There must be uninterrupted logistical supply chains and transportation to and from the sites; 6. There must be effective on-site and off-site radiation monitoring systems, and emergency preparedness and response measures; and 7. There must be reliable communication with the regulator and others. "Nuclear Safety, Security and Safeguards in Ukraine," IAEA, https://www.iaea.org/topics/response/nuclear-safety-security-and-safeguards-in-ukraine.

56 IAEA, GC(68)/RES/15 (Nuclear Safety, Security and Safeguards in Ukraine), September 20, 2024.

In its statement at the General Conference, Russia rejected the resolution and the broader criticism of its actions, arguing instead that Ukraine was responsible for escalating nuclear risks through alleged attacks on nuclear facilities in both occupied Ukrainian territory and inside Russia. Moscow accused Western states of ignoring these incidents and of politicizing the IAEA by supporting a resolution it described as "cynical" and beyond the Agency's mandate.[57] Russia also dismissed references to the "Seven Pillars" and "Five Principles"[58] as selectively applied and questioned the impartiality of monitoring based on these frameworks. It insisted that its presence at ZNPP ensures the plant's safety, denied carrying out any attacks on nuclear facilities, and urged Member States to vote against the resolution to avoid what it claimed would be reputational damage to the Agency.[59]

Beyond the General Conference, many IAEA member states reiterated in public statements that nuclear safety and security must remain a core priority during armed conflict. At the September 2025 Board of Governors meeting, the European Union (EU) and its member states expressed deep concern about the situation at Ukrainian nuclear facilities and stressed the need to uphold the Agency's "Seven Pillars" and "Five Principles."[60] This message was reinforced by a joint statement delivered on behalf of 47 delegations, which condemned the nuclear risks created by Russia's military activities, highlighted the dangers posed by attacks on energy infrastructure, and called for unrestricted ISAMZ access as well as continued international support for the IAEA's assistance to Ukraine.[61]

Attacks on Iranian nuclear sites

Between June 12 and 23, Israeli forces carried out an intensive bombing campaign inside Iran, targeting nuclear sites as well as military and civilian facilities. In the following week, the United States joined the campaign. The following paragraphs summarize the June 2025 assaults on Iran's nuclear infrastructure and the international response.

On 13 June, Israel launched a major air assault on Iran's nuclear program, striking the Natanz uranium-enrichment complex and related facilities.[62] State media and satellite images showed

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57 "Statement by the Russian Federation," agenda item 21, 69th session of the IAEA General Conference, September 19, 2025.

58 The IAEA Director General proposed "The Five Principles" in May 2023 as principles for protecting the ZNPP and avoiding nuclear incidents. They are: 1.There should be no attack of any kind from or against the plant, in particular targeting the reactors, spent fuel storage, other critical infrastructure, or personnel; 2.The ZNPP should not be used as storage or a base for heavy weapons (i.e. multiple rocket launchers, artillery systems and munitions, and tanks) or military personnel that could be used for an attack from the plant; 3.Off-site power to the plant should not be put at risk. To that effect, all efforts should be made to ensure that off-site power remains available and secure at all times; 4. All structures, systems and components essential to the safe and secure operation of the ZNPP should be protected from attacks or acts of sabotage; and 5. No action should be taken that undermines these principles. "Nuclear Safety, Security and Safeguards in Ukraine."

59 "Statement by the Russian Federation," agenda item 21, 69th session of the IAEA General Conference, September 19, 2025.

60 "Statement by the European Union," IAEA Board of Governors on Nuclear Safety, September 8, 2025.

61 "Joint Statement by several Member States on Agenda Item 8 'Nuclear safety, security and safeguards in Ukraine'," IAEA, INFCIRC/1276, March 10, 2025.

62 "Israel and U.S. Strike Iran's Nuclear Program," *Arms Control Today*, July/August 2025, https://

explosions and black smoke over Natanz immediately after the raid.[63] Iran later reported that Natanz's above-ground pilot enrichment plant was destroyed (though the underground centrifuge facility appeared to remain intact). At an emergency IAEA board meeting on 16 June, Director General Grossi confirmed that the Natanz above-ground facility had indeed been "destroyed" but emphasized there had been no off-site radiation release and that external radiation levels remained normal.[64]

On 21–22 June, U.S. forces bombed three Iranian nuclear sites under the code name *Operation Midnight Hammer*. President Trump announced the strikes as "very successful," stating that the United States had employed its largest conventional bomb, the 30,000-lb GBU-57 Massive Ordnance Penetrator, against the deeply buried Fordow uranium-enrichment plant, and had fired Tomahawk cruise missiles at the Natanz Fuel Enrichment Plant and the uranium-conversion facility at Isfahan.[65] All three sites were part of Iran's declared civilian nuclear program and subject to IAEA safeguards

In his 23 June 2025 statement to the IAEA Board of Governors, DG Grossi provided the first authoritative technical update on the condition of the attacked facilities. He reported that craters were visible at Fordow, consistent with the use of ground-penetrating munitions, and noted that while the IAEA had not yet been able to fully assess underground damage, the explosive payloads used, and the sensitivity of centrifuge systems meant that "very significant damage is expected to have occurred."[66] At Isfahan, he confirmed that additional buildings were hit, including structures involved in uranium conversion, and that entrances to tunnels used for storing enriched material appeared to have been struck. At Natanz, DG Grossi reported that the Fuel Enrichment Plant had also been hit with ground-penetrating munitions. Iran conveyed to the IAEA that it will adopt special measures to protect nuclear materials and equipment.[67]

Beyond physical damage and radiological risks, some analysts have also raised concerns about post-strike nuclear security at affected facilities.[68] While this issue has not featured

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www.armscontrol.org/act/2025-07/news/israel-and-us-strike-irans-nuclear-program#:~:text=The%20U,reactor%20at%20the%20Arak%20site.

63 Jon Gambrell et al., "Israel strikes Iran's nuclear sites and kills top generals. Iran retaliates with missile barrages," *AP News*, June 18, 2025, https://apnews.com/article/iran-explosions-israel-tehran-00234a06e5128a8aceb406b140297299.

64 IAEA, "Director General Grossi's Statement to UNSC on Situation in Iran," June 13, 2025, https://www.iaea.org/newscenter/statements/director-general-grossis-statement-to-unsc-on-situation-in-iran-13-june-2025.

65 Kelsey Davenport, "Israel and U.S. Strike Iran's Nuclear Program," Arms Control Association, July/August 2025, https://www.armscontrol.org/act/2025-07/news/israel-and-us-strike-irans-nuclear-program.

66 IAEA, "IAEA Director General's Introductory Statement to the Board of Governors," June 23, 2025, https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-23-june-2025.

67 Ibid.

68 Matt Caplan and Vesal Razavimaleki, "Nuclear terrorists wear suits: How Iran could build a nuclear weapon without state approval," *Bulletin of Atomic Scientists*, July 31, 2025, https://thebulletin.org/2025/07/nuclear-terrorists-wear-suits-how-iran-could-build-a-nuclear-weapon-without-state-

prominently in official international discussions, recent commentary has highlighted the possibility that disruption caused by the attacks — combined with reduced IAEA access — could increase vulnerabilities related to the protection and accounting of weapon-usable nuclear material. In particular, concerns have been raised about the risk of diversion or theft of highly enriched uranium during or after the strikes, especially if material was moved or dispersed to avoid further attacks. Although largely hypothetical at this stage, such scenarios underscore the importance of timely verification access and robust nuclear security arrangements in the aftermath of military action against nuclear infrastructure.

Justifications by Israel and the United States

In the aftermath of the June 2025 attacks, Israel and the United States publicly set out their respective legal and security justifications for the use of force against Iran's nuclear facilities.

- Israel stated that it had "acted to ensure its survival" by targeting what it described as the core of Iran's military nuclear program, including uranium conversion and enrichment capabilities. Prime Minister Benjamin Netanyahu framed the operation as a pre-emptive measure taken after years of intelligence efforts and in close coordination with the United States, with the objective of ensuring that Iran would not acquire nuclear weapons.[69] In its statement at the 69th IAEA General Conference, Israel reiterated its long-standing security concerns regarding Iran's nuclear program while emphasizing its cooperation with the IAEA.[70]
- The United States justified its June 2025 strikes in a formal notification to the United Nations Security Council. In a letter on 27 June 2025, Washington stated that the attacks constituted the exercise of the inherent right of collective self-defense under Article 51 of the UN Charter and were aimed at eliminating Iran's nuclear enrichment capacity at Fordow, Natanz, and Isfahan. The United States argued that the operation was necessary and proportionate, citing Iran's long-standing pattern of armed attacks against U.S. and Israeli interests, its continued uranium enrichment beyond levels required for peaceful purposes, and the exhaustion of diplomatic options. The letter emphasized that the strikes were directed solely at Iran's nuclear program and framed them as essential to preventing Iran from acquiring and using a nuclear weapon, which Washington characterized as an existential threat to Israel and a grave danger to international peace and security.[71]

Responses by the international community

IAEA Secretariat

Following the attacks on Iran's nuclear facilities beginning on 13 June 2025, the IAEA

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approval/.

69 Israeli Prime Minister's Office, "Statement by PM Netanyahu," Gov.il, June 24, 2025, https://www.gov.il/en/pages/event-statement240625.

70 "Statement by Israel," General Debate, IAEA 69th General Conference, September 15, 2025.

71 S/2025/426 (Letter dated 27 June 2025 from the Chargé d'affaires a.i. of the United States Mission to the United Nations addressed to the President of the Security Council), June 27, 2025.

Secretariat undertook an intensive set of actions to assess the evolving situation. As in previous crises, the Secretariat's efforts were guided by relevant General Conference resolutions[72] affirming that armed attacks on nuclear facilities devoted to peaceful purposes "constitute a violation of the principles of the United Nations Charter, international law, and the Statute of the Agency."[73]

The Director General first briefed the Board of Governors on 13 June, recalling these resolutions and stressing that nuclear facilities "must never be attacked," as such actions carry severe implications for nuclear safety, security, and safeguards.[74] On 23 June, the Secretariat reported visible cratering at Fordow consistent with ground-penetrating munitions, extensive damage to underground enrichment halls at Natanz, destruction of the above-ground PFEP, and impacts on buildings involved in uranium conversion and centrifuge component production.[75]

Concerning Iranian communication, on 13 June, Iran informed the Agency that it intended to "adopt special measures to protect our nuclear equipment and materials."[76]

IAEA Board of Governors and General Conference

At the 69th IAEA General Conference in September 2025, Iran requested the inclusion of a supplementary agenda item titled *"Prohibition of All Forms of Attacks and Threats of Attack Against Nuclear Sites and Facilities Under IAEA Safeguards and Devoted to Peaceful Purposes."*[77] In its explanatory memorandum, Iran argued that the recent military operations against its safeguarded nuclear facilities demonstrated the urgent need for Member States to reaffirm the long-standing international norm — reflected in General Conference decisions such as GC(53)/DEC/13 and resolutions GC(XXIX)/RES/443, GC(XXIX)/RES/444 and GC(XXXIV)/RES/533 — that armed attacks on safeguarded nuclear facilities violate the UN Charter, international law, and the IAEA Statute. The draft resolution put forward by Iran aimed to prevent all forms of attacks and threats of attack against nuclear facilities devoted to peaceful purposes, clarify accountability for such acts, and uphold the authority of the IAEA and the integrity of the nuclear non-proliferation regime. In the face of strong US diplomatic pressure and an expectation that the draft resolution would fail, Iran withdrew it, yet some Member States nevertheless used the agenda item to articulate their positions.

- China strongly condemned the attacks on safeguarded Iranian nuclear facilities, arguing that any armed strike against nuclear installations devoted to peaceful purposes constitutes a grave violation of international law and a dangerous precedent for global

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72 In particular, GC(XXIX)/RES/444 and GC(XXXIV)/RES/533.

73 IAEA, GOV/2025/50, September 3, 2025, 3.

74 IAEA, "Statement on the Situation in Iran," June 2025, https://www.iaea.org/newscenter/statements/statement-on-the-situation-in-iran-13-june-2025.

75 IAEA, "IAEA Director General's Introductory Statement to the Board of Governors," June 2025, https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-23-june-2025.

76 IAEA, GOV/2025/50, September 3, 2025, 3.

77 IAEA, GC(69)/1/Add.2, August 15, 2025.

nuclear security.[78] Stressing that nuclear facilities must never be attacked "regardless of the context or circumstances," Beijing called on all IAEA Member States to take a clear stance against targeting nuclear sites under Agency safeguards and affirmed its decision to co-sponsor Iran's draft resolution as part of its commitment to upholding the international nuclear security architecture.

- Russia, in its statement of 19 September 2025, Moscow expressed concern that, despite two special sessions of the Board of Governors, the Agency had not issued a collective condemnation of the attacks.[79] Russia reiterated its "categorical opposition to strikes on any nuclear facilities, especially those under IAEA safeguards," and called on the Agency to issue a collective response so as to avoid normalizing attacks on safeguarded installations.
- The United States, in a statement delivered on 18 September 2025, welcomed the withdrawal and argued that the draft resolution had presented "a deeply inaccurate picture of recent events," misused international legal instruments, and would have improperly placed the General Conference in a position that risked "usurping the exclusive prerogatives of the UN Security Council" and distorting the role of the IAEA.[80] The United States maintained that its own June 2025 strikes were conducted in the exercise of the inherent right of collective self-defense under Article 51 of the UN Charter, targeting only military objectives under international humanitarian law.

At the same time, reactions by IAEA Member States to attacks on nuclear facilities have not been uniform across different conflict contexts. While many States have forcefully invoked the Agency's safety and security principles in response to Russian military actions affecting Ukrainian nuclear facilities, responses to the June 2025 strikes on Iran's safeguarded sites were often framed more narrowly through non-proliferation and safeguards considerations. Japan's statement at the 69th IAEA General Conference illustrates this distinction: whereas Tokyo has consistently emphasized the inviolability of nuclear facilities and the importance of the IAEA's "Seven Pillars" and "Five Principles" in relation to Ukraine, its response to the Iran strikes focused on urging Iran to resume full cooperation with the IAEA and on the importance of diplomacy, without directly condemning the attacks themselves.[81] This contrast highlights the continuing tension between nuclear safety and security norms and broader geopolitical considerations in IAEA-related debates.

The United Nations General Assembly

On 14 November 2025, the United Nations General Assembly adopted the resolution entitled "Report of the International Atomic Energy Agency" (A/80/L.7) by a vote of 146 in favor, 2 against (Russia and the United States), with 1 abstention (Iran).[82] The resolution took note

[78] "Statement by China," Agenda Item 22, 69th IAEA General Conference, September 18, 2025.

[79] "Statement by Russia," Agenda Item 22, 69th IAEA General Conference, September 18, 2025.

[80] "Statement by the United States," Agenda Item 22, 69th IAEA General Conference, September 18, 2025.

[81] "Statement by Japan," General Debate, 69th IAEA General Conference, September 18, 2025.

[82] "With 146 Member States Voting in Favour, 2 Against, General Assembly Adopts Resolution Affirming Strong Support for International Atomic Energy Agency," UN Meetings Coverage and

of the IAEA's 2024 annual report (A/80/348) and reaffirmed the Assembly's strong support for the Agency's central role in promoting the peaceful uses of nuclear energy, assisting developing countries, and ensuring nuclear safety, security and safeguards. It also encouraged Member States to continue supporting the Agency's activities across these areas.

In the debate following the vote, the United States reiterated that its strikes were undertaken in self-defense and urged Iran to fully cooperate with the IAEA, while Israel stated that its actions were intended to neutralize an imminent threat. [83] Iran, in turn, rejected these claims and maintained that its nuclear program is exclusively peaceful.

Other attacks

On December 31, 2024, the *Financial Times* revealed that leaked Russian military documents from 2013–14 show that Russia trained officers for potential strikes on Japan and South Korea, with detailed target lists that explicitly included NPPs among 160 civilian and military sites.[84] The files, originating from senior-officer training materials, outline how cruise missiles such as the Kh-101 would be used against nuclear complexes and other critical infrastructure in a major conflict, reflecting Moscow's concern that U.S. forces based in the region could intervene in a broader war. Experts quoted in the article argued that the documents demonstrate the strategic interconnection between European and Asian theatres and highlight Russia's willingness to consider attacks on nuclear installations as part of wartime planning, raising significant nuclear-security implications for both regions.

(2) Status of Accession to Nuclear Security and Safety-Related Conventions and Their Application to Domestic Systems

A) Accession status to nuclear security-related conventions

This section examines the accession status of the surveyed countries to international conventions related to nuclear security and safety, namely: the Convention on the Physical Protection of Nuclear Material (CPPNM); the Amendment to the CPPNM (A/CPPNM); the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT); the Convention on Nuclear Safety (CNS); the Convention on Early Notification of a Nuclear Accident; the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management; and the Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency. Some, if not all, of these nuclear safety-related conventions have provisions on physical protection measures from the perspective of safety. As these measures can also serve nuclear security purposes, those nuclear safety-related conventions are regarded as nuclear security-related conventions in this report.[85] Table 3-4

Press Release, November 14, 2025, https://press.un.org/en/2025/ga12729.doc.htm#:~:text=The%20193%2Dmember%20Assembly%20adopted,to%20support%20the%20Agency's%20activities.

83 Ibid.

84 Chris Cook and Max Seddon, "Russia trained officers for attacks on Japan and South Korea," *The Financial Times*, December 31, 2024, https://www.ft.com/content/d345a6e7-2d72-4dcb-9c12-76d571ba75eb.

85 *2024 NSSG Report* also mentioned these treaties.

shows the adherence status of each surveyed country to the six conventions mentioned above.

The latest status of international conventions related to nuclear security are as follows:[86]

- CPPNM[87] (entered into force in 1987): 165 signatories. No new signatories: the number of new signatories has been two to three almost every year, but there was no increase in 2022, 2023 and 2025. In 2024, Liberia newly ratified.
- A/CPPNM[88] (entered into force in 2016): 137 countries ratified. New ratification by Mongolia. While the number of new ratifications had already been declining over the past decade—15 in 2016, 7 in 2017, 3 in 2018, 5 in 2019, 2 in 2020, 2 in 2021, 4 in 2022, 3 in 2023, and 2 in 2024 — the single ratification recorded in 2025 represents the lowest annual increase in recent years.
- ICSANT[89] (entered into force in 2007): 127 States Parties. Newly ratified by Ecuador and Seychelles. In recent years, the number of new States Parties has been 6 in 2017, 1 in 2018, 2 in 2019, 1 in 2020, 1 in 2021, 2 in 2022, 2 in 2023 and 3 in 2024.
- CNS[90] (entered into force in 1996): 98 States Parties. Newly ratified by Mongolia and Uzbekistan. Two countries ratified in 2024.
- Convention on Early Notification of a Nuclear Accident[91] (entered into force 1986): 136 States Parties. Newly ratified by Uzbekistan. One country ratified in 2024.
- Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency[92] (entered into force 1987): 131 States Parties. Newly ratified by Uzbekistan. One country ratified in 2024.
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management[93] (entered into force in 2001): 92 parties. Bangladesh

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86 As of December 5, 2025.

87 The Convention requires the criminalization of acts such as receipt, possession, use, transfer, alteration, disposal or dispersing nuclear material without lawful authority and which causes or is likely to cause personal or property damage, and theft of nuclear material. Efforts to universalize the Convention, including countries that do not have nuclear programs, continue to be important.

88 While the CPPNM covers nuclear materials only during international transport, its Amendment expanded the scope to include domestic nuclear materials and nuclear facilities. Also, the Amendment covers criminal acts such as unauthorized transfer of nuclear materials and unlawful acts against nuclear facilities.

89 It obliges States Parties to criminalize the possession or use of radioactive materials or nuclear explosive devices with malicious intent, the use of nuclear facilities in a manner that leads to the emission of radioactive materials, or the destruction of such facilities.

90 This Convention aims at ensuring and enhancing the safety of NPPs. State Parties are required to take legal and administrative measures, to report to the review committee established under this Convention, and to accept peer review in order to ensure the safety of NPPs under their jurisdiction.

91 This Convention obligates State Parties to immediately report to the IAEA when a nuclear accident has occurred, including the type, time, and location of the accident as well as relevant information.

92 This Convention establishes an international framework that enables the provision of equipment and dispatch of experts with the goals of preventing and/or minimizing nuclear accidents and radiological emergencies.

93 The Joint Convention calls for its State Parties to take legal and administrative measures, report to its review committee, and undergo peer review by other parties, for the purpose of ensuring safety of spent fuel and radioactive waste.

and Lebanon ratified in 2025.[94]

Table 3-4: Signature and Ratification Status for Major Nuclear Security and Safety-related Conventions

	CPPNM	A/CPPNM	ICSANT	CNS	Convention on Early Notification of a Nuclear Accident	Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
China	○	○	○	○	○	○	○
France	○	○	○	○	○	○	○
Russia	○	○	○	○	○	○	○
U.K.	○	○	○	○	○	○	○
U.S.	○	○	○	○	○	○	○
India	○	○	○	○	○	○	
Israel	○	○	△	△	○	○	
Pakistan	○	○		○	○	○	
Australia	○	○	○	○	○	○	○
Belgium	○	○	○	○	○	○	○
Brazil	○	○	○	○	○	○	○
Canada	○	○	○	○	○	○	○
Finland	○	○	○	○	○	○	○
Germany	○	○	○	○	○	○	○
Iran					○	○	△
Japan	○	○	○	○	○	○	○
Kazakhstan	○	○	○	○	○	○	○
South Korea	○	○	○	○	○	○	○
Mexico	○	○	○	○	○	○	○
Netherlands	○	○	○	○	○	○	○
Norway	○	○	○	○	○	○	○
South Africa	○	○	○	○	○	○	○
Sweden	○	○	○	○	○	○	○
Switzerland	○	○	○	○	○	○	○
Türkiye	○	○	○	○	○	○	○
UAE	○	○	○	○	○	○	○
North Korea					△	△	

○: Ratification, acceptance, approval, and accession △: Signature

In 2025, there was an increase in the number of ratifications for all conventions. Uzbekistan

[94] IAEA, *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, September 17, 2025, https://www.iaea.org/sites/default/files/22/06/jointconv_status.pdf.

has ratified 3 conventions and Mongolia 2.

The following statements from the countries surveyed and the IAEA General Conference resolution regarding the universalization and implementation of the conventions.

During the 69th IAEA General Conference, among the surveyed countries, Norway and Switzerland expressed their support for the universalization of international nuclear-security instruments, including the CPPNM, its Amendment, and ICSANT, and reaffirmed their commitment to strengthening their implementation. France also voiced support for the universalization of international legal frameworks underpinning nuclear safety and security.[95]

In November 2025, the IAEA convened a dedicated "Technical Meeting to Promote the Universalization of the CPPNM and its Amendment."[96] The IAEA's 20-year milestone for the A/CPPNM was also marked, reaffirming its role as a cornerstone of the global nuclear-security architecture. During a side event on the margins of the General Conference, DG Grossi remarked: "In a world where the peaceful use of nuclear energy is expanding, and where the risks posed by malicious actors are ever-present, universalization of these instruments would provide an important legal foundation to strength national, regional and global security."[97]

Additionally, the preamble of the "Nuclear Security Resolution" adopted at the IAEA General Conference in 2025 included a paragraph that echoed previous years' resolutions,[98] stating that "Respecting that participating in and joining international nuclear security instruments is a voluntary and sovereign decision of a state, while noting efforts towards the widest possible participation."[99]

Transparency and information sharing while protecting sensitive information such as making part of IPPAS mission reports available to the public are also encouraged to ensure that countries implement nuclear security-related conventions and other international instruments (See (3)C) of this chapter). The status of the efforts in this area by the countries surveyed is shown in Table 3-5.

B) INFCIRC/225/Rev.5

Application status of each surveyed country of the measures recommended in INFCIRC/225/Rev.5

In 2011, the IAEA published the fifth revision of the "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities" (INFCIRC/225/Rev.5) as

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95 IAEA, "69th IAEA General Conference, Delegates' Statements," https://www.iaea.org/es/node/207293.

96 Nuclear Regulatory Authority of the Slovak Republic, "Technical Meeting to Promote the Universalization of the Convention on the Physical Protection of Nuclear Material (CPPNM) and its Amendment," November 20-21, 2025, https://www.ujd.gov.sk/m-akcie/MA/MA-0273-2025_25-04118E_Encl_CPPNM_Universalization.pdf.

97 IAEA, "Celebrating 20 Years of a Legal Milestone in Nuclear Security," October 2, 2025, https://www.iaea.org/newscenter/news/celebrating-20-years-of-a-legal-milestone-in-nuclear-security.

98 *Hiroshima Report 2024*, p. 188.

99 IAEA, GC(69)/RES/8, September 2025.

IAEA Nuclear Security Series Document No. 13. The Agency formally initiated the process to revise the Nuclear Security Recommendations, as approved by the Nuclear Security Guidance Committee (NSGC) in December 2024.[100]

The introduction and implementation of physical protection measures in accordance with the recommended measures in INFCIRC/225/Rev.5, as well as the identification of issues and the formulation of individual measures, are entirely the responsibility of states and are left to the efforts of national regulatory authorities and operators. Therefore, it is important for states to disseminate information on the introduction and application of the measures recommended in INFCIRC/225/Rev.5. However, the amount of such information dissemination has gradually declined since the end of the 2016 Nuclear Security Summit process.

Regarding efforts related to apply recommended measures outlined in INFCIRC/225/Rev.5 by each country under this survey, actions have been taken to date by all countries except North Korea for which there is no information. However, the extent and level of application vary among the respective countries.

The following describes the information disseminated at the IAEA General Conference and efforts made by the countries surveyed regarding the major recommended measures of the national physical protection systems for nuclear materials and nuclear facilities as indicated in INFCIRC/225/Rev.5 as well as efforts by international organizations.

Development of national laws and regulations

Each state is responsible for establishing and maintaining a national regulatory framework to govern physical protection.

- Canada: Implemented the amendments to its regulations, which previously did not contain explicit requirements for security culture, interface of safety, security and safeguards, or the protection of sensitive information.[101] Revised provisions to the *Nuclear Safety and Control Act* were published in the *Canada Gazette* in October 2025.[102] The update introduces new obligations for licensees to establish, maintain, and document measures that promote and support a robust security culture. It also requires licensees to ensure that actions taken to protect the environment or the safety of persons do not compromise the security of a nuclear facility, and mandates the protection of sensitive information as part of an integrated nuclear security framework.
- Finland[103]: "continues its work to ensure high levels of nuclear safety and security… including updating its regulatory framework to maintain compliance with international standards."

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[100] *Nuclear Security Review 2025*, p. 11.

[101] *Hiroshima Report 2024*, p. 173.

[102] Canadian Nuclear Safety Commission, "Regulations Amending Certain Regulations Made Under the Nuclear Safety and Control Act (Imports, Exports and Safeguards): SOR/2025-196," *Canada Gazette*, Part II, Volume 159, Number 21, October 8, 2025.

[103] "National Statement by Finland," Plenary Session, 69th General Conference of the IAEA, September 15, 2025.

- Pakistan[104]: "will host the IAEA International Physical Protection Advisory Services (IPPAS) mission during 2026… to further strengthen our nuclear security regime."
- United Arab Emirates[105]: "has updated its national regulatory requirements on physical protection and cybersecurity and has actively participated in the relevant IAEA meetings and conferences. We reaffirm our strong commitment to international cooperation in this vital area."
- United Kingdom[106]:"encourage any state that has not yet done so to ratify the Amended Convention for the Physical Protection of Nuclear Material – the most important international convention in the field of civil nuclear security."

Table 3-5: Status of Efforts to Share Information on Implementation of Nuclear Security Measures

	CPPNM Article 14.1	IPPAS Mission Report Made Available	UNSCR1540 Reporting
China	○		○
France	○		○
Russia	○		○
U.K.	○		○
U.S.	○		○
India			○
Israel	○		○
Pakistan			○
Australia	○	○	○
Belgium	○		○
Brazil			○
Canada	○	○	○
Finland	○	○	○
Germany	○		○
Iran			○
Japan	○	○	○
Kazakhstan	○		○
South Korea	○		○
Mexico	○		○
Netherlands	○	○	○
Norway	○		○
South Africa			○

[104] "Pakistan's National Statement," Plenary Session, 69th General Conference of the IAEA, September 15, 2025.

[105] "Statement by the United Arab Emirates," Plenary Session, 69th Session of the IAEA General Conference, September 15, 2025.

[106] "Statement by the United Kingdom," Plenary Session, 69th Session of the IAEA General Conference, September 15, 2025.

	CPPNM Article 14.1	IPPAS Mission Report Made Available	UNSCR1540 Reporting
Sweden	○	○	○
Switzerland	○	○	○
Türkiye			○
UAE			○
North Korea			

"○"indicates initiatives for which information was obtained from publicly available information, etc., or for which implementation was announced. "●" indicates new initiatives in 2025 or newly identified initiatives.

Sources: "Nuclear Security Summit 2016 Progress Reports," http://www.nss2016.org/2016-progress-reports; "NTI Index Country Action Tracker," Nuclear Threat Initiative, April 17, 2024, https://www.ntiindex.org/news/country-area-actions-april-2024-update/; "National Reports," UN 1540 Committee, https://www.un.org/en/sc/1540/national-implementation/national-reports.shtml; "IPPAS Mission Report: Australia," November 2013, https://www.dfat.gov.au/sites/default/files/international-physical-protection-advisory-service-ippas-mission-report.docx; "IPPAS Mission Report: Canada," October 2015, http://www.nuclearsafety.gc.ca/eng/pdfs/IPPAS/Canadas-IPPAS-Mission-Report-2015-eng.pdf; "IPPAS Follow-up Mission Report: Japan," December 2018, https://www.nra.go.jp/data/000295553.pdf; "Draft Follow-up Mission Report: Sweden," October 2016, https://www.stralsakerhetsmyndigheten.se/contentassets/27a6dd9e94e54dc189cecfa7c7f2f910/draft-follow-up-mission-report-sweden.pdf; "Report of the International Physical Protection Advisory Service (IPPAS) mission to Finland," November 9, 2022, https://stuk.fi/documents/150192312/154500071/IPPAS_report_Final_29_Nov_2022.pdf; "IPPAS Follow-up Mission Report: Switzerland," May 2024. https://ensi.admin.ch/en/documents/ippas-follow-up-mission-report-switzerland/; "Nuclear Security Index 2020," Nuclear Threat Initiative, https://www.ntiindex.org/.

Identification and assessment of threats (including insider threats)

It is recommended that physical protection in a country should be conducted based on each country's latest threat assessment (and/or Design Basis Threat (DBT)).[107] When considering threats, particular attention should be given to insider threats,[108] as individuals within the organization, with access rights, authority, and knowledge, pose a different risk compared to external threats. Insiders could bypass measures for nuclear security and safety procedures, given that they can utilize access rights and knowledge mentioned above.[109]

The IAEA has continued outreach activities to raise the awareness of physical protection based on threat assessment and DBT. In March, May and August, it held the "International Training Course on Insider Threats Using the Shapash 3D Model" at the Nuclear Security Training and Demonstration Centre (NSTDC) in Seibersdorf.[110] The next training will be held in February 2026.[111] Additionally, it held two "National Workshop on Threat Assessment and DBT" in

[107] DBT is generally not disclosed. Australia has produced a publicly available version of the DBT to show that its research reactor is protected against high-level threat. Australian Safeguards and Non-Proliferation Office, "Design Basis Threat," https://www.dfat.gov.au/international-relations/security/asno /Pages/design-basis-threat.

[108] IAEA, Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5), 2011, pp. 8-12.

[109] IAEA, *Preventive and Protective Measures Against Insider Threats*, 2020, pp. 3-4.

[110] IAEA, *Nuclear Security Report 2025*, op. cit., p. 16; "International Training Course on Insider Threats Using the Shapash 3D Model," IAEA, https://www.iaea.org/events/evt2405486.

[111] IAEA, "International Training Course on Insider Threats Using the Shapash 3D Model," https://www.iaea.org/events/evt2504823.

Cameroon (March 2025) and in Uzbekistan (June 2025).[112]

Additionally, the U.S. Office of Radiological Safety held a webinar titled "Building a Resilient Security Culture: Addressing the Human Element."[113] It emphasize that Human factors related to security systems are what distinguishes between "acceptable" security and "great" security.

As for Non-Governmental Organizations (NGOs), the World Institute for Nuclear Society (WINS) published the "Managing Insider Threats in the Nuclear Industry," the 2025 edition of the "International Best Practice Guide Series."[114] This edition aims to "define insider threat, describe the types of insider threat, consider the targets that must be protected, understand the measures for prevention of, and protection from, insider threats and to provide an overview of the purpose and core components of an Insider Threat Mitigation Program (ITMP)."

Cybersecurity

The following is information disseminated by the countries surveyed in 2025 regarding initiatives or statements in the area of cyber-security.

- Canada: Implemented the amendments to its nuclear-security regulations related to cybersecurity and the protection of digital information that had been outlined in the *Hiroshima Report 2024*.[115] Revisions to the *Nuclear Safety and Control Act* were published in the *Canada Gazette* in October 2025.[116] The update introduces new obligations for licensees to establish and maintain a comprehensive cybersecurity program and to protect digital and electronic components essential to nuclear-facility operations from cyber-enabled threats. It also strengthens provisions for safeguarding sensitive information. Additionally, the amendments replace the term "physical protection measures" with "nuclear security measures" to reflect an integrated approach that covers both cyber and physical security.
- Japan: In May 2025, Japan adopted a new cyber law supporting a more proactive national cybersecurity strategy aimed at detecting and disrupting attacks before they occur.[117] While the legislation is not specific to nuclear installations, it places particular emphasis on strengthening the protection of critical infrastructure sectors—such as energy facilities—through stricter reporting obligations and enhanced oversight. In parallel, Japan hosted an IAEA Regional Training Course on Conducting Computer Security Inspections for Nuclear Facilities in March 2025, reflecting its continued

[112] *Nuclear Security Report 2025*, op. cit., p. 17.

[113] "Building a Resilient Security Culture' Addressing the Human Element," Office of Radiological Security, https://insiderthreatmitigation.org/wp-content/uploads/2025/05/Security-Culture-Webinar-Invitation_June-2025.pdf.

[114] "Managing Insider Threats in the Nuclear Industry," WINS, https://www.wins.org/document/managing-insider-threats-in-the-nuclear-industry/.

[115] *Hiroshima Report 2024*, p. 173.

[116] Canadian Nuclear Safety Commission, "Regulations Amending Certain Regulations Made Under the Nuclear Safety and Control Act (Imports, Exports and Safeguards): SOR/2025-196," *Canada Gazette*, Part II, Volume 159, Number 21, 8 October 2025.

[117] "Cybersecurity 2025," Chambers and Partners, March 13, 2025, https://practiceguides.chambers.com/practice-guides/cybersecurity-2025/japan.

efforts to build national and regional capacity in nuclear-sector cybersecurity.[118]

- Türkiye: Hosted an IAEA Regional Workshop on Drafting Computer Security Regulation in April, and a Regional Training Course on Computer Security Fundamentals for Nuclear Security in June. [119]

Looking ahead to 2026, the IAEA is now organizing the third *International Conference on Computer Security in the Nuclear World: Securing the Future (CyberCon26)* which will be held at the IAEA's Headquarters in Vienna, Austria from 11 to 15 May 2026.[120]

Nuclear security culture[121]

It has been increasingly recognized in recent years that fostering and maintaining a nuclear security culture is extremely important to ensure the continued effectiveness of nuclear security measures, including cybersecurity and insider threat. All organizations related to nuclear energy, including regulatory agencies and operators, are required to recognize the existence of the threat of nuclear terrorism and the importance of nuclear security, and to ensure that each individual is aware of their role and responsibilities in nuclear security.

The "Nuclear Security" resolution (GC(69)/RES/8) was adopted at the General Conference in August 2025. Among its provisions, it "encourages the Secretariat, in consultation with Member States, to continue promoting international exchanges of experience, knowledge and good practices regarding ways to develop, foster and maintain a robust nuclear security culture compatible with States' nuclear security regimes."[122]

Additionally, the IAEA reports that "Member States continue to request the Agency's assistance in enhancing understanding of nuclear security culture and its application in practice."[123] The following are some of the major efforts by the countries surveyed regarding nuclear security culture and statements made at international conferences.

- Canada: Implemented changes to its Nuclear Security Regulations in response to proposals received during the IPPAS mission in 2015. This includes a security awareness training program for new employees which "should include instructions on security practices/procedures to protect sealed sources and prescribed information, and on reporting suspicious events or security incidents (including during transport)."[124]

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118 *Nuclear Security Report 2025*, op. cit., p. 18.

119 Ibid.

120 IAEA, "International Conference on Computer Security in the Nuclear World: Securing the Future," https://www.iaea.org/events/cybercon26.

121 According to the definition by the IAEA, nuclear security culture is "the assembly of characteristics, attitudes and behaviours of individuals, organizations and institutions which serves as a means to support, enhance and sustain nuclear security." IAEA, *IAEA Nuclear Safety and Security Glossary 2022 (Interim) Edition*, October 2022, p. 140.

122 GC(69)/RES/8, September 18, 2025, p. 8.

123 *Nuclear Security Review 2025*, p. 39.

124 Canadian Nuclear Safety Commission, "Regulations Amending Certain Regulations Made Under the Nuclear Safety and Control Act (Imports, Exports and Safeguards): SOR/2025-196," *Canada Gazette*, Part II, Volume 159, Number 21, 8 October 2025.

- Japan: Hosted the Forum for Nuclear Cooperation in Asia (FNCA) 25th Coordinators Meeting and 26th Ministerial Meeting. The "Conclusion and Recommendations" of the Coordinators Meeting read that "deepening understanding of new threats such AI, computer cyber security, and insider threat mitigation and sharing best practices is expected to further foster a nuclear security culture."[125]
- Russia[126]: Highlights "promoting the strengthening of a nuclear security culture" as one of the priority tasks of the IAEA.

(3) Efforts to Maintain and Improve the Highest Level of Nuclear Security

A) Minimization of HEU and separated plutonium stockpile in civilian use

Minimizing HEU and separated plutonium inventory is one of the key indicators for achieving the highest level of nuclear security.[127]

HEU

Global efforts to reduce the civilian use of HEU continued in 2025. All major producers of molybdenum-99 — the most widely used medical radioisotope — have now ended the use of HEU targets. By the end of 2024, 109 research reactors and isotope-production facilities have either been converted from HEU to low-enriched uranium (LEU) or permanently shut down, and 6,934 kilograms of HEU have been removed or returned to their countries of origin from 48 states (and Taiwan).[128] In 2025, the following initiatives were undertaken by surveyed countries.

- Japan[129]: In collaboration with the NNSA, Kyoto University completed the conversion of the Kyoto University Critical Assembly (KUCA) by converting two cores from using HEU to high-assay low-enriched uranium (HALEU) fuel.

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125 "Conclusions and Recommendations of the 25th FNCA Coordinators Meeting," JAEC, April 1, 2025, p. 19, https://www.aec.go.jp/kaigi/teirei/2025/siryo11/3-1_haifu.pdf.

126 "Statement by Russia," item 4 of the session "Nuclear Security: Nuclear Security Review 2025," IAEA Board of Governors, March 4, 2025.

127 With respect to separated plutonium, the communiqué of the 2014 Hague Summit marked the first time in the Nuclear Security Summit series that the need to maintain it at a minimum level was explicitly articulated. The Ministerial Declaration of ICONS 2020 called upon "all Member States possessing HEU and separated plutonium in any application, […] to make sure they are appropriately secured and accounted for, by and in the relevant State," and encouraged "Member States, on a voluntary basis, to further minimize HEU in civilian stocks, when technically and economically feasible." "Ministerial Declaration," Ministry of Foreign Affairs of Japan, February 10, 2020, p. 1. Additionally, the co-presidents' statement of ICONS2024 called on the IAEA member states to voluntarily minimize their civilian HEU stockpiles further where technically and economically feasible. "Statement by the Co-Presidents of the International Conference on Nuclear Security 2024: Shaping the Future," IAEA, https://www.iaea.org/sites/default/files/24/05/cn-321_co-presidents_statement.pdf.

128 IAEA, *Nuclear Technological Review 2025*, p. 58.

129 "NNSA-Kyoto University conversion of the critical assembly meets joint U.S.-Japan commitments and advances nuclear energy innovation," U.S. Department of Energy, December 1, 2025, https://www.energy.gov/nnsa/articles/111th-reactor-conversion-advances-nuclear-nonproliferation-and-innovation-partnership.

- Norway[130]: "strongly advocates minimizing and eliminating the civilian use and stocks of highly enriched uranium (HEU). We call on all Member States to sign and implement Information Circular 912 in this regard."[131]
- United States: In 2025, the U.S. Department of Energy decided to blend down approximately 2.2 metric tons of surplus HEU into HALEU at the Savannah River Site, beginning as early as 2025.[132] Separately, the U.S. NRC authorized the transfer of 100 grams of 99% enriched HEU from the U.S. Department of Energy to Japan Nuclear Fuel Limited (JNFL).[133] In addition, in January 2025, the NNSA announced that the agency was finalizing plans to commission a National Academies study assessing the proliferation and weapons-usability risks associated with HALEU fuels, in light of their increasing use in advanced reactor designs. [134] As of the end of 2025, however, no further public updates on this study had been released.
- Japan / the United States: Hosted the side event "The U.S.–Japan HEU Minimization Partnership: Reflecting on a Decade of Achievement" on the margins of the IAEA General Conference, highlighting recent progress in reducing HEU in Japan.[135] The event showcased the successful return to the United States of HEU from KUCA and the JAEA's Materials Testing Reactor Critical Assembly (JMTRC). The United States and Japan also reaffirmed their commitment to convert the remaining HEU fuel used for research at Kindai University to LEU.

In addition to initiatives above, the EU launched the EU-Conversion & PrepHALEU project to develop and qualify low-enriched uranium fuels for research reactors currently operating on HEU, including Germany's FRM-II and France's planned Jules Horowitz Reactor (JHR). Funded through Euratom and Horizon 2020, the initiative aims to establish secure LEU and HALEU supply chains, accelerate conversion of high-performance reactors from HEU to LEU, and reduce proliferation risks associated with continued HEU use.[136]

In addition to the above-mentioned efforts by various each country to minimize HEU, France, Germany, and the United Kingdom voluntarily reported on their civilian HEU stockpiles in

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130 "Statement by Norway," 69th IAEA General Conference, September 25, 2025.

131 INFCIRC/912 (2017) is a pledge to make every effort to achieve further progress with regard to minimizing and eliminating the use of HEU in civilian applications.

132 "Highly Enriched Uranium Blend Down to High-Assay Low-Enriched Uranium, at the Savannah River Site," *Federal Register*, July 25, 2025, http://federalregister.gov/documents/2025/07/25/2025-14017/highly-enriched-uranium-blend-down-to-high-assay-low-enriched-uranium-at-the-savannah-river-site.

133 "Small quantity of HEU to be exported to Japan," International Panel on Fissile Materials, November 26, 2025, https://fissilematerials.org/blog/2025/02/small_quantity_of_heu_to_.html.

134 U.S. Department of Energy, "NNSA Administrator Jill Hruby Issues Statement on Understanding and Assessing the Risks Associated with HALEU," https://www.energy.gov/nnsa/articles/nnsa-administrator-jill-hruby-issues-statement-understanding-and-assessing-risks.

135 IAEA, "The U.S.-Japan HEU Minimization Partnership: Reflecting on a Decade of Achievement," https://www.iaea.org/resources/member-states-side-events/the-us-japan-heu-minimization-partnership-reflecting-on-a-decade-of-achievement.

136 "EU seeks to develop new research reactor fuel," *Nuclear Engineering International*, February 11, 2025, https://www.neimagazine.com/news/eu-seeks-to-develop-new-research-reactor-fuel/?cf-view.

their 2025 report on plutonium management (INFCIRC/549).[137] Such reporting is encouraged in the Joint Statement on Minimizing and Reducing Highly Enriched Uranium for Civilian Use (INFCIRC/912), issued in 2017, using the standardized form for voluntary reporting attached to this Joint Statement.[138] The use of the standardized form allows for the sharing of information that is desired to be disclosed and, if submitted on a regular basis, allows the international community to evaluate the country's efforts to minimize HEU.

Twenty-one countries are participating in the Joint Statement, including six countries surveyed for *Hiroshima Report* possessing HEU. Only two out of these six countries (Australia and Norway) have so far submitted reports to the IAEA using the INFCIRC/912 form. No country has done so since 2020.[139]

Separated plutonium

While the Nuclear Security Resolution adopted at the 69th IAEA General Conference recognizes the importance of minimizing HEU use where technically and economically feasible, it does not mention minimizing separated plutonium.[140]

With regard to developments in 2025 among the countries covered by this survey, in February, the Japan Federation of Electric Power Companies announced Plutonium Utilization Plan for FY2024. In response to this Plan, on March 4, the Japan Atomic Energy Commission (JAEC) stated that the amount of plutonium held in FY2025 is expected to be about 44.5 tons, since no new plutonium will be recovered and no plutonium will be consumed.[141] With this, the JAEC stated their views that the Plan is appropriate at this moment, taking also into account the planned operation of plutonium-thermal reactors, the operational outlook for the Rokkasho Reprocessing Plant and other facilities, as well as the status of efforts to process overseas-held plutonium into Mixed Oxide (MOX) fuel.

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[137] INFCIRC/549/Add.5/29, September 11, 2025 (France); INFCIRC/549/Add.2/28, September 11, 2025 (Germany); INFCIRC/549/Add.8/27, June 11, 2025 (the United Kingdom). France and Germany reported their HEU holdings as of 31 December 2024, while the United Kingdom reported figures as of 31 December 2023.

[138] "Joint Statement on Minimising and Eliminating the Use of Highly Enriched Uranium in Civilian Applications," INFCIRC/912, February 16, 2020. South Korea, the Netherlands, and Norway submitted the Working Paper toward the 2020 NPT Review Conference, which promoted State parties to consider subscribing and implementing the reporting mechanism of the INFCIRC/912. NPT/CONF.2020/WP.14, p. 4.

[139] INFCIRC/912/Add.4, March 5, 2020 (Australia); INFCIRC/912/Add.3, August 19, 2019 (Norway). France, Germany, and the United Kingdom voluntarily added HEU inventory to their reporting of civilian separated plutonium inventory quantities under the International Plutonium Management Guidelines (INFCIRC/549).

[140] GC(69)/RES/9, September 2025, 3. The communiqué of the 2014 Hague Nuclear Security Summit, however, encourages states to keep their stockpile "to the minimum level, as consistent with national requirements." Ministry of Foreign Affairs of Japan, "The Hague Nuclear Security Summit Communiqué," March 25, 2014, https://www.mofa.go.jp/files/000135986.pdf.

[141] JAEC, "*電気事業者等から公表されたプルトニウム利用計画について（見解）（案）[Plutonium Utilization Plans Published by the Federation of Electric Utilities and others (Opinion)]*," March 3, 2025, https://www.aec.go.jp/kaigi/teirei/2025/siryo08/1_haifu.pdf.

Table 3-6: Implementation Status of Minimization of HEU and Plutonium Stockpiles in Civilian Application and Measures for Preventing Illicit Trafficking

	HEU and Plutonium Stockpile Minimization in Civilian Application	Participation in the ITDB
China	○	○
France	○	○
Russia	○	○
U.K.	○	○
U.S.	●	○
India	○	○
Israel	○	○
Pakistan		○
Australia	○	○
Belgium	●	○
Brazil	○ Completely removed	○
Canada	○	○
Finland	Never possessed	○
Germany	○	○
Iran		○
Japan	●	○
Kazakhstan	●	○
South Korea	○ Completely removed	○
Mexico	○ Completely removed	○
Netherlands	○	○
Norway	●	○
South Africa	○	○
Sweden	○ Completely removed	○
Switzerland	○ Completely removed	○
Türkiye	○ Completely removed	○
UAE	Never possessed	○
North Korea		

Note:
"●" indicates that the commitment to HEU minimization in 2025 has been confirmed.
" ○ " indicates past efforts.

B) Prevention of illicit trafficking

Nuclear detection, nuclear forensics, research and development of new technologies to strengthen capacity of law enforcement and customs, as well as participation in the IAEA's Incident and Trafficking Database (ITDB) have all been regarded as important for preventing illicit trafficking of nuclear materials. The ITDB is a database on incidents related to

unauthorized possession, illicit trafficking, illegal dispersal of radioactive material, as well as discovery of nuclear and other radioactive material out of regulatory control. It has been attracting attention as it provides useful statistics which enable one to realize the real threat of nuclear terrorism

According to the *ITDB 2025 Factsheet*, 145 countries participate in the ITDB, a number unchanged from 2024 (see Table 3-6 for participation status of countries surveyed).[142]

From the start of the ITDB in 1993 to the end of December 2024, 4,390 cases were reported in total. In 2024, 147 incidents were reported in total by 32 States, a decrease of 21 incidents from 2023.[143] The IAEA points out on these trends that they continue to "align with the historical averages of annual reporting fluctuations observed since 1993."[144] The number of reports to the ITDB in recent years had decreased between 2020 and 2021, the number of incidents reported by States followed historical averages in 2023 and 2024.[145]

The ITDB categorizes the types of incidents in three groups. Group I: incidents that are, or are likely to be, connected with trafficking or malicious use; Group II: incidents of undetermined intent, and Group III: incidents that are not, or are unlikely to be, connected with trafficking or malicious use.

Of the 4,390 confirmed incidents, there were 353 within Group I, 1,065 incidents within Group II and 2,972 incidents within Group III. Of these, 14% of all cases involved nuclear material,[146] 59% involved other radioactive material and 27% involved radioactive contamination or other material.[147] It is estimated that about 53% of all theft incidents since 1993 have occurred during authorized transport. Over the past decade, the proportion of incidents during transportation has been about 65. Therefore, the IAEA continuously highlighted the importance of strengthening measures to protect radioactive materials during transport. The majority of materials reported to the ITDB as stolen or lost (or otherwise missing under uncertain circumstances), involve radioactive sources that are used in industrial, material analysis or medical applications.[148]

With regard to reporting to the ITDB, incidents should be communicated through the designated point of contact of each participating country. In December 2023, the IAEA published the "Guidelines for the ITDB States' Points of Contact."[149] In October 2024, the Agency held the Triennial Meeting of States' Points of Contact for the Incident and Trafficking

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142 IAEA, *ITDB 2025 Factsheet*, https://www.iaea.org/sites/default/files/25/03/itdb-factsheet.pdf.

143 Ibid, p. 2.

144 Ibid.

145 The IAEA attributed this to the impact of the COVID-19 pandemic.

146 These included 13 cases of HEU, three cases of plutonium and five cases of plutonium-beryllium neutron sources.

147 *ITDB 2025 Factsheet*, p. 4.

148 IAEA points out that "Devices containing radioactive sources can be attractive to a potential thief as they may be perceived to have a high resale or scrap metal value."

149 IAEA, *Guidelines for the ITDB States' Points of Contact (IAEA Services Series No.49)*, December 2023.

Database in Vienna. The meeting resulted in a suggestion to increase the frequency of the meeting and of the points of contact training event, to increase the online activities of the ITDB in the area of training and capacity building, and to organize consultancy meetings to review some of the operational structures for reporting to the ITDB.[150]

Note that the ITDB does not disclose details of reported cases or illicit trafficking in order to protect sensitive information in participating countries.

In 2025, the following cases of theft and discovery of nuclear and radioactive materials out of regulatory control were reported.

- On 27 February, a radiography camera containing 2.738 TBq (74 Ci) of Ir-192 was reported stolen in North Carolina, United States. The radiographer had not followed approved procedures for securing the camera, which had been stolen out of his truck. The device was recovered intact on March 13.[151]
- In July, Georgia's State Security Service reported it had detained two people for attempting to sell $3 million worth of uranium.[152] Then, in October of the same year, the agency arrested three Chinese citizens in Tbilisi while allegedly trying to buy 2kg of uranium. The suspects reportedly planned to transport the nuclear material to China through Russia.[153]
- On 7 July, Atom Malaysia reported uncovering several attempts by an organized syndicate to smuggle radioactive materials illegally via both land and maritime routes, noting that it detects an average of approximately 15 such cases each year.[154]

In connection with the illicit trafficking of nuclear and other radioactive materials, countries are working to develop national nuclear security detection architectures. In this regard, the International Network of Front Line Officers and Organizations for Nuclear Security Detection (FLO Network) remains a valuable source of information sharing. An assessment of the overall impact of the FLO Network indicates that 74.8% of survey participants stated that they have implemented best practices or knowledge gained from the FLO Network, and that 71% reported substantial growth in nuclear security detection knowledge and skills.[155]

Ensuring nuclear security at major public events (MPEs) in each country has also become important. IAEA member states have been requesting the IAEA to support the provision of

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150 *Nuclear Security Report 2024*, p. 16.

151 "Lost Radiography Device," *IAEA News*, March 19, 2025, https://www-news.iaea.org/ErfView.aspx?mId=f498597c-4a52-475d-9ba1-b234416025c3.

152 "Georgia stops sale of $3 million of uranium that could have been used in bomb," *Reuters*, July 17, 2025, https://www.reuters.com/world/europe/georgia-stops-sale-3-million-uranium-that-could-have-been-used-bomb-2025-07-17/.

153 "Chinese citizens arrested in Georgia, accused of trying to buy uranium," *Al Jazeera*, October 25, 2025, https://www.aljazeera.com/news/2025/10/25/chinese-citizens-arrested-in-georgia-accused-of-trying-to-buy-uranium.

154 Ben Tan, "Atom says Malaysia sees around 15 cases of radioactive material smuggling yearly," *Malay Mail*, July 7, 2025, https://www.malaymail.com/news/malaysia/2025/07/07/atom-says-malaysia-sees-around-15-cases-of-radioactive-material-smuggling-yearly/183128.

155 *Nuclear Security Review 2025*, p. 38.

Table 3-7: Participation Status in and Efforts toward Nuclear Security Initiatives

	IPPAS	Nuclear Forensics	Nuclear Security Fund	G7GP	Global FTPRNT
China		○	●		
France		○	●	○	○
Russia		○	○		
U.K.		○	●	○	○
U.S.	○	○	●	○	○
India		○			
Israel		○			○
Pakistan		○	●		○
Australia		●	●	○	○
Belgium		○	●	○	○
Brazil		○			
Canada		○	●	○	○
Finland	○	○	●	○	○
Germany		○	●	○	○
Iran					
Japan	○	○	●	○	○
Kazakhstan		○		○	○
South Korea		○	●	○	○
Mexico		○		○	○
Netherlands	○	○	●	○	○
Norway		○	○	○	○
South Africa		○			
Sweden		○	●	○	○
Switzerland	○	○	●	○	
Türkiye	○	○			○
UAE		○	●		○
North Korea					

IPPAS: "●" indicates acceptance in 2025. " ○ " indicate acceptance in the past five years.
Nuclear Forensics: "●" indicates new contributions confirmed for 2025. " ○ " indicates past participation in ITWG activities or other achievements (obtained from public information).
Nuclear Security Fund: "●" indicates new contributions confirmed for 2025. " ○ " indicate the actual contributions made in the past three years.

hand-held radiation detection equipment, assistance with preparing MPEs, and support for the operation, maintenance, and configuration of detection equipment. In 2024, five countries

received equipment on loan from the IAEA and 6 received donated detection equipment.[156] Additionally, human resource development was carried out to ensure nuclear security at MPEs. According to the IAEA's 2025 *Nuclear Security Report*, Bahrain and Thailand held training and workshop.[157]

The IAEA is in the process of revising the Implementing Guide *Nuclear Security Systems and Measures for Major Public Events* (IAEA Nuclear Security Series No. 18), originally published in 2012. The revision will reflect lessons learned and good practices from States implementing nuclear security measures at their MPEs, alongside advances in methodologies and technology. At the time of writing, it has not yet been published.[158]

In terms of the efforts by the countries surveyed, the Institute of Peace and Conflict Studies (IPCS) in India, together with the Office of Nuclear Smuggling Detection and Deterrence (NSDD) of the U.S. NNSA, convened their Sixth Annual Radiological Security Dialogue in the Maldives from 4 to 6 August. The discussions highlighted the pressing need for well-informed engagement on the security of nuclear and radiological materials.[159]

At the March IAEA Board of Governors, China stated that it supports the IAEA's central role in nuclear security cooperation and highlighted its efforts to strengthen national nuclear security through the continued organization of the "Storm Series" Nuclear Security Exercises to enhance preparedness and response to evolving nuclear terrorism threats.[160]

C) Acceptance of international nuclear security review missions

The IAEA's international assessment missions, in which international experts provide advice on the implementation of international instruments and IAEA guidance on the protection of nuclear and other radioactive material and related facilities and activities, include the IPPAS,[161] the International Nuclear Security Advisory Service (INSServ) missions as well as the mission to develop Integrated Nuclear Security Sustainability Plans (INSSP).[162] In addition, a new advisory mission, the Regulatory Infrastructure Mission for Radiation Safety and Nuclear Security (RISS), was launched in March 2022.[163]

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156 Ibid.

157 IAEA, *Nuclear Security Report 2025*, op. cit., p. 21.

158 *Nuclear Security Review 2025*, 40.

159 Christina McAllister and Braden Holt, "Nuclear Security News and Member Updates Roundup, August 2025," Stimson Center, September 3, 2025, https://www.stimson.org/2025/nuclear-security-news-and-member-updates-roundup-august-2025/.

160 "Statement by China," Agenda Item: Nuclear Security, IAEA Board of Governors, March 18, 2025.

161 An international team of experts from Member States and IAEA reviews the nuclear security situation as implemented by mission host states, against the international guidelines and good practices contained in the 2005 A/CPPNM and IAEA Nuclear Security Series documents. The review will cover all aspects, from the regulatory framework to transport, information and computer security arrangements.

162 Previously known as the Integrated Nuclear Security Support Plan. "Support" was replaced by "Sustainability" in 2023.

163 *Nuclear Security Review 2023*, p. 9.

IPPAS missions, which are particularly high-profile, were received in 2025 by Bangladesh and Kenya. For Kenya, it was first time for them to receive this mission.[164]

Although acceptance of IPPAS and follow-up missions has increased among Western countries included in the survey, some countries have never hosted a mission, indicating a clear split in levels of engagement (see Table 3-7).

It is now common practice to make an IPPAS mission report available to the public while protecting sensitive information, from the perspective of transparency and accountability regarding the status of nuclear security implementation in countries. To date, Australia, Canada, Finland, Japan, the Netherlands, and Sweden released part of their reports. In addition to these countries, Switzerland released in May 2024 part of the reports of the 2018 IPPAS and the 2023 follow-up mission.[165]

INSServ is a mission initiated in 2006 to review national nuclear security regimes for radioactive materials out of regulatory control. In 2025, Zambia hosted this mission.[166] A total of 89 missions have been carried out to date.

D) Technology development: Nuclear forensics

Nuclear forensics is an important technology for nuclear security in that it can identify and prosecute perpetrators of illicit trafficking and malicious acts involving nuclear and radiological materials. The past several years have seen various forms of support for further advancement of this technology, including the establishment of national systems as well as international networking systems. Capacity building in the areas of Radiological Crime Scene Management (RCSM) and nuclear forensics continues to be important for countries. The Nuclear Security Resolution adopted by the IAEA General Conference in September continuously encouraged countries that have not yet done so "to consider establishing, where practical, national nuclear forensics libraries"[167] (para. 56).[168]

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[164] IAEA, "IAEA Completes International Physical Protection Advisory Service Mission in Kenya," IAEA November 21, 2025, https://www.iaea.org/newscenter/pressreleases/iaea-completes-international-physical-protection-advisory-service-mission-in-kenya; IAEA, "IAEA Completes International Physical Protection Advisory Service Mission in Bangladesh," December 2025, https://www.iaea.org/newscenter/pressreleases/iaea-completes-international-physical-protection-advisory-service-mission-in-bangladesh.

[165] Swiss Federal Nuclear Safety Inspectorate, *IPPAS Follow-up Mission Report: Switzerland*, May 21, 2024, https://ensi.admin.ch/en/documents/ippas-follow-up-mission-report-switzerland/.

[166] IAEA, "IAEA Mission to Zambia Finds Strong Commitment to Nuclear Security, Encourages Focus on Capacity Building," July 30, 2025, https://www.iaea.org/newscenter/pressreleases/iaea-mission-to-zambia-finds-strong-commitment-to-nuclear-security-encourages-focus-on-capacity-building.

[167] "A National Nuclear Forensics Library is a national system for the identification of nuclear and other radioactive materials found out of regulatory control. A Library enables comparisons to information on known materials and data obtained from analytical measurements of nuclear or other radioactive materials found out of regulatory control." IAEA, *Development of a National Nuclear Forensics Library: A System for the Identification of Nuclear or Other Radioactive Material out of Regulatory Control*, IAEA-TDL-009, 2018, p. 1.

[168] IAEA, *Nuclear Security Resolution*, September 2025, 10. Whether to build a national nuclear forensics library is a matter of national sovereignty, and according to the ISCN, the number of countries that are building such libraries is quite small by global standards. "How Far Has the Nuclear Forensics Library

The IAEA held an International Integrated Workshop on RCSM and Nuclear Forensics in July at the Nuclear Security Training and Demonstration Center (NSTDC).[169] Additionally, the IAEA has developed a new National Workshop on RCSM for practitioners, building on its existing RCSM activities to strengthen national preparedness. The workshop was designed with expert contributions from INTERPOL and specialists from Member States and is specifically tailored to operational practitioners.[170] The first Workshop is scheduled in Vietnam for March 2026.[171]

An important multilateral cooperation effort on nuclear forensics technology is the International Technical Working Group on Nuclear Forensics (ITWG), which was established in 1995. To date, more than 50 countries have participated in its annual meetings.[172]

In July 2025, the ITWG held its 28th annual meeting in Bologna, Italy, with approximately 90 participants from more than 30 countries and international organizations.[173] It was scheduled for the IAEA and UNICRI to provide updates on their forensics-related activities, and for some national representatives from the Global Forum to Prevent Radiological/Nuclear Terrorism (GFTPRNT) to report on the activities of this newly established forum.[174]

The five ITWG task groups are also continuing their active work.[175] For example, the Guidelines Technical Group continues to develop consensus-based guidelines across a range of nuclear forensics topics, reflecting best practices identified through the collaborative work of the nuclear forensics expert community and aimed at informing both public messaging and decision-makers.[176]

In 2025, the IAEA held five training courses and workshops related to nuclear forensics and seven training courses and workshops related to crime scene management. These included practical introductory level training courses and train-the-trainer courses.

The IAEA has plans to train basic and advanced level trainers and hold workshops in the fields

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Establishment Progressed? (in Japanese)," ISCN, December 2021, https://www.jaea.go.jp/04/iscn/activity/2021-12-15/2021-12-15-07.pdf.

169 "International Integrated Workshop on Radiological Crime Scene Management and Nuclear Forensics," IAEA, July 2025, https://www.iaea.org/events/evt2405466.

170 ITWG, *Nuclear Forensics Update*, No.35, June 2025, p. 3, https://www.nf-itwg.org/newsletters/ITWG_Update_no_35.pdf.

171 IAEA, "National Workshop on Radiological Crime Scene Management: Practitioners," https://www.iaea.org/events/evt2405721.

172 ITWG, *Nuclear Forensics Update*, No. 24, September 2022, p. 2.

173 "Nuclear Forensics International Technical Working Group (ITWG) held its annual conference in Bologna, Italy," International Science and Technology Center, July 9th, 2025, https://www.istc.int/news/nuclear-forensics-international-technical-working-group-itwg-held-its-annual-conference-in-bologna-italy.

174 ITWG, *Nuclear Forensics Update*, No.35, op. cit., p. 2.

175 The ITWG has established the following task groups to examine technical priorities in detail: Evidence and Testimony; Exercises; Guidelines; Libraries and Assessment; and Outreach and Training. "Organization," ITWG, https://www.nf-itwg.org/content.html.

176 ITWG, *Nuclear Forensics Update*, No.35, op. cit., p. 2.

of crime scene management and nuclear forensics, and to produce technical documents for the development and maintenance of nuclear forensics capabilities.[177]

With regard to activities in the surveyed countries beyond those noted above, Australia hosted a side event at the IAEA General Conference on cooperation in nuclear forensics, drawing on its experience of successful collaboration with the Government of the Philippines in the seizure and secure handling of smuggled uranium.[178]

E) Human resource development and capacity building and support activities

It is an essential responsibility of each state to build the capacity of organizations and people to establish, implement and sustain a nuclear security regime.[179] The IAEA plays an important role in providing coordinated education and training programs that strengthen capabilities in states to address and sustain nuclear security.[180]

The IAEA also began human resources development through utilizing the IAEA NSTDC, which was established in 2023. The IAEA's *Nuclear Security Report 2025* reported that 46 events were held at NSTDC.[181] Regarding the NSTDC, South Korea stated at the NPT PrepCom that it "recognizes the importance of international and regional cooperation in national capacity building for nuclear safety. In this regard, we continue to support the operation of the IAEA Nuclear Security Training and Demonstration Centre (NSTDC) in Seibersdorf, Austria."[182]

The IAEA also organized training in the countries surveyed. According to the IAEA's *Nuclear Security Report 2025* and the *IAEA NSSC Network Newsletter*, in addition to the items already mentioned in this chapter, training and workshops were held in Kazakhstan, Ukraine, Türkiye and Japan on topics such as physical protection, the development of domestic systems and computer inspections.[183]

Beyond IAEA-led and state-implemented training activities, a number of initiatives also have focused on developing the next generation of nuclear security professionals through academic and consortium-based programs. One example of next-generation human resource development is the Nuclear Science and Security Consortium, hosted by the University of California, Berkeley, and supported by the United States NNSA. The Nuclear Security and Nonproliferation Summer School, held in June 2025, provided practical modules including

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177 *Nuclear Security Review 2025*, pp. 41-2.

178 IAEA, "Australia and the Philippines: A Case Study of the Real-World Impact of Cooperation in Nuclear Forensics," September 2025, https://www.iaea.org/resources/member-states-side-events/australia-and-the-philippines-a-case-study-of-the-real-world-impact-of-cooperation-in-nuclear-forensics.

179 IAEA, "Building Capacity for Nuclear Security Implementing Guide," *IAEA Nuclear Security Series*, No. 31-3, 2018, p. 1.

180 *Nuclear Security Plan 2022-2025*, GC(65)/24, September 15, 2021, p. 18.

181 *Nuclear Security Report 2025*, op. cit., p. 11.

182 "Statement by South Korea," Cluster 3, 3rd PrepCom for the 11th RevCon, May 6, 2025.

183 IAEA, *NSSC Network Newsletter*, Issue 15, July 2025; *Nuclear Security Report 2025*, op. cit., pp. 17-8.

emergency response and nuclear forensics.[184] In addition, the Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN) at JAEA runs a program entitled the "ISCN Summer School" that accepts summer interns and helps them deepen their understanding of nuclear nonproliferation and nuclear security.[185]

WINS, a non-governmental organization, has also undertaken efforts in this regard. In addition to holding workshops and publishing reports on various issues related to nuclear security, WINS provides human resource development through the WINS Academy, which offers professional development programs in various fields related to nuclear security.[186]

International network for training and support

The IAEA's activities on training for human resource development and capacity building are carried out in close cooperation with states, including the activities of National Nuclear Security Support Centres (NSSCs) and the International Network of NSSCs (NSSC Network).

The International Network of NSSCs, established by the IAEA in 2012, plays an important role as a keystone for collaboration and networking among national NSSCs.[187] Ninety-two institutions from 71 countries and 10 observers are participating in the NSSC network.[188] Countries participating in the NSSC network in the countries surveyed for the *Hiroshima Report* include Brazil, Canada, China, France, Japan, Kazakhstan, South Korea, Pakistan, Russia and the United States.[189] To date, the following six regional and sub-regional groups have been established: the Africa regional group; the Arab States in Asia group; the Asia Regional Network; the Hungary, Lithuania, Ukraine Consortium; the Latin America; and Southeast Asian Nations regional group.[190] In October 2025, an annual meeting of NSSC Network took place in Vienna.

Regarding the human resource development efforts of the countries surveyed in 2025, South Korea mentioned in its national statement at the NPT PrepCom that it is "actively contributing to capacity-building initiatives through the International Nuclear Nonproliferation and Security Academy (INSA) in Daejeon, which has provided training programs to over six hundred officials from 30 countries."[191] Additionally, in June, South Korea hosted an international

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184 "2025 NSSC-LLNL Nuclear Security and Nonproliferation Summer School," Nuclear Science and Security Consortium, https://nssc.berkeley.edu/nssc-summer-schools/nssc-2025-summer-programs/2025-nssc-llnl-nuclear-security-and-nonproliferation-summer-school/.

185 "ISCN 夏の学校 2025 実施報告 [Report on the "ISCN Summer School 2025"]," *ISCN Newsletter*, No. 347, November 2025, pp. 43-5.

186 "WINS Academy Programmes," WINS, https://www.wins.org/wins-academy.

187 For basic information on the NSSC network, see: IAEA, "Understanding Nuclear Security Support Centres (NSSCs) in FIVE QUESTIONS," https://www.iaea.org/sites/default/files/20/08/nssc-five-questions.pdf.

188 IAEA, *NSSC Network Newsletter*, Issue 15, July 2025; IAEA, *Nuclear Security Review 2025*, p. 15.

189 *Nuclear Security Review 2023*, August 2023, p. 12; Appendix C, 1.

190 IAEA, "The Chair's Report on the 2023 Annual Meeting of the International Network for Nuclear Security Training and Support Centres (NSSC Network)," https://www.iaea.org/sites/default/files/23/06/chairs_report_annual_meeting_2023.pdf.

191 "Statement by South Korea," Cluster 3, Third PrepCom for the 11th NPT RevCon, May 6, 2025.

training course for instructors on establishing and operating an NSSC.[192]

Australia stated that it supports regional capability building in partnership with the IAEA, particularly in Asia and the Pacific, such as the Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA).[193] In June, the IAEA organized an International Workshop on Establishing and Operating a National Nuclear Security Support Centre in Paris, France.[194]

These activities are based on the technical guidance document on establishing and operating NSSCs issued by the IAEA in 2020. The related activities of this technical guidance have become one of the focuses of the NSSC network's activities in recent years.[195]

International network for education

The International Nuclear Security Education Network (INSEN) was established in 2010 to promote sustainable nuclear security education through a partnership between the IAEA and educational and research institutions as well as other stakeholders.[196]

As of August 2025, the INSEN had 227 institutions from a total of 75 countries.[197] According to the IAEA's *Nuclear Security Review 2025*, membership in INSEN increased by seven institutions from seven countries in 2024.[198] Among the countries covered by this survey, institutions from Brazil, Canada, France, Germany, India, Japan, Kazakhstan, the Netherlands, Pakistan, Russia, South Africa, Sweden, Türkiye, the United Kingdom and the United States are participants.

In 2023, there was an increase in collaboration within the INSEN network, with the proportion of INSEN institutions working together to implement education programs in nuclear security growing from 62.7% in 2023 to 69.2% in 2024. There was also an increase in the number of INSEN members teaching courses on nuclear security in existing programs, from 53.97% in 2023 to 64.1% in 2024.[199]

As part of these international efforts, the INSEN annual meeting was held in Japan from 10 to 14 November 2025, hosted in Ibaraki Prefecture.[200] This meeting marked the first time

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192 *NSSC Network Newsletter*, Issue 15, op. cit.

193 "Statement by Australia," Cluster 3, Third PrepCom for the 11th NPT RevCon, May 6, 2025.

194 *NSSC Network Newsletter*, Issue 15, op. cit.

195 IAEA, *Establishing and Operating a National Nuclear Security Support Centre (IAEA-TDL-010)*, https://www.iaea.org/publications/14704/establishing-and-operating-a-national-nuclear-security-support-centre.

196 IAEA, "International Nuclear Security Education Network (INSEN)," https://www.iaea.org/ services/networks/insen. Their work includes the development of peer-reviewed teaching materials; faculty development in different areas of nuclear security; joint research activities; student exchange programmes; academic theses supervision and evaluation; knowledge management; promotion of nuclear security education; and other related activities.

197 *Nuclear Security Review 2025*, p. 15.

198 Ibid.

199 Ibid, p. 15.

200 JAEA, *ISCN Newsletter*, No.0348, December 2025, p. 47, https://www.jaea.go.jp/04/iscn/nnp_news/

that the INSEN annual meeting, traditionally convened at IAEA Headquarters in Vienna, was held outside that city. It brought together representatives from 35 countries and regions. The meeting in Japan facilitated exchanges between domestic educational and research institutions and INSEN member organizations, while also providing an opportunity to share internationally insights into challenges and human resource development needs identified through practical educational settings.

F) Nuclear security plan and nuclear security fund

The IAEA developed a comprehensive action plan, called the Nuclear Security Plan, for protection against nuclear terrorism, which was approved by the Board of Governors in March 2002, marking its first-ever initiative in this regard. To facilitate the implementation of this plan, the Nuclear Security Fund (NSF) was established in the same year. Since then, IAEA Member States have been requested to contribute funds on a voluntary basis. Subsequent "Nuclear Security Plans" have been developed every four years since 2005, and activities in 2025 were carried out based on the sixth plan adopted in 2021,[201] covering the period from 2022 to 2025.

The NSF is sustained through voluntary contributions from IAEA Member States and others. In paragraph 13 of the IAEA Nuclear Security Resolution adopted in 2025, it calls upon all IAEA Member States "to consider providing the necessary political, technical, and financial support, as appropriate, to the Agency's efforts to enhance nuclear security through various arrangements at the bilateral, regional, and international levels."[202]

According to the *IAEA Nuclear Security Review 2025*, contributions or pledges to the NSF were made in 2024 by 21 countries, including 16 countries subject to this survey (Australia, Belgium, Canada, China, Finland, France, Germany, Japan, the Netherlands, South Korea, Pakistan, Sweden, Switzerland, the United Arab Emirates, the United Kingdom, and the United States). ,[203] It is the first time for the United Arab Emirates to contribute. Forty-eight IAEA Member States, the European Union, and governmental and non-governmental organizations have contributed to the NSF since its establishment.[204]

It is noteworthy that the NSF's total budget allotment in 2024 amounted to €28 million, representing a decrease of approximately €20 million from €48 million in 2023 and resulting in a near halving. [205] While the balance of NSF reserve funds stood at €67 million at the end of

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attached/0348.pdf#page=47.

[201] IAEA, *Nuclear Security Plan 2022-2025: Report by the Director General*, GC (65)/24, September 15, 2021.

[202] IAEA, *Nuclear Security Resolution*, September 2025, p. 6.

[203] *Nuclear Security Review 2025*, p. 45.

[204] Ibid, p. 43.

[205] Since the 2025 *Nuclear Security Review*, the IAEA started using "budget allotment" instead of "revenue." It explains that "Allotments provide a better overview of the funding made available to Agency for the nuclear security programme at the time the contribution was made, as opposed to revenue, recognition of which is based on the International Public Sector Accounting Standards requirements." The allotments for the past 5 years are: €28 million in 2019, €94 million in 2020, €23 million in 2021, €20 million in 2022, and €48 million in 2023.

2024, only slightly below the €68 million recorded at the end of 2023, the sharp decline in new funding raises concerns about the sustainability of the NSF's capacity to implement priority nuclear security activities.

According to the IAEA, it still requires a significant amount of funding in order to implement a number of activities that have been identified as Member State priorities. The *Nuclear Security Review 2025* included a graph showing areas of activity that were lacking funding. According to this, there was a funding shortfall of about 15 million euros for the security of nuclear materials and nuclear facilities, about 18 million euros for the security of materials out of regulatory control, and about 4 million euros for program development and international cooperation.[206]

G) Participation in international efforts

International efforts to raise the level of nuclear security today form a multilayered structure. Major efforts by the international community in nuclear security include support for implementation of UN Security Council Resolution 1540 (2004) and multilateral forums such as the IAEA ICONS and the Nuclear Security Summit Process, which ended in 2016. Furthermore, there are efforts by the G7 and the Global Initiative to Combat Nuclear Terrorism (GICNT) as a framework for multilateral cooperation on nuclear security.

UN Security Council Resolution 1540

Adopted in 2004, Security Council resolution 1540 decided that States should take effective measures to establish and strengthen national control systems to prevent the proliferation of nuclear, chemical and biological weapons and their means of delivery, and called for the development and maintenance of appropriate and effective physical protection measures for that purpose.[207] States are requested to submit reports to the United Nations on the obligations called for in this resolution. The submission of such reports will increase transparency regarding the nuclear security measures taken by states and contribute to international assurance regarding the implementation of such measures. See Table 3-5 for the status of submission of this report by the countries covered by this survey. Only Laos submitted an updated report in 2025, and no new reports were submitted from the countries surveyed.[208]

Nuclear Security Summit Process[209]

The Nuclear Security Summit Process ended in 2016, but efforts have continued afterwards through the Nuclear Security Contact Group (NSCG), which was established based on the Joint Statement on Sustained Action to Strengthen Global Nuclear Security. However, no public information on new participating countries or specific activities in recent years could be found.

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[206] *Nuclear Security Review 2025*, p. 45.

[207] UN Security Council, *Resolution 1540 (2004)*, S/RES/1540 (2004), April 28, 2004.

[208] "National Reports," UN 1540 Committee, https://www.un.org/en/sc/1540/national-implementation/national-reports.shtml.

[209] Launched in 2010 at the initiative of the U.S. President Barack Obama, it has been held a total of four times by 2016 (2012 in South Korea, 2014 in the Netherlands and 2016 in the U.S.).

The "Basket Initiative,"[210] was launched at the Nuclear Security Summit Process, in which volunteer states promote initiatives through joint statements on specific themes. However, momentum appears to have slowed. While an annual "Know Your Insider" newsletter was previously issued by the INFCIRC/908 "Mitigating Insider Threats" International Working Group, no edition was published in 2025. Although a revised version of INFCIRC/908 was submitted in August 2024, no further updates have been reported since.[211]

GICNT[212]

The GICNT was an important multinational initiative for enhancing global capabilities in nuclear security, involving 89 countries, including numerous developing nations, as well as international organizations such as the IAEA, INTERPOL, and the United Nations Office of Counter-Terrorism (UNOCT). The initiative actively engaged in practical activities such as training and workshops, and the development of practical guidelines. All countries under this survey except Iran, North Korea, and South Africa have participated in the GICNT. However, following Russia's full-scale invasion of Ukraine in February 2022, the United States and Russia mutually agreed to pause all official GICNT meetings and working group activities, effectively suspending the initiative's operations.[213]

In response to the resulting gap in international cooperation on radiological and nuclear terrorism, the United States launched the Global Forum to Prevent Radiological and Nuclear Terrorism (Global FTPRNT), with its inaugural meeting held in Bucharest in November 2024, bringing together 63 countries and six international organizations.[214] The Forum seeks to reaffirm the importance of multilateral cooperation, assess evolving R/N terrorism risks, and catalyze capacity-building efforts among like-minded partners. While the Global FTPRNT has emerged as a functional successor to GICNT, it remains unclear whether the initiative will be sustained in the longer term, given that it was launched under the Biden administration and its institutionalization has yet to be determined.

G7

The G7's initiatives related to nuclear security include the G7 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (G7GP),[215] the NPDG, the NSSG, and

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[210] Other initiatives include Transportation Security (INFCIRC/909), in which Japan is the lead country; Minimizing and Eliminating the Use of HEU for Civilian Use (INFCIRC/912); and Nuclear Forensics (INFCIRC/917), in which Australia is the lead country. "Information Circulars," IAEA, https://www.iaea.org/publications/documents/infcircs.

[211] Insider Threat Mitigation, https://insiderthreatmitigation.org/.

[212] The initiative, jointly announced by Russia and the United States at the 2006 G8 St. Petersburg Summit, aims to counter the threat of nuclear terrorism through international efforts.

[213] "Overview," Global FTPRNT, https://globalftprnt.org/en.

[214] U.S. Department of State, "Statement on the Global Forum to Prevent Radiological and Nuclear Terrorism," November 15, 2024, https://2021-2025.state.gov/joint-statement-on-the-global-forum-to-prevent-radiological-and-nuclear-terrorism/.

[215] The initiative was agreed at the 2002 Kananaskis Summit (Canada) by the then G8, including Russia, with the main objective of preventing the proliferation of WMDs and related substances, etc. Currently, the G7 is leading the initiative, with 30 countries and the EU participating.

the Nuclear and Radiological Working Group (NRSWG). The following is a summary of their respective activities in 2025.

The NPDG issued a statement at its meeting in August and stated its "support the International Atomic Energy Agency (IAEA) in its mission to verify the non-diversion of nuclear material," and commitment to "working together to ensure that civil nuclear programs around the globe are consistent with the highest international safety, security, and safeguards standards, guidelines, and recommendations."[216]

While the NSSG usually publishes a report on that year's G7 Presidency, there was no report in 2025 following the Kananaskis summit in Canada.

The NRSWG held a meeting in Vancouver in November 2025. Deliverables are presented in a common report of the G7GP CBRN sub-Working Group, with nuclear security–relevant priorities including support for the implementation of UNSCR 1540, strengthened strategic trade and export controls, capacity building to prevent and detect illicit trafficking of nuclear and radiological materials, and efforts to address emerging nuclear security risks linked to new technologies and disinformation.[217]

[216] Global Affairs Canada, "Statement of the G7 Non-Proliferation Directors Group," August 20, 2025.

[217] CBRNWG, "Chemical, Biological, Radiological and Nuclear sub-Working Group Deliverables," November 2025, https://siteassets.pagecloud.com/gpwg/uploads/GP_CBRNWG_Deliverables_November_2025.pdf.

Part II: Evaluation

Country-by-Country Analysis

Evaluation Points and Criteria

In this "Evaluation" section, the performances of the 36 countries surveyed in this project are quantified across three areas—nuclear disarmament, non-proliferation, and nuclear security—based on the study and analysis presented in the "Report" section.

Evaluations are conducted separately for four groups—nuclear-weapon states (NWS), non-parties to the Nuclear Non-Proliferation Treaty (NPT), non-nuclear-weapon states (NNWS), and a particular state (North Korea)—due to their differing characteristics. Since each group is assessed using different sets of criteria, the maximum points vary depending on the group to which a country belongs.

To facilitate comparison of the relative performances of the 36 countries, each country's results in each area are also presented in percentage terms on a chart.

The following section lists the point values and measurement scales for each evaluation criterion.

[Full points for each group of countries]

Groups / Areas	(1) NWS	(2) Non-NPT Parties	(3) NNWS	(4) Other
	China France Russia U.K. U.S.	India Israel Pakistan	Australia, Brazil, Canada, Germany, Iran, Japan, Kazakhstan, South Korea, Mexico, Netherlands, Norway, South Africa, Sweden, Switzerland, Türkiye <u>Nuclear disarmament and non-proliferation:</u> Austria, Egypt, Indonesia, New Zealand, Poland, Saudi Arabia, Syria Nuclear security: Belgium, Finland, UAE	North Korea*
Nuclear Disarmament	109	106	48	106
Nuclear Non-Proliferation	47	43	61	61
Nuclear Security	38	38	38	38

* North Korea announced its suspension from the NPT in 1993 and formally withdrew in 2003, and it has conducted a total of six nuclear tests—in 2006, 2009, 2013, 2016 (twice), and 2017. However, there is no consensus among the States Parties regarding North Korea's official status under the NPT.

[Nuclear Disarmament]

Evaluation items	Maximum points	Evaluation criteria
1. Status of Nuclear Forces (estimates)	**-20**	
Status of nuclear forces (estimates)	(-20)	-5 (～ 50); -6 (51 ～ 100); -8 (101 ～ 200); -10 (201 ～ 400); -12 (401 ～ 1,000); -14 (1,001 ～ 2,000); -16 (2,001 ～ 4,000); -17 (4,001 ～ 6,000); -19 (6,001 ～ 8,000); -20 (8,001 ～)
		(not applicable to the NNWS)
2. Commitment to Achieving a World without Nuclear Weapons	**9**	
A) Voting behavior on UNGA resolutions on nuclear disarmament proposals by Japan, NAC and NAM	(6)	On each resolution: 0 (against); 1 (abstention); 2 (in favor)
B) Announcement of significant policies and important activities	(3)	Add 1 point for each policy, proposal, or other initiative that has a major impact on global progress toward a world without nuclear weapons (maximum of 3 points).
C) Actions that run counter to nuclear disarmament	(-3)	Deduct 1~3 points for actions that undermine nuclear disarmament, excluding those assessed under other criteria
3. Humanitarian Consequences of Nuclear Weapons	**5**	
A) Voting behavior on UNGA resolutions	(2)	On each resolution: 0 (against); 0.5 (abstention); 1 (in favor)
B) Participation in joint statements and international conferences	(1)	Add 0.5 points for each instance of participation in joint statements or international conferences on the humanitarian consequences of nuclear weapons
C) Victim assistance and environmental remediation	(2)	Add 1 point for each implementation or initiative related to victim assistance and environmental remediation. For the UNGA resolution, 0 (against); 0.5 (abstention); 1 (in favor)
4. Treaty on the Prohibition of Nuclear Weapons (TPNW)	**10**	
A) Signatures and ratifications	(7)	0 (not signed); 3 (signed but not ratified); 7 (ratified) For non-signatory states, add 1 point for participation in meetings as observers
B) Voting behavior on UNGA resolutions on TPNW	(1)	0 (against); 0.5 (abstention); 1 (in favor)
C) Voting behavior on legally binding UNGA resolutions on the prohibition of nuclear weapons	(2)	On each resolution: 0 (against); 0.5 (abstention); 1 (in favor)
5. Reduction of Nuclear Weapons	**22**	

Evaluation items	Maximum points	Evaluation criteria
A) Reduction of nuclear weapons	(15)	· Add 1~10 points in accordance with the decuple rate of reduction from the previous fiscal year for a country having declared the number of nuclear weapons · For a country having not declared it, add some points using the following formula: (the previous target – the latest target)÷the estimated number of nuclear weapons×10 · Add 1 (engaging in nuclear weapons reduction over the past five years); add 1 (engaging in nuclear weapons reduction under legally-binding frameworks such as New Strategic Arms Reduction Treaty); add 1 (announcing further reduction plan and implementing it in 2025) · Give a full score (15 points) in case of the total abolition of nuclear weapons · -1 (increase of the number of possessed nuclear weapons in the past five years without any reductions)
		(not applicable to the NNWS)
B) Concrete steps toward further nuclear disarmament	(3)	0 (no announcement of a nuclear weapons reduction plan); 1 (announcing a general plan for nuclear weapons reduction); 2 (announcing a plan specifying the scale of reduction); 3 (announcing a concrete and detailed reduction plan)
		(not applicable to the NNWS)
C) Trends in the strengthening and modernization of nuclear weapons capabilities	(4)	0 (modernizing or reinforcing nuclear forces in a way that reverses nuclear weapons reduction); 2–3 (modernizing or reinforcing nuclear forces in a manner that may not increase the number of nuclear weapons); 4 (not engaging in nuclear modernization or reinforcement)
		(not applicable to the NNWS)
6. Diminishing the Role and Significance of Nuclear Weapons in National Security Strategies and Policies	**12**	
A) Current status of the roles and significance of nuclear weapons	(-8)	Deduct 6 points for reliance on nuclear weapons for national security, and deduct 2 points for actions such as nuclear threats.
		(not applicable to the NNWS)
B) No first use and sole purpose	(3)	0 (has not adopted either policy); 2 (adopting a similar policy or expressing the intention to adopt either policy in the future); 3 (has already adopted either policy) Deduct 2 points for actions that violate commitment, and 1 point for words or actions that cast doubt on commitment.
		(not applicable to the NNWS)
C) Negative security assurances	(2)	0 (not declared); 1 (declared with reservations); 2 (declared without reservations) Deduct 2 points for actions that violate commitment, and 1 point for words or actions that cast doubt on commitment.
		(not applicable to the NNWS)
D) Voting behavior on UNGA resolutions on legally binding security assurances for NNWS	(1)	0 (against); 0.5 (abstention); 1 (in favor)

Evaluation items	Maximum points	Evaluation criteria
E) Signature and ratification of nuclear-weapon-free zone treaty protocols	(3)	Add 0.5 points for the ratification of each protocol; a country ratifying all protocols receives 3 points.
		(not applicable to countries except NWS)
F) Extended nuclear deterrence	(-5)	(not applicable to the NWS and Non-NPT Parties)
		(Applied solely to NNWS): -5 (a country relying on the nuclear umbrella and participating in nuclear sharing); -3 (a country relying on the nuclear umbrella); 0 (a country not relying on the nuclear umbrella)
G) Nuclear risk reduction	(3)	NWS and Non-NPT Parties: Add 1~2 points for implementing concrete measures for nuclear risk reduction, add another 1 point for proposals and initiatives.
		NNWS: 1 point for proposals and initiatives.
H) Actions that increase nuclear risk	(-3)	Deduct 3 points for actions that increase nuclear risk
7. De-alerting and Measures to Extend Decision Time for Nuclear Weapon Use	**4**	
De-alerting and measures to extend decision time for nuclear weapon use	(4)	0 ～ 1 (maintaining a high alert level); 2 (maintaining a certain alert level); 3 (de-alerting during peacetime); add 1 point for implementing measures increasing the credibility of a lowered alert status
		(not applicable to the NNWS)
8. CTBT	**12**	
A) Signatures and ratifications	(4)	0 (not signed); 2 (not signed but ratified); 4 (ratified)
B) Moratoria on nuclear test explosions pending the CTBT's entry into force	(3)	0 (not declared); 2 (declared); 3 (declared and closing nuclear test sites)
		(not applicable to the NNWS)
C) Voting behavior on UNGA resolutions on the CTBT	(1)	0 (against); 0.5 (abstention); 1 (in favor)
D) Cooperation with the CTBTO Preparatory Commission	(2)	0 (no cooperation or no information); 1 ～ 2 (paying contributions, actively participating in meetings, and actively engaging in outreach activities for the treaty's entry into force)
E) Contribution to the development of the CTBT's verification systems	(2)	Add 1 point for establishing and operating the IMS; add another 1 point for participating in discussions to enhance CTBT verification capabilities
F) Nuclear testing	(-3)	-3 (conducting nuclear test explosions in the past 5 years);-1 (conducting non-explosive nuclear tests or tests with unclear status); 0 (not conducting any nuclear tests)
		(not applicable to the NNWS)
9. FMCT	**10**	
A) Efforts to initiate negotiations on an FMCT	(4)	Add 1 (expressing a commitment); add 1 (actively promoting early commencement); add 1 ～ 2 (making concrete proposals on the start of negotiations)
B) Voting behavior on UNGA resolutions on an FMCT	(1)	0 (against); 0.5 (abstention); 1 (in favor)

Evaluation items	Maximum points	Evaluation criteria
C) Moratoria on the production of fissile material for nuclear weapons	(3)	0 (not declared); 1 (not declared but not producing fissile material for nuclear weapons); 2 (declared); 3 (declared and taking measures to cease production as declared)
		(not applicable to the NNWS)
D) Contribution to the development of verification measures	(2)	0 (no contribution or no information); 1 (proposing research on verification measures); 2 (engaging in R&D for verification measures)
10. Transparency Regarding Nuclear Forces, Fissile Material, and Nuclear Doctrines	**6**	
Transparency regarding nuclear forces, fissile material, and nuclear doctrines	(6)	Add 1 ～ 2 (disclosing nuclear doctrine); add 1 ～ 2 (disclosing the status of nuclear forces); add 1 ～ 2 (disclosing the status of fissile material usable for nuclear weapons)
		(not applicable to the NNWS)
11. Nuclear Disarmament Verification	**7**	
A) Acceptance and implementation of nuclear disarmament verification	(3)	0 (not accepting or implementing); 2 (limited acceptance and implementation); 3 (accepting and implementing verification comprehensively and completely); deduct 1 ～ 2 points in case of non-compliance or implementation issues
		(not applicable to the NNWS)
B) Engagement in research and development for nuclear disarmament verification measures	(1)	0 (not engaging or no information); 1 (engaging in R&D)
C) IAEA inspections of fissile material declared as no longer required for military purposes	(3)	0 (not implementing); 1(limited implementation); 3 (implementing); add 1 point if a country engages in efforts to implement or strengthen implementation, except when already implementing.
		(not applicable to the NNWS)
12. Irreversibility	**7**	
A) Implementing and planning the dismantlement of nuclear warheads and their delivery vehicles	(3)	0 (not implementing or no information); 1 (possibly implementing but unclear); 2 ～ 3 (implementing)
		(not applicable to the NNWS)
B) Decommissioning and conversion of nuclear weapons-related facilities	(2)	0 (not implementing or no information); 1 (implementing in a limited manner); 2 (implementing extensively)
		(not applicable to the NNWS)
C) Disposition and conversion to peaceful uses of fissile material declared excess for military purposes	(2)	0 (not implementing or no information); 1 (implementing in a limited manner); 2 (implementing extensively)
		(not applicable to the NNWS)

Evaluation items	Maximum points	Evaluation criteria
13. Disarmament and Non-Proliferation Education and Cooperation with Civil Society	**4**	
Disarmament and non-proliferation education and cooperation with civil society	(4)	Add 1 (reference in the NPT Review Process and other fora, participation in joint statements; reference to gender issues, participation in joint statements; implementation of disarmament and non-proliferation education; cooperation with civil society); maximum 4 points
14. Hiroshima and Nagasaki Peace Memorial Ceremonies	**1**	
Hiroshima and Nagasaki Peace Memorial Ceremonies	(1)	0 (not attending); 0.5 (not attending in 2025 but attended at least once in the past 3 years); 1 (attending any one of the ceremonies)

[Nuclear Non-Proliferation]

Evaluation items	Maximum points	Evaluation criteria
1. Acceptance and Compliance with Nuclear Non-Proliferation Obligations	**20**	
A) Accession to the NPT	(10)	0 (not signing or declaring withdrawal); 3 (not ratifying); 10 (in force); 0 point for declaring withdrawal after accession
B) Compliance with Articles I and II of the NPT and the UNSCRs on non-proliferation	(7)	0 (not complying with Articles I and II of the NPT); 3 ～ 4 (having not yet violated Articles I and II of the NPT but displaying behaviors that raise concerns about proliferation, or not complying with the UNSCRs adopted for relevant nuclear issues); 5 (taking concrete measures for solving the non-compliance issue); 7 (complying)
		As for the non-NPT states (maximum 3 points); 2 (not complying with the UNSCRs adopted for relevant nuclear issues); 3 (other cases)
C) Nuclear-Weapon-Free Zones	(3)	1 (signing the NWFZ treaty); 3 (ratifying the treaty)
D) Actions that run counter to nuclear non-proliferation	(-4)	Deduct 1~4 points for actions that run counter to nuclear non-proliferation, although they do not violate NPT
2. IAEA Safeguards Applied to the NPT NNWS	**18**	
A) Signing and ratifying a Comprehensive Safeguards Agreement	(4)	0 (not signing); 1 (not ratifying); 4 (in force)
B) Signing and ratifying an Additional Protocol	(5)	0 (not signing); 1 (not ratifying); 3 (provisional application); 5 (in force)
C) Implementation of the integrated safeguards	(4)	0 (not implementing); 2 (broader conclusion) 4 (implementing)

Evaluation items	Maximum points	Evaluation criteria
D) Compliance with IAEA Safeguards Agreement	(5)	0 (not resolving the non-compliance issue); 2 (taking concrete measures for solving the non-compliance issue); 5 (complying)
3. IAEA Safeguards Applied to NWS and Non-Parties to the NPT	**7**	
A) Application of the IAEA safeguards (Voluntary Offer Agreement or INFCIRC/66) to their peaceful nuclear facilities	(3)	0 (not applying); 1 (applying INFCIRC/66); 2 (applying Voluntary Offer Agreement); add 1 point if all civilian nuclear facilities are designated as eligible facilities or are subject to safeguards
B) Signing, ratifying, and implementing an Additional Protocol	(4)	0 (not signing); 1 (not ratifying); 3 (in force); add 1 point if widely applied to peaceful nuclear activities
4. Cooperation with the IAEA	**4**	
A) Cooperation with the IAEA	(4)	Add 1 (contributing to the development of verification technologies); add 1 ∼ 2 (contributing to the universalization of the Additional Protocol); add 1 (other efforts)
B) Behaviors impeding IAEA activities	(-2)	Deduct 1~2 points for impeding IAEA activities
5. Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	**15**	
A) Establishment and implementation of the national control systems	(5)	0 (not establishing); 1 (establishing but insufficient); 2 (establishing a system to a certain degree); 3 (establishing an advanced system, including the Catch-all); add 1 ∼ 2 (if continuing to implement appropriate export controls); deduct 1 ∼ 2 (not adequately implementing)
B) Requiring the conclusion of the Additional Protocol for nuclear export	(2)	0 (not requiring or no information); 1 (requiring for some cases); 2 (requiring)
C) Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	(3)	0 (not implementing or no information); 2 (implementing); 3(actively implementing); deduct 1 ∼ 3 (depending on the degree of violation)
D) Participation in the PSI	(2)	0 (not participating); 1 (participating); 2 (actively participating)
E) Civil nuclear cooperation with non-parties to the NPT	(3)	0 (exploring active cooperation); 1~2 (contemplating cooperation, subject to implementing additional nuclear disarmament and non-proliferation measures); 3 (showing a cautious attitude or being against it)
6. Transparency in the Peaceful Use of Nuclear Energy	**4**	
A) Reporting on the peaceful nuclear activities	(2)	0 (not reporting or no information); 1 (reporting but insufficiently); 2 (reporting)

Evaluation items	Maximum points	Evaluation criteria
B) Reporting on plutonium management	(2)	0 (not reporting or no information); 1 (reporting); 2 (reporting on not only plutonium but also uranium); add 1 (ensuring a high level of transparency in plutonium although not being obliged to report)

[Nuclear Security]

Evaluation items	Maximum points	Evaluation criteria
1. The Amount of Weapon-Usable Nuclear Material and Possession of Relevant Facilities	**-15**	
A) The amount of weapon-usable nuclear material	(-13)	· HEU: -5 (100t or more); -4 (50 t or more); -3 (10 t or more); -2 (1t or more); -1 (possessing less than 1t) · Military separated Pu: -5 (50t or more); -4 (20 t or more); -3 (5 t or more); -2 (1t or more); -1 (possessing less than 1t) · Non-military separated Pu: -3 (70t or more); -2 (30t or more); -1 (possessing less than 30t)
B) Possession of facilities that could cause serious radiological effects	(-2)	· Power reactor(s): -1 · Reprocessing facility(ies): -1 Not the number of facilities, but their presence or absence. Does not include facilities under construction.
2. Status of Accession to Nuclear Security and Safety-Related Conventions and Their Application to Domestic Systems	**20**	
A) Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	(3)	0 (not signed the CPPNM); 1 (not ratified the CPPNM); 2 (CPPNM in force, but not ratified the A/CPPNM); 3 (both the CPPNM and the A/CPPNM in force)
B) International Convention for the Suppression of Acts of Nuclear Terrorism	(2)	0 (not signed); 1 (not ratified); 2 (in force)
C) Convention on Nuclear Safety	(2)	0 (not signed); 1 (not ratified); 2 (in force)
D) Convention on Early Notification of a Nuclear Accident	(2)	0 (not signed); 1 (not ratified); 2 (in force)
E) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	(2)	0 (not signed); 1 (not ratified); 2 (in force)

Evaluation items	Maximum points	Evaluation criteria
F) Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	(2)	0 (not signed); 1 (not ratified); 2 (in force)
G) Enactment of laws and establishment of regulations for the national implementation	(3)	0 (not established domestic laws and regulations nor the national implementation system) 1: Establishment of CPPNM Implementation Authority 1: National Legal Framework for the A/CPPNM 1: Submission of information in accordance with Article 14.1
H) INFCIRC/225/Rev.5	(4)	0 (not applied or no information) ・Average score of Security & Control Measures and Protect Facilities in the NTI Nuclear Security Index 2023 are used. 4 (80 points or above); 3 (60 points or above); 2(50 points or above); 1(35 points or above); 0 (Less than 35 points) ・1: Information on introducing new regulation in 2025.
3. Efforts to Maintain and Improve the Highest Level of Nuclear Security	**17**	
A) Minimization of HEU in civilian use	(4)	0 (no effort or no information); 1 (limited efforts: efforts made in the past); 3 (active efforts); add 1 (commitment to further enhancement) Breakdown of 3 (active efforts): 2: Reduction in 2025 or complete removal in the past; 1: Ongoing efforts (including technology development efforts)
B) Acceptance of international nuclear security review missions	(4)	0 (none or no information) 2: Accepted in 2025 (1: Announcement of future mission) 1: Acceptance of review mission within the last 5 years or accepted more than two missions in the past 1: Making part of mission report available to the public
C) Technology development—nuclear forensics	(2)	0 (no effort or no information); 1 (some efforts: Participation in ITWG, CMX, INFCIRC/917, etc.); 2 (active efforts: Implementation or announcement of major activities in 2025)
D) Capacity building and support activities	(2)	0 (not implemented or no information); 1 (implementing: establishment of COE or relevant organizations, participation in training courses, workshops, etc., regional and international support activities); 2 (actively implementing: new major activities in 2025)
E) IAEA Nuclear Security Plan and Nuclear Security Fund	(2)	0 (no contribution or information); 1 (made contributions: contributions made in 2025); 2 (made active contributions: continuous contributions (*points added if contributions have been made continuously over the years even if contributions cannot be confirmed in 2025))
F) Participation in international efforts	(3)	0 (no participation); 1 (participated in two or more frameworks); 2 (participated in four or more frameworks); add 1 point if contributing actively
4. Responding to Nuclear Security Threats Posed by States	**-2**	

Evaluation items	Maximum points	Evaluation criteria
A) Commitment to international norms prohibiting attacks against nuclear facilities for peaceful uses, and strengthening of efforts	(1)	0 (none, no information); 1 (statement of commitment, proposal, etc.)
B) Armed attack against nuclear facilities	(-3)	0 (none); -3 (attacked nuclear facilities)

Starting with the *Hiroshima Report 2021*, the Committee revised several grading ranges: the negative evaluation range for actions undermining nuclear non-proliferation was expanded; the evaluation for the International Atomic Energy Agency (IAEA) "Recommendations on the Physical Protection of Nuclear Material and Facilities (INFCIRC/225/Rev.5)" was expanded, including additional positive evaluation for measures addressing insider and cyber threats; and the range for enactment of laws and establishment of regulations for national implementation was expanded. These evaluations considered not only efforts made in 2021 but also prior efforts.

In the *Hiroshima Report 2023*, evaluation items and criteria were further updated to reflect new developments in nuclear issues, as well as the 10th NPT Review Conference (RevCon) and the TPNW First Meeting of States Parties (1MSP). A detailed description of these changes is provided below.

For the *Hiroshima Report 2024*, the Research Committee introduced new evaluation criteria regarding voting behavior on UNGA resolutions on victim assistance and environmental remediation, and whether nuclear-armed states have designated all civilian nuclear facilities for IAEA safeguards.

For nuclear-weapon states (NWS), radar charts were prepared to illustrate each country's performance across different aspects of nuclear disarmament. To facilitate this, the 12 evaluation issues for nuclear disarmament were grouped into six points: (1) number of nuclear weapons; (2) reduction of nuclear weapons; (3) commitment to achieving a "world without nuclear weapons;" (4) operational policy; (5) status of signature, ratification, or negotiation of relevant multilateral treaties; and (6) transparency.

Modification of evaluation items and criteria in the *Hiroshima Report 2023*

Nuclear disarmament

- Commitment to achieving a world without nuclear weapons: the criterion "Actions that run counter to nuclear disarmament," previously included under "Announcement of significant policies and important activities," was elevated to an independent medium-term item. While its point value remains unchanged, the evaluation criteria were revised to specify that actions already assessed under other items are excluded.

- Humanitarian consequences of nuclear weapons
  - This issue, previously assessed as a medium-level item under "Commitment to achieving a world without nuclear weapons," was upgraded to an independent major item considering the increased number of evaluation elements related to the TPNW and other developments.
  - New sub-items were established to evaluate efforts related to "participation in international conferences and joint statements" and "victim assistance and environmental remediation."

- TPNW
  - Signature and ratification of the TPNW: participation as observers was added to the evaluation criteria following the First Meeting of States Parties.
  - Voting on three UNGA resolutions: the previous single evaluation item was divided into two—one specific to the TPNW and one covering the other two resolutions. (Overall evaluation criteria remain unchanged.)

- Diminishing the role and significance of nuclear weapons in national security strategies and policies
  - Current status of the roles and significance of nuclear weapons: In light of recent acts of aggression accompanied by nuclear threats, point reductions were applied not only for traditional reliance on nuclear weapons (applied uniformly to nuclear-armed states), but also for actions involving nuclear threats. The total possible score (i.e., total point deduction) for this item remains unchanged.
  - For the items "no first use" and "negative security assurances," point deductions are now applied for actions inconsistent with declared policies, or for statements and behaviors that cast doubt on such commitments.
  - In response to the heightened importance of providing security assurances to non-nuclear-weapon states, a new evaluation item was added: "Voting for a legally binding UNGA resolution on security assurances to non-nuclear-weapon states."
  - Given the increased emphasis on nuclear risk reduction, a new evaluation item on "nuclear risk reduction" was introduced.

- CTBT: A new evaluation item—"voting behavior on UNGA resolutions on the CTBT"—was created to further clarify each country's position and actions regarding the CTBT.

- FMCT: A new evaluation item—"voting behavior on UNGA resolutions on an FMCT"—was established to clarify the situation regarding FMCT negotiations and the responses of surveyed countries.

- Disarmament and non-proliferation education, and cooperation with civil society: Reflecting discussions at the 10th NPT Review Conference, the evaluation criteria were revised to: "reference in the NPT Review Process and other fora, participation in joint statements; reference to gender issues, participation in joint statements; implementation of disarmament and non-proliferation education; cooperation with civil society." (The total point value remains unchanged.)

Nuclear non-proliferation

- Compliance with nuclear non-proliferation obligations: "Actions contrary to nuclear non-proliferation," previously one of the evaluation criteria under the medium item "Compliance with NPT Articles I and II and related Security Council resolutions," was reclassified as an independent medium item (with no change in grade).

- Cooperation with the IAEA: In light of recent actions that hinder IAEA safeguards, an additional point deduction was introduced under the evaluation item for "actions that impede the activities of the IAEA."

Nuclear security

- The amount of weapon-usable nuclear material
  - The baseline holdings were revised so that point-reduction categories are now determined based on each country's current stockpiles.
  - The classification of plutonium was revised from "weapons-grade plutonium" to "military separated plutonium," and from "reactor-grade plutonium" to "non-military separated plutonium." Because reliable data was difficult to obtain under the previous terminology, the terminology was updated to more commonly used and stable categories.
  - The item "Possession of facilities that could cause serious radiological effects" was added. This addition reflects heightened concern over the risks of sabotage against nuclear facilities and the potential theft of nuclear materials. Although multiple types of facilities could produce radiological consequences in the event of sabotage, two types were selected as the main representative facilities capable of causing serious impacts.

- Enactment of laws and establishment of regulations for national implementation
  - For the "IAEA Recommendations on the Physical Protection of Nuclear Material," the evaluation method was revised to use the score from the Nuclear Threat Initiative (NTI) Nuclear Security Index—widely recognized internationally—in order to clarify the grading criteria and enhance objectivity.
  - Regarding "Establishment of laws and system," because the evaluation focuses on the "Convention on the Physical Protection of Nuclear Material," which is the central convention among those related to nuclear security, this item was moved to "2-G)" immediately after "F) Convention on Assistance to Nuclear Accidents," the final convention in the sequence, rather than appearing after the IAEA recommendation document.
  - The scoring criteria for "establishment of laws and institutions for domestic implementation" were clarified.

- Efforts to maintain and improve the highest level of nuclear security
  - "Separated plutonium inventory" was removed from "minimization of HEU and separated plutonium inventory for civilian use," because civilian separated plutonium is already evaluated as "separated plutonium for non-military use" under

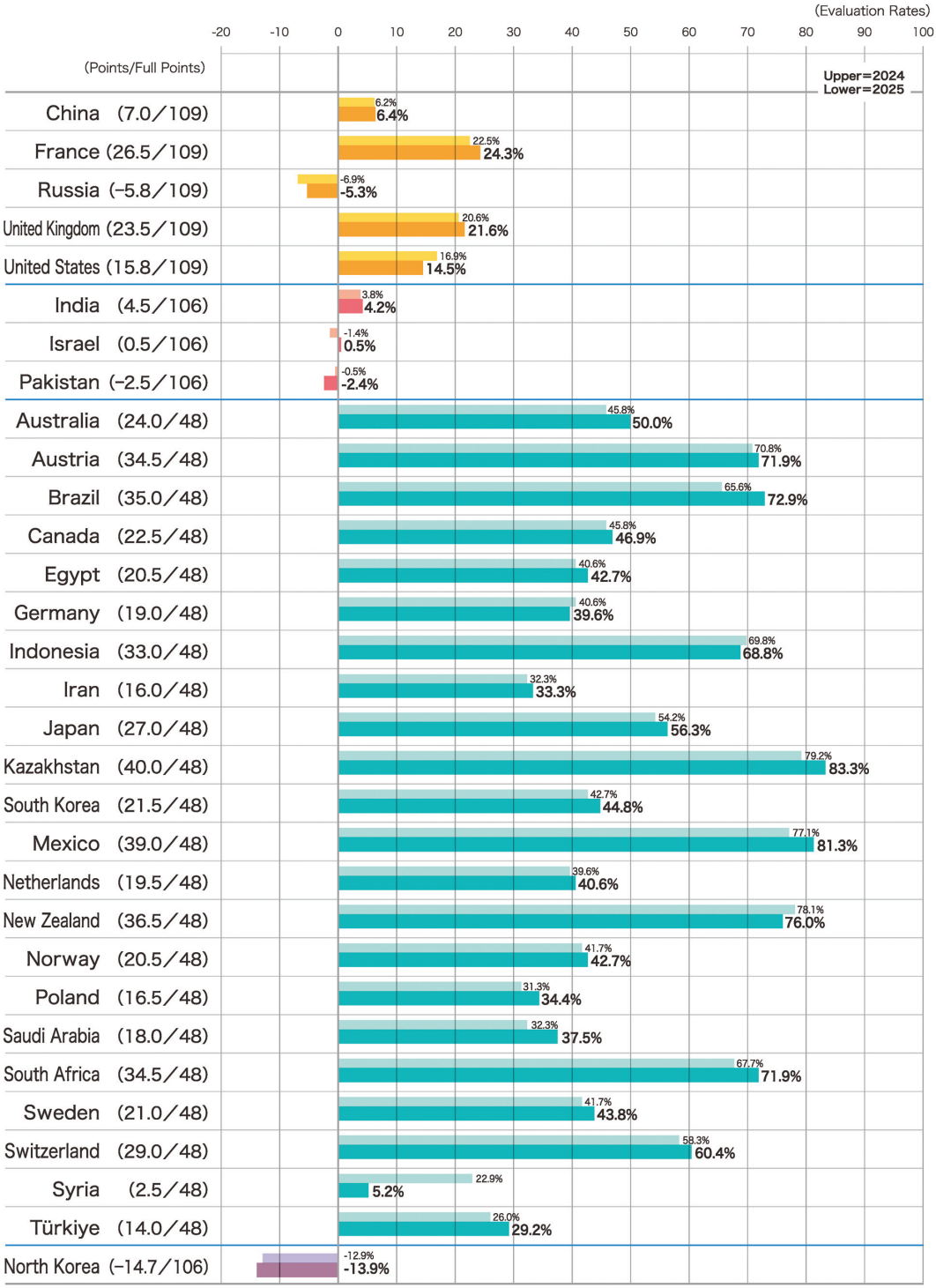
"Item 1." The evaluation criteria for this item were also clarified.

- ✧ "Prevention of illicit trafficking" was removed due to the difficulty of obtaining country-specific data that would allow objective assessment.
- ✧ The evaluation criteria for "acceptance of international evaluation missions" were clarified.
- ✧ The evaluation criteria for "Technology Development – Nuclear Forensics" were clarified.
- ✧ The evaluation criteria for "Human Resource Development / Capacity Building and Support Activities" were clarified.
- ✧ The evaluation criteria for the "IAEA Nuclear Security Plan and Nuclear Security Fund" were clarified.
- ✧ The evaluation criteria for "Participation in International Initiatives" were clarified, and the list of initiatives covered was revised and updated.

➢ "Response to Nuclear Security Threats Posed by States" was newly added (in response to Russia's attack on Ukraine's nuclear facilities).

Chapter 1
Area Summary

(1) Nuclear Disarmament

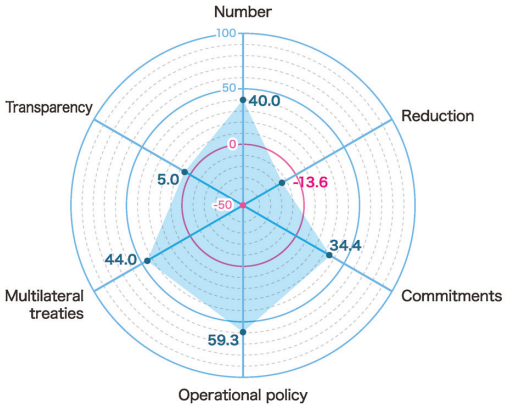


6-point Nuclear Disarmament Radar Chart

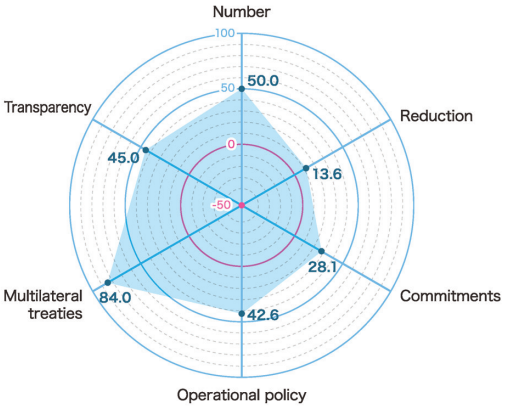
According to the radar charts illustrating how each nuclear-weapon state performs across key aspects of nuclear disarmament, China needs to strengthen its efforts on nuclear weapons reduction and transparency. Russia and the United States are urged to pursue further reductions of their nuclear arsenals. The performances of France and the United Kingdom are comparatively well-balanced relative to the other nuclear-weapon states; however, both countries still need to enhance their efforts in the areas of reductions, commitments, and operational policies.

Six Points	Evaluation Items
Number	✧ Number of nuclear weapons
Reduction	✧ Reduction of nuclear weapons
Commitments	✧ Treaty on the Prohibition of Nuclear Weapons (TPNW) ✧ Commitments to achieving a world without nuclear weapons ✧ Humanitarian consequences of nuclear weapons ✧ Disarmament and non-proliferation education and cooperation with the civil society ✧ Hiroshima and Nagasaki Peace Memorial Ceremonies
Operational policy	✧ Diminishing the role and significance of nuclear weapons in national security strategies and policies ✧ De-alerting and measures to extend decision time for nuclear weapon use
Multilateral treaties	✧ Comprehensive Nuclear-Test-Ban Treaty (CTBT) ✧ Fissile Material Cut-off Treaty (FMCT)
Transparency	✧ Transparency regarding nuclear forces, fissile material, and nuclear doctrines ✧ Verification ✧ Irreversibility

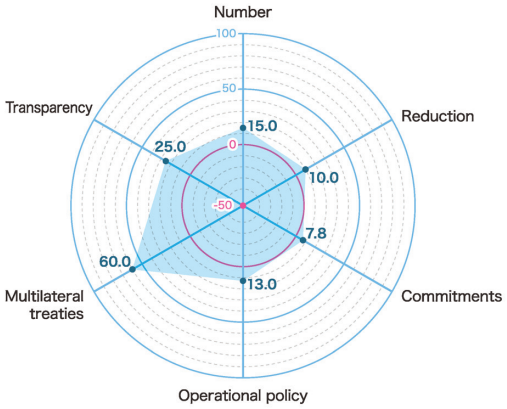
China



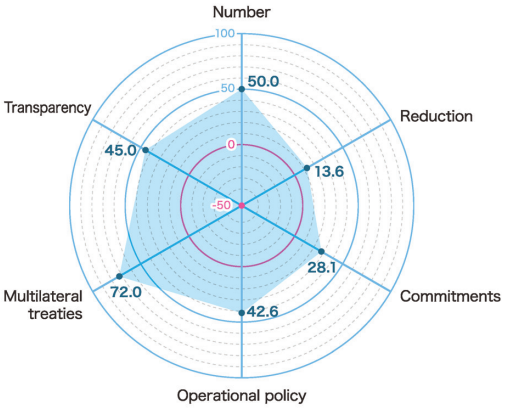
France



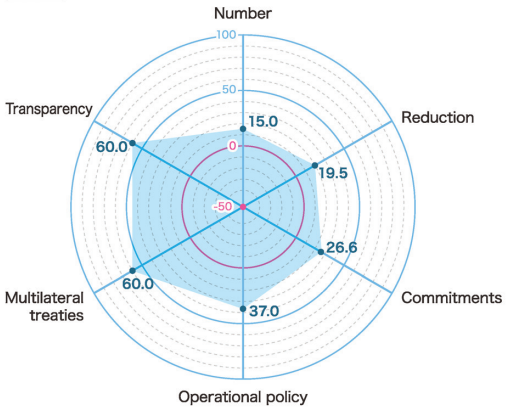
Russia



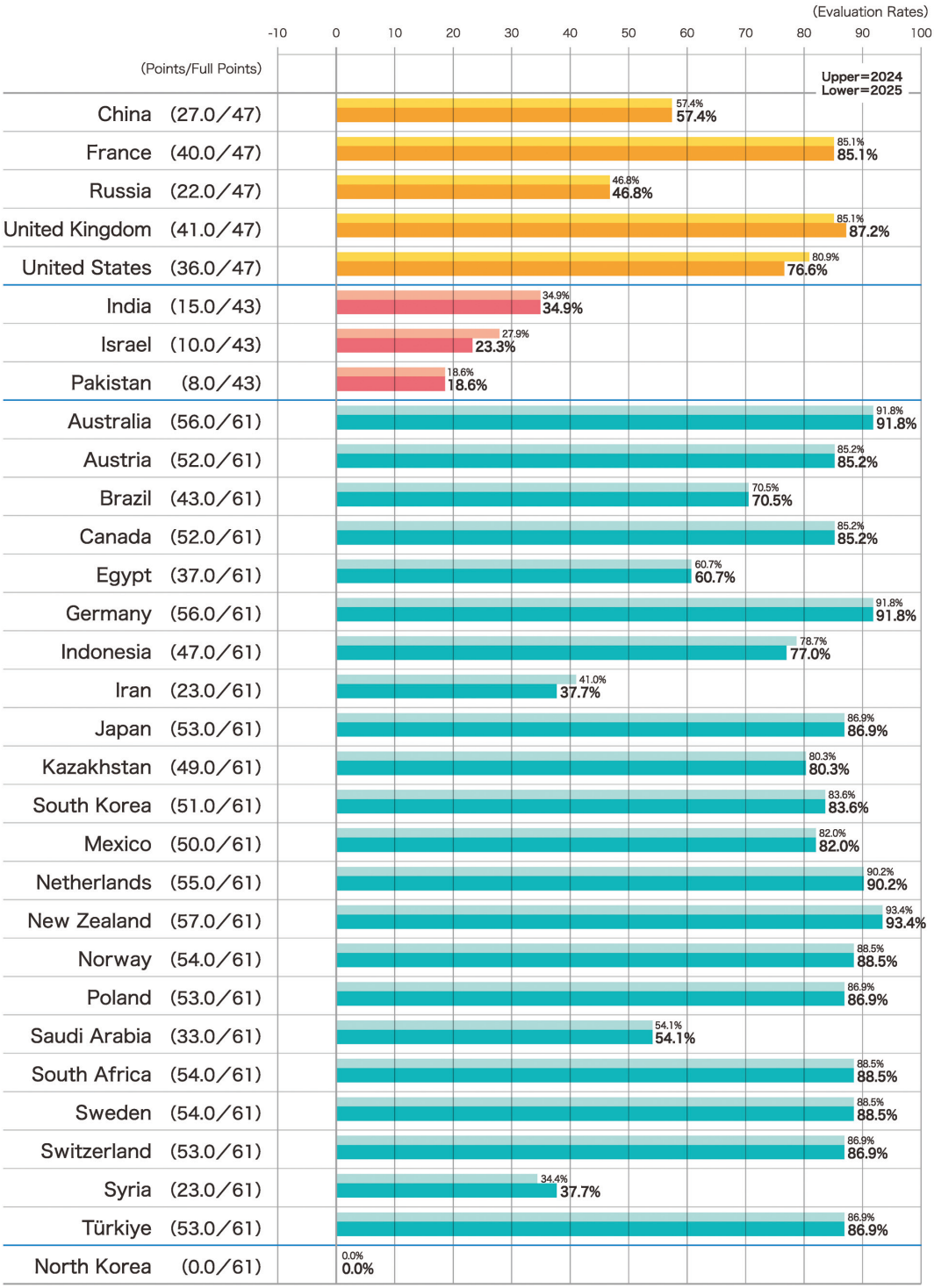
United Kingdom



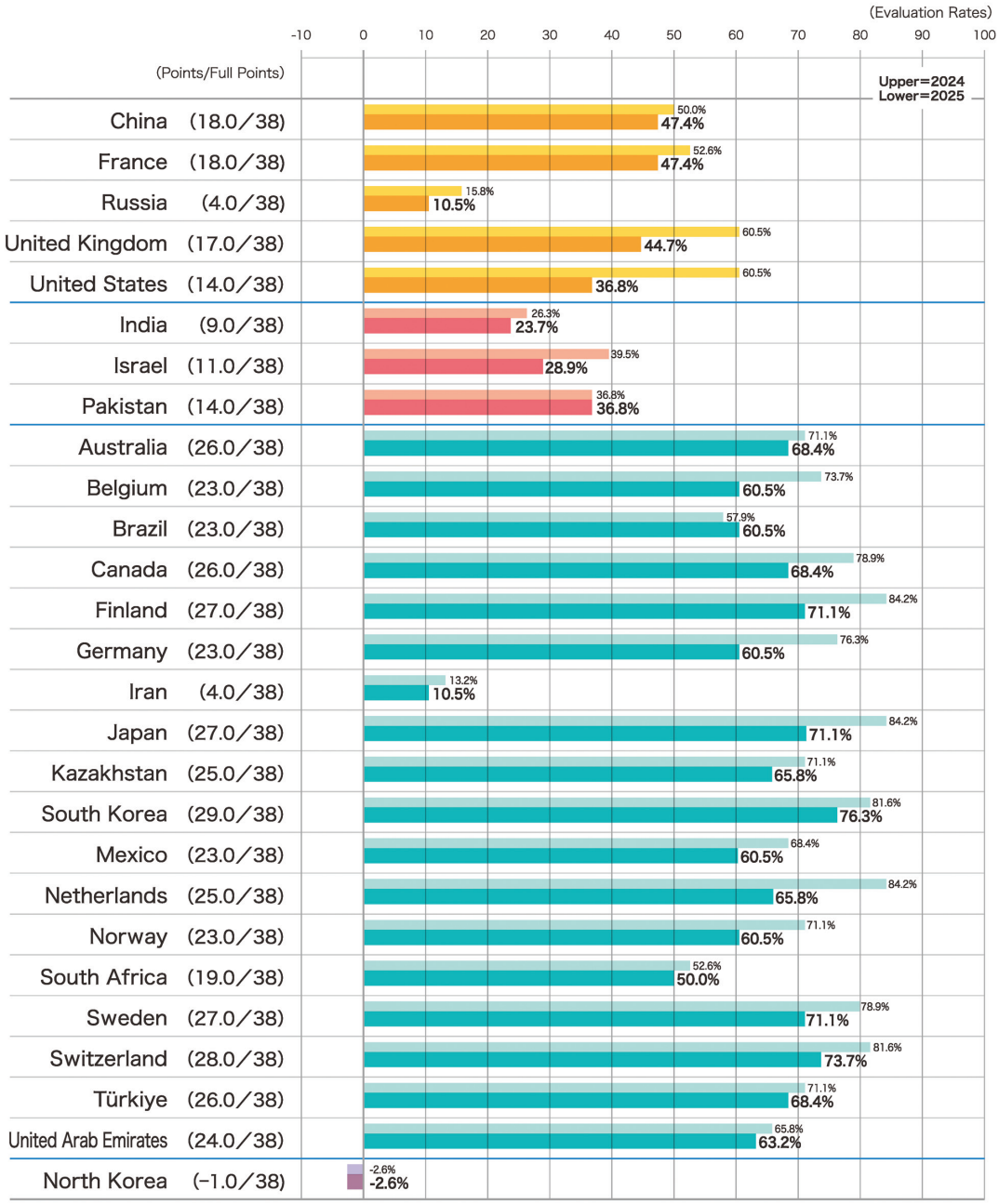
United States



(2) Nuclear Non-Proliferation



(3) Nuclear Security



Chapter 2

Country-by-Country Summary

(1) Nuclear-Weapon States

1. China ■ Nuclear-Weapon State

Nuclear Disarmament	**7.0** Points	Full Points **109**	**6.4%**
	Change compared to the *Hiroshima Report 2025* **0.2**		

China remains the only NWS that has not undertaken substantial nuclear disarmament measures, maintaining that its participation in nuclear weapons reductions is premature. It voted against the Japan-sponsored UNGA resolution on nuclear disarmament and has continued to actively modernize its nuclear forces, particularly its ICBM and SLBM capabilities. China is estimated to possess roughly 600 nuclear warheads, and the pace of its arsenal expansion has accelerated. Some analyses project that China could field more than 1,000 operational nuclear weapons within the next decade. It has unveiled several new capabilities and showcased a complete nuclear triad for the first time in September 2025. China opposes the TPNW and has not signed it. It has also not yet ratified the CTBT and voted against the UNGA resolution on a FMCT. Beijing has not declared a moratorium on the production of fissile material for nuclear weapons, and concerns persist regarding the potential military use of its civilian nuclear facilities. Although China continues to affirm its no-first-use policy and unconditional negative security assurances, there is growing concern that it is expanding the role of nuclear weapons in its national security strategy, potentially including revisions to these long-standing policies. Despite emphasizing the importance of transparency regarding strategic intentions, China maintains the lowest level of transparency among the NWS and discloses no official information about the size, composition, or posture of its nuclear forces.

Nuclear Non-Proliferation	**27** Points	Full Points **47**	**57.4%**
	Change compared to the *Hiroshima Report 2025* **0**		

China acceded to the IAEA Additional Protocol, in which no provision for complementary access visits is stipulated. It opposes the acquisition of nuclear submarines by Australia under the trilateral security partnership between Australia, the U.K. and the U.S. (AUKUS). The country stated its opposition to measures centered on sanctions against North Korea at the United Nations Security Council (UNSC). Although China has stated that it has been implementing sanctions measures against North Korea under UNSC resolutions, activities such as the movement of workers and the trade in minerals between China and North Korea pose challenges to the implementation of those sanctions. China has also been criticized for exporting two nuclear power reactors to Pakistan, which may constitute a violation of the NSG guidelines. Since 2018, China has not submitted a report to the IAEA based on the Guidelines for the Management of Plutonium.

Nuclear Security	**18** Points	Full Points **38**	**47.4%**
	Change compared to the *Hiroshima Report 2025* **-1**		

China has ratified all nuclear security-related conventions; and has established a national implementation system for the A/CPPNM. China hosted an IPPAS mission in 2017 and continues to contribute to the NSF. There is room for improvement in enhancing measures against insider threats and for cybersecurity. China continues its efforts to strengthen national nuclear security through its “Storm Series” nuclear security exercises to enhance preparedness and response to nuclear terrorism.

2. France ■ Nuclear-Weapon State

Nuclear Disarmament	**26.5** Points	Full Points **109**	**24.3%**
	Change compared to the *Hiroshima Report 2025* **2**		

France has announced that its maximum number of nuclear warheads is 300 and has reduced the overall size of its nuclear forces. Throughout 2025, and in response to Russia's growing threats, France has put forward several proposals to its European allies to initiate a strategic dialogue on the role of its nuclear arsenal in defending Europe. It has expanded its bilateral nuclear cooperation and coordination with the U.K. It has converted surplus fissile material originally intended for military use to civilian purposes, placing it under international safeguards. France has voted against most UNGA resolutions on nuclear disarmament and abstained from voting on the resolution proposed by Japan. Alongside the U.K. and the U.S., France has affirmed its commitment not to delegate the decision to use nuclear weapons to AI. France opposes the TPNW and has not signed it. It has ratified the CTBT and supports the early start of FMCT negotiations. France also participates in the IPNDV.

Nuclear Non-Proliferation	**40** Points	Full Points **47**	**85.1%**
	Change compared to the *Hiroshima Report 2025* **0**		

France acceded to the IAEA Additional Protocol, with the provision for complementary access visits. Its civilian nuclear material covered by the EURATOM Treaty is subject to its safeguards. France has proactively engaged in nuclear non-proliferation, including contributions to the IAEA safeguards systems, and the establishment and implementation of its export control systems. France submitted a report based on the Guidelines for the Management of Plutonium to the IAEA, including its holding of civil HEU in addition to that of civil plutonium.

Nuclear Security	**18** Points	Full Points **38**	**47.4%**
	Change compared to the *Hiroshima Report 2025* **-2**		

France has ratified all nuclear security-related conventions and has established a national implementation system for the A/CPPNM. France hosted the IPPAS mission in 2018 and announced it will host another one from 2027. Its civilian plutonium stockpile continued to increase in 2025. France participates in nearly all INFCIRC initiatives and continues to contribute to the NSF. France hosted several IAEA training courses and workshops on nuclear security, including on cyber security, but there is room for improvement in enhancing measures against insider threats and strengthening nuclear security culture.

3. Russia ■ Nuclear-Weapon State

Nuclear Disarmament	**-5.8** Points	Full Points **109**	**-5.3%**
	Change compared to the *Hiroshima Report 2025* **1.7**		

Russia continued its invasion of Ukraine and repeatedly engaged in nuclear intimidation. It also confirmed the deployment of nuclear weapons to Belarus, although it has not been independently verified. Russia is estimated to possess approximately 5,500 nuclear warheads and has been actively modernizing its ICBMs. In October, it tested the Burevestnik nuclear-powered, nuclear-capable cruise missile and the Poseidon nuclear-powered, nuclear-capable unmanned underwater vehicle. In June, Russia announced that it has begun mass production of the Oreshnik IRBM. Russia has continued to suspend implementation of the New START treaty, refusing on-site inspections and data sharing, though it maintains that it remains committed to the treaty's quantitative limits. In September, Russia stated that it would continue to comply with the treaty's provisions for one year after its expiration. In August, Russia has announced that it no longer considers itself bound by the 1987 INF Treaty. Moscow also asserts that further progress on nuclear disarmament requires Western countries to abandon their "hostile" policies toward Russia. Russia withdrew the ratification of the CTBT. Following the announcement that the United States would resume nuclear testing, Russia has stated that it will not conduct nuclear explosion tests as long as the United States refrains from doing so, but that it will assess the necessity of making relevant preparations. Russia is critical of nuclear disarmament verification efforts led by the U.S. and other countries. It has voted against all UNGA resolutions on nuclear disarmament, including the one proposed by Japan, as well as on an FMCT. Russia has not signed the TPNW and has issued strong criticisms of the treaty.

Nuclear Non-Proliferation	**22** Points	Full Points **47**	**46.8%**
	Change compared to the *Hiroshima Report 2025* **0**		

Russia has been impeding the implementation of IAEA safeguards by attacking and occupying nuclear facilities in Ukraine. The country repeatedly defended North Korea's nuclear and missile activities at the UNSC. Russia has strengthened cooperation with North Korea, it was reported that activities related to the nuclear and ballistic missiles program. Russia acceded to the IAEA Additional Protocol, in which no provision for complementary access visits is stipulated. It considers that the conclusion of an Additional Protocol should be voluntary. Russia supported and participated in the UN conference on a WMD free zone in the Middle East. It submitted a report based on the Guidelines for the Management of Plutonium to the IAEA.

Nuclear Security	**4** Points	Full Points **38**	**10.5%**
	Change compared to the *Hiroshima Report 2025* **-2**		

Russia has ratified all nuclear security-related conventions and has established a national implementation system for the A/CPPNM. It has continued to produce civilian HEU. Its stockpile of plutonium for civil uses increased. Russia has never hosted an IPPAS mission. It has not contributed to the NSF in 2024. Russia has continued to attack and occupy nuclear power plants in Ukraine, notably using drones, and it also appeared to attack infrastructure, such as power grids, that is critical for nuclear security. There is room for improvement in enhancing measures against insider threats and for cybersecurity. Russia voted against UNGA resolution A/80/L.7 which reaffirmed the Assembly's strong support for the Agency's central role in promoting the peaceful uses of nuclear energy, assisting developing countries, and ensuring nuclear safety, security and safeguards.

4. The United Kingdom ■ Nuclear-Weapon State

Nuclear Disarmament	**23.5** Points	Full Points **109**	**21.6%**
	Change compared to the *Hiroshima Report 2025* **1**		

The U.K. has maintained its nuclear policies established in 2021, which include raising the ceiling on its overall nuclear weapons stockpile to no more than 260 and maintaining certain restrictions on transparency. The U.K. has announced in June that it will acquire a dozen nuclear-capable F-35A fighter jets and join NATO's DCA nuclear mission. There is ongoing speculation that U.S. B61-12 gravity nuclear bombs have been deployed to the RAF Lakenheath base. It has strengthened its bilateral nuclear cooperation and coordination with France. With the United States and France, it affirmed its commitment not to delegate the decision to use nuclear weapons to AI. The U.K. opposes the TPNW and has not signed it. The U.K. has ratified the CTBT and supports the early commencement of FMCT negotiations. It has also collaborated with the U.S. and Norway on the development of nuclear disarmament verification measures and participates in the IPNDV. The U.K. voted in favor of the UNGA resolution on nuclear disarmament proposed by Japan.

Nuclear Non-Proliferation	**41** Points	Full Points **47**	**87.2%**
	Change compared to the *Hiroshima Report 2025* **1**		

The U.K. acceded to the IAEA Additional Protocol with the provision for complementary access visits. All of its civilian nuclear material is subject to the international safeguards. It has proactively engaged in nuclear non-proliferation, including implementation of export controls. It continues to engage discussions with the IAEA regarding the implementation of safeguards on nuclear fuel for Australia's nuclear-powered submarines, which is being promoted by Australia, the U.K. and the U.S. The U.K. submitted a report based on the Guidelines for Management of Plutonium to the IAEA in 2025.

Nuclear Security	**17** Points	Full Points **38**	**44.7%**
	Change compared to the *Hiroshima Report 2025* **-6**		

The U.K. has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. It hosted an IPPAS mission in 2016 and announced in 2022 a plan to host a new one. Its civilian plutonium stockpile increased. It voluntarily reported on its civilian HEU stockpiles, which increased. Insider threat and cyber security measures have been taken, and the U.K. is working on enhancing nuclear security culture. It participates in all INFCIRC initiatives and continues to contribute to the NSF.

5. The United States ■ Nuclear-Weapon State

Nuclear Disarmament	**15.8** Points	Full Points **109**	**14.5%**
	Change compared to the *Hiroshima Report 2025* **-2.6**		

The U.S. is estimated to possess around 5,100 nuclear warheads, making it the second-largest NWS after Russia, and continues to reduce this number. Although the U.S. has called for arms control and disarmament dialogue with Russia and China, no concrete results have yet been achieved. The U.S. opposes the TPNW and has not signed it. The U.S. pursues the comprehensive modernization of its nuclear triad despite growing delays and cost overruns, and the deployment of SLBMs with low-yield nuclear warheads will be maintained. The announcement of the "Golden Dome" air defense system has been accused by China and Russia of upsetting strategic stability by seeking to escape mutual vulnerability. The U.S. has stated that it will not adopt policies such as no first use of nuclear weapons or the sole purpose of nuclear weapons. In October, the U.S. announced that it would resume nuclear testing immediately, although it remains unclear whether this refers to explosive nuclear testing or tests of nuclear-capable delivery systems. The U.S. remains one of the most transparent NWS on nuclear issues, having publicly disclosed the number of nuclear warheads in its stockpile as well as the number of dismantled warheads. The U.S. established and continues to lead the IPNDV and has abstained on the UNGA resolution on nuclear disarmament proposed by Japan.

Nuclear Non-Proliferation	**36** Points	Full Points **47**	**76.6%**
	Change compared to the *Hiroshima Report 2025* **-2**		

Regarding an (interim) Iran nuclear deal, the U.S. joined indirect negotiations with Iran and other countries concerned. However, they could not reach an agreement to reconstruct a deal. The U.S. attacked Iran's uranium enrichment facilities and other sites with the aim of preventing Iran's acquisition of nuclear weapons. While assessments indicate the attack delayed Iran's breakout time, it also made it difficult to implement safeguards at the targeted facilities. It abstained the UNGA Resolution on the Establishment of a WMD-Free Zones in the Middle East, and did not participate in the Conference on the Establishment of a WMD-Free Zones in the Middle East. The U.S. has proactively led efforts to bolster nuclear non-proliferation, including implementation of stringent export controls and promotion of international non-proliferation cooperation, such as PSI. It acceded to the IAEA Additional Protocol with the provision for complementary access visits. It continues to engage discussions with the IAEA regarding the implementation of safeguards on nuclear fuel for Australia's nuclear-powered submarines, which is being promoted by AUKUS. As in the previous year, the U.S. has not submitted a report based on the Guidelines for Management of Plutonium to the IAEA in 2025.

Nuclear Security	**14** Points	Full Points **38**	**36.8%**
	Change compared to the *Hiroshima Report 2025* **-9**		

The U.S. has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. Measurement to enhance insider threat and cyber security has been taken. The U.S. received an IPPAS mission in 2024. It is vigorously supporting other countries' HEU minimization efforts, and its own civilian HEU stockpile decreased. The U.S. participates in all INFCIRC initiatives and continues to contribute to the NSF. U.S.-led international efforts including Global FTPRNT and the Nuclear Security Summit Process have stalled in 2025. That being said, it continued to host a number of capacity building efforts such as the NRC's annual AI workshop. In June, the U.S. has conducted strikes on three Iranian nuclear facilities, all part of Iran's declared civilian nuclear program and subject to IAEA safeguards. The U.S. voted against UNGA resolution A/80/L.7 which reaffirmed the Assembly's strong support for the Agency's central role in promoting the peaceful uses of nuclear energy, assisting developing countries, and ensuring nuclear safety, security and safeguards.

(2) Non-Parties to the NPT

6. India ■ Non-Party to the NPT

Nuclear Disarmament	**4.5** Points	Full Points **106**	**4.2%**
	Change compared to the *Hiroshima Report 2025* **0.5**		

India is estimated to possess roughly 180 nuclear warheads and continues to expand its stockpile incrementally. It is also actively developing a range of nuclear delivery systems, including a novel SLBM reportedly completed in June. India has not signed the TPNW. Although it upholds a moratorium on nuclear testing, it has refused to sign the CTBT and abstained from voting on the UNGA resolution calling for the treaty's early entry into force. India maintains its NFU policy, while reserving the option of nuclear retaliation in response to a major biological or chemical attack.

Nuclear Non-Proliferation	**15** Points	Full Points **43**	**34.9%**
	Change compared to the *Hiroshima Report 2025* **0**		
India acceded to the IAEA Additional Protocol, in which no provision for complementary access visits is stipulated. India's quest for membership in the NSG is supported by some member states, but the group has not yet made a decision. India received a pressure vessel for a nuclear power plant from Russia in January 2025. India has advanced nuclear cooperation, including discussions with France on emerging nuclear technologies.			
Nuclear Security	**9** Points	Full Points **38**	**23.7%**
	Change compared to the *Hiroshima Report 2025* **-1**		
India has ratified all nuclear security-related conventions except the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. There is room for improvement in national legislation for the A/CPPNM. Its stocks of HEU and separated plutonium for military use have continued to increase, and it is believed to continue to be producing HEU for naval propulsion. India has never received an IPPAS mission. There is room for improvement in enhancing measures against insider threats. India does not contribute to the NSF.			

7. Israel ■ Non-Party to the NPT

Nuclear Disarmament	**0.5** Points	Full Points **106**	**0.5%**
	Change compared to the *Hiroshima Report 2025* **2**		
Israel is believed to possess roughly 90 nuclear warheads but has consistently adhered to a policy of "nuclear opacity," neither confirming nor denying the existence of its arsenal. Consequently, significant uncertainties remain regarding its nuclear capabilities and posture. Israel has developed and deployed nuclear-capable IRBMs and SLCMs. It has not yet ratified the CTBT, nor has it declared a moratorium on the production of fissile material for nuclear weapons, and it abstained from voting on the UNGA resolution on an FMCT. Israel has also voted against most UNGA resolutions on nuclear disarmament and has not signed the TPNW.			
Nuclear Non-Proliferation	**10** Points	Full Points **43**	**23.3%**
	Change compared to the *Hiroshima Report 2025* **-2**		
Israel argues that improvement of regional security is imperative for establishing a WMD-Free Zone in the Middle East. It voted against the UNGA resolution "Establishment of a nuclear-weapon-free zone in the region of the Middle East," and rejected to participate in the Conference on the Establishment of a WMD-Free Zone in the Middle East. It has established solid export control systems. Meanwhile, Israel has not acceded to the IAEA Additional Protocol. Israel attacked Iran's uranium enrichment facilities and other sites with the aim of preventing Iran's acquisition of nuclear weapons. But the attack made it difficult to implement safeguards at the targeted facilities.			
Nuclear Security	**11** Points	Full Points **38**	**28.9%**
	Change compared to the *Hiroshima Report 2025* **-4**		
Israel has only ratified three out of six nuclear security-related conventions, but has established a national implementation system for the A/CPPNM. Its stockpile of plutonium for military use has increased. Israel has never received IPPAS missions. There is room for improvement in disseminating information on nuclear security efforts. Israel has not contributed to the NSF in 2024. In June 2025, Israeli forces carried out an intensive bombing campaign inside Iran, targeting both civilian areas and nuclear sites. Israel notably damaged the Natanz uranium enrichment facility, placed under IAEA safeguards.			

8. Pakistan ■ Non-Party to the NPT

Nuclear Disarmament	**-2.5** Points	Full Points **106**	**-2.4%**
	Change compared to the *Hiroshima Report 2025* **-2**		

Pakistan is estimated to possess roughly 170 nuclear warheads and continues to expand its arsenal incrementally. It is also continuing to develop and deploy short- and medium-range ballistic missiles. Pakistan has not signed the TPNW. Although it maintains a moratorium on nuclear testing, it has refused to sign the CTBT. Pakistan continues to block the start of FMCT negotiations at the CD and voted against the UNGA resolution calling for their immediate commencement. It has also not declared a moratorium on the production of fissile material for nuclear weapons. The signing of a mutual defense agreement with Saudi Arabia has prompted speculation over whether it effectively extends Pakistani nuclear deterrence to its ally.			
Nuclear Non-Proliferation	**8** Points	Full Points **43**	**18.6%**
	Change compared to the *Hiroshima Report 2025* **0**		
Pakistan has not yet acceded to the IAEA Additional Protocol. It argues that it has made efforts to enhance its export control systems; however, it is still unclear how robust or successfully implemented such export control systems are in practice. Pakistan has argued that it is qualified to be accepted as an NSG member, but has yet to achieve this status.			
Nuclear Security	**14** Points	Full Points **38**	**36.8%**
	Change compared to the *Hiroshima Report 2025* **0**		
Pakistan has not signed the ICSANT nor the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste. They established a domestic implementation system for the A/CPPNM. Its military use HEU holdings has increased. Pakistan has never received an IPPAS mission but has announced plans to host one in 2026. It has progressed the revision of national nuclear security regime and published regulatory guides. The country is actively engaged in human resource development and promotion of nuclear security culture. There is room for improvement in enhancing measures against insider threats and for cybersecurity. Pakistan contributed to the NSF in 2024.			

(3) Non-Nuclear-Weapon States

9. Australia ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**24** Points	Full Points **48**	**50%**
	Change compared to the *Hiroshima Report 2025* **2**		
Australia advocates a "progressive approach" to nuclear disarmament through incremental measures rather than an immediate legal prohibition of nuclear weapons. Australia has not signed the TPNW. Australia has increased its reliance on extended nuclear deterrence and has strongly opposed creating a third category of states under the NPT for recipients of extended nuclear deterrence. Australia participates in the IPNDV. It has actively engaged in efforts to promote the early entry into force of the CTBT. It is also a member of the Friends of an FMCT. It has proactively worked on nuclear disarmament in cooperation with civil society and is committed to gender mainstreaming.			
Nuclear Non-Proliferation	**56** Points	Full Points **61**	**91.8%**
	Change compared to the *Hiroshima Report 2025* **0**		
Australia is also a state party to the South Pacific Nuclear-Free Zone Treaty. It acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. The Australia-India Nuclear Cooperation Agreement was adopted in 2015, and Australia exports uranium. Australia, the U.K. and the U.S. decided to work together to introduce nuclear submarines to Australia. It continues consultations with the IAEA regarding how to implement IAEA safeguards for their nuclear fuel. It has implemented export controls appropriately.			
Nuclear Security	**26** Points	Full Points **38**	**68.4%**
	Change compared to the *Hiroshima Report 2025* **-1**		

Australia has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. It hosted an IPPAS mission in 2017 and has made part of the mission report publicly available. Australia has made contributions to the NSF in 2024, after years of hiatus. Australia participates in almost all INFCIRC initiatives. It has been ahead in cybersecurity measures. Australia has also hosted a side event at the IAEA General Conference on cooperation in nuclear forensics

10. Austria ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**34.5** Points	Full Points **48**	**71.9%**
	Change compared to the *Hiroshima Report 2025* **0.5**		
Austria is a state party to the TPNW and has consistently led the way in advocating for the legal prohibition of nuclear weapons, including serving as a chair country of the 1MSP. It has also played a prominent role in highlighting the humanitarian aspects of nuclear weapons. Austria argues that nuclear weapons undermine common security. It has proactively engaged in cooperation with civil society and gender mainstreaming efforts.			
Nuclear Non-Proliferation	**52** Points	Full Points **61**	**85.2%**
	Change compared to the *Hiroshima Report 2025* **0**		
Austria has participated in and implemented the related treaties and measures. It acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It has implemented export controls appropriately.			

11. Belgium ■ Non-Nuclear-Weapon State

Nuclear Security	**23** Points	Full Points **38**	**60.5%**
	Change compared to the *Hiroshima Report 2025* **-5**		
Belgium ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. Belgium has hosted an IPPAS mission in 2019. In 2024, Belgium announced that it requested an IPPAS mission for 2027. There is room for improvement in capacity building efforts, and in the areas of domestic efforts and cybersecurity measures. It contributed to the NSF.			

12. Brazil ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**35** Points	Full Points **48**	**72.9%**
	Change compared to the *Hiroshima Report 2025* **3.5**		
While actively taking the initiative toward the adoption of the TPNW and signing the treaty, Brazil has not yet ratified it. It has consistently voted in favor of most UNGA Resolutions on nuclear disarmament. It has ratified the CTBT. Brazil participates in the IPNDV.			
Nuclear Non-Proliferation	**43** Points	Full Points **61**	**70.5%**
	Change compared to the *Hiroshima Report 2025* **0**		
Brazil is a state party to the Latin America Nuclear-Weapon-Free Zone Treaty. While it complies with nuclear non-proliferation obligations, Brazil continues to be reluctant to accept the IAEA Additional Protocol. It considers that the conclusion of the Additional Protocol should be voluntary. Brazil has begun to construct nuclear submarines, and discussions are continuing with the IAEA on safeguards for the nuclear fuel of nuclear submarines.			
Nuclear Security	**23** Points	Full Points **38**	**60.5%**
	Change compared to the *Hiroshima Report 2025* **1**		

Brazil ratified the A/CPPNM in 2022 and became a party to all nuclear security-related conventions. They have developed national legislation to implement the A/CPPNM. Brazil established an independent regulatory authority. Brazil has never received an IPPAS mission. Brazil holds cyber defense drills for its nuclear energy sector every year. There is room for improvement in participation in multilateral efforts. There is room for improvement in enhancing measures against insider threats. Brazil shows commitment to international norms prohibiting attacks against nuclear facilities for peaceful uses.

13. Canada ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**22.5** Points	Full Points **48**	**46.9%**
	Change compared to the *Hiroshima Report 2025* **0.5**		
Canada advocates a "progressive approach" to nuclear disarmament through incremental measures rather than an immediate legal prohibition of nuclear weapons. It has not signed the TPNW. Canada is actively committed to the elaboration of the CTBT verification system and to the treaty's early entry into force, and it is working toward the elaboration of an FMCT. Canada has also undertaken active cooperation with civil society and gender mainstreaming. Canada participates in the IPNDV.			
Nuclear Non-Proliferation	**52** Points	Full Points **61**	**85.2%**
	Change compared to the *Hiroshima Report 2025* **0**		
Canada acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It undertakes proactive efforts for nuclear non-proliferation, including proceeding with the export control reform. Canada exported uranium to India, as part of their civil nuclear cooperation.			
Nuclear Security	**26** Points	Full Points **38**	**68.4%**
	Change compared to the *Hiroshima Report 2025* **-4**		
Canada has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. In 2025, it strengthened national laws, including its cybersecurity regulations, and is also actively involved in fostering a nuclear security culture. Canada hosted an IPPAS mission in 2015 and has made part of the IPPAS mission report publicly available. Canada participates in almost all INFCIRC initiatives and is a continuous contributor to the NSF.			

14. Egypt ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**20.5** Points	Full Points **48**	**42.7%**
	Change compared to the *Hiroshima Report 2025* **1**		
Egypt voted in favor of most UNGA Resolutions on nuclear disarmament and has expressed support for issues related to the humanitarian dimensions and legal prohibition of nuclear weapons. It has not yet signed the TPNW. Even though Egypt has shown some support for nuclear disarmament, it cannot be said to be actively pursuing it. It has not ratified the CTBT. It also abstained from voting on the UNGA resolution on an FMCT.			
Nuclear Non-Proliferation	**37** Points	Full Points **61**	**60.7%**
	Change compared to the *Hiroshima Report 2025* **0**		
Egypt has been active toward establishing a WMD-free zone in the Middle East, including an initiative to convene the UN Conference on a WMD-free zone in the Middle East. Meanwhile, it has yet to conclude the IAEA Additional Protocol. Egypt has made efforts toward, inter alia, putting export control legislation in place. Still, its export controls remain at an insufficient level. While signing, it has not yet ratified the Africa Nuclear-Weapon-Free Zone Treaty.			

15. Finland ■ Non-Nuclear-Weapon State

Nuclear Security	**27** Points	Full Points **38**	**71.1%**
	Change compared to the *Hiroshima Report 2025* **-5**		

Finland has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. They hosted an IPPAS mission in 2022, and made part of the IPPAS mission report publicly available. Finland has made continuous contributions to the NSF. They are the only country in the world that is constructing a final repository for high-level radioactive waste, which is scheduled to be operational in 2026. Finland is ahead in cybersecurity measures, but there is room for improvement in capacity building and participation in international efforts.

16. Germany ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**19** Points	Full Points **48**	**39.6%**
	Change compared to the *Hiroshima Report 2025* **-0.5**		

While Germany has proactively engaged in nuclear disarmament, it has voted against or abstained from voting on UNGA Resolutions related to the humanitarian dimensions and the legal aspects of nuclear weapons. Germany has not signed the TPNW and has not participated in the 3MSP as an observer, contrary to 2024. It advocates a "progressive approach" toward nuclear disarmament through incremental measures rather than an immediate legal prohibition of nuclear weapons. Germany hosts U.S. non-strategic nuclear weapons as part of NATO's nuclear sharing policy and has increased its reliance on extended nuclear deterrence. It has expressed support for discussing the role of French and British nuclear deterrence in the protection of Europe. It has ratified the CTBT and calls for the immediate commencement of FMCT negotiations. It participates in the IPNDV and is actively engaged in cooperation with civil society on nuclear disarmament efforts.

Nuclear Non-Proliferation	**56** Points	Full Points **61**	**91.8%**
	Change compared to the *Hiroshima Report 2025* **0**		

Germany acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It has engaged in non-proliferation, including the establishment of solid export control systems. Germany submitted a report based on the Guidelines for the Management of Plutonium to the IAEA, including its holding of civil HEU in addition to that of civil plutonium.

Nuclear Security	**23** Points	Full Points **38**	**60.5%**
	Change compared to the *Hiroshima Report 2025* **-6**		

Germany has no nuclear power plants currently in operation. Germany has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. They hosted an IPPAS mission in 2017. It participates in a number of INFCIRC initiatives and continues to contribute to the NSF. There is room for improvement when it comes to nuclear forensics, capacity building and participation in international efforts.

17. Indonesia ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**33** Points	Full Points **48**	**68.8%**
	Change compared to the *Hiroshima Report 2025* **-0.5**		

Indonesia has actively promoted nuclear disarmament in various international fora. It has consistently voted in favor of UNGA resolutions on nuclear disarmament, reflecting its support for addressing both the humanitarian consequences of nuclear weapons and their legal prohibition. Indonesia has ratified the TPNW and the CTBT, and it participates in the IPNDV. It concluded a facility agreement with the CTBTO in April.

Nuclear Non-Proliferation	**47** Points	Full Points **61**	**77.0%**
	Change compared to the *Hiroshima Report 2025* **-1**		

Indonesia is a state party to the Southeast Asia Nuclear-Weapon-Free Zone Treaty. It has concluded the IAEA Additional Protocol, and applied the integrated safeguards. Regarding Export Control, while the Indonesian regulatory authority has held discussions, Indonesia has not yet established a list of dual-use technologies nor implemented catch-all controls.

18. Iran ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**16** Points	Full Points **48**	**33.3%**
	Change compared to the *Hiroshima Report 2025* **0.5**		

Iran has consistently voted in favor of most UNGA resolutions on nuclear disarmament, reflecting support for addressing both the humanitarian consequences of nuclear weapons and their legal prohibition. However, it has not actively promoted nuclear disarmament. Iran has neither ratified the CTBT nor signed the TPNW. It voted against UNGA resolutions on nuclear disarmament proposed by Japan and on an FMCT. Meanwhile, Iran has been strengthening its ties with Russia amid the latter's ongoing invasion of Ukraine.

Nuclear Non-Proliferation	**23** Points	Full Points **61**	**37.7%**
	Change compared to the *Hiroshima Report 2025* **-2**		

Although indirect negotiations by the countries concerned to restore an (interim) Iran nuclear deal were held intermittently, no agreement was reached. As a countermeasure to the U.S. withdrawal from the JCPOA and the enhancement of sanctions on Iran, Tehran has steadily expanded the areas from which it has withdrawn from its obligations under the JCPOA; such as the upper limits of, inter alia, its stockpile of enriched uranium, level of enrichment (including 20% and 60% HEU), and the number of centrifuges. Following the adoption of the IAEA Board of Governors resolution in November 2024, Iran has initiated expanding production of 60% HEU. Iran's HEU storage increased significantly. In addition, it also suspended verification and monitoring measures under the JCPOA, including the provisional application of the Additional Protocol to the IAEA Safeguards Agreement. The IAEA could not resolve the issues regarding the accuracy and completeness of declarations for four sites related to the alleged Iran's past clandestine nuclear program. Iran continued to deny entry to some IAEA inspectors. In July, legislation suspending cooperation with the IAEA was enacted. Iran held consultations with the IAEA regarding safeguards for facilities attacked by Israel and the U.S. Although an agreement was reached in September, Iran announced its termination in November in response to that month's IAEA Board of Governors resolution.

Nuclear Security	**4** Points	Full Points **38**	**10.5%**
	Change compared to the *Hiroshima Report 2025* **-1**		

Iran is not party to several nuclear security-related conventions, and there is room for improvement. Although Iran was supposed to complete domestic procedures for ratifying the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste, it appears that they have not done so in 2025. Iran continued to produce HEU for civilian use and increased its holdings, at least as of 13 June, before the attacks by Israel on its nuclear facilities. Following the attacks, Iran informed the IAEA that it intended to "adopt special measures to protect our nuclear equipment and materials." Iran received an IPPAS mission in 2004. There is room for improvement in disseminating information on nuclear security efforts. At the 69th IAEA General Conference, Iran requested the inclusion of a supplementary agenda item titled "Prohibition of All Forms of Attacks and Threats of Attack Against Nuclear Sites and Facilities Under IAEA Safeguards and Devoted to Peaceful Purposes" aimed at reaffirming the international norm that armed attacks on safeguarded nuclear facilities violate the UN Charter, international law, and the IAEA Statute. However, Iran withdrew the request before it was put to a vote.

19. Japan ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**27** Points	Full Points **48**	**56.3%**
	Change compared to the *Hiroshima Report 2025* **1**		

Japan advocates a "progressive approach" to nuclear disarmament, favoring incremental measures over an immediate legal ban on nuclear weapons. It has not signed the TPNW and has increasingly relied on extended nuclear deterrence. Although initially considered, Japan ultimately chose not to participate in the 3MSP as an observer. It submitted the recommendations of the IGEP as a working paper to the PrepCom. Japan has actively engaged in nuclear disarmament efforts, including promoting the entry into force of the CTBT, participating in the FMCT Friends group, enhancing transparency on nuclear weapons, and supporting disarmament and non-proliferation education and cooperation with civil society. The Japan-sponsored "Youth Leader Fund for a World Without Nuclear Weapons" entered its second phase. Japan also participates in the IPNDV.

Nuclear Non-Proliferation	**53** Points	Full Points **61**	**86.9%**
	Change compared to the *Hiroshima Report 2025* **0**		
Japan has acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It has proactively engaged in nuclear non-proliferation, including the establishment of solid export control systems and conducting outreach activities. It submitted a report based on the Guidelines for the Management of Plutonium to the IAEA.			
Nuclear Security	**27** Points	Full Points **38**	**71.1%**
	Change compared to the *Hiroshima Report 2025* **-5**		
Japan ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. Japan is continuously working on minimizing HEU and has made progress in 2025 as well. It has accepted an IPPAS mission in 2024. Japan has made part of its earlier IPPAS mission reports publicly available. It participates in a number of INFCIRC initiatives and continues to contribute to the NSF. In 2025, Japan updated its cyber legislation, strengthening the protection of critical infrastructure, and it also hosted an IAEA training course on computer security inspections for nuclear facilities.			

20. Kazakhstan ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**40** Points	Full Points **48**	**83.3%**
	Change compared to the *Hiroshima Report 2025* **2**		
Kazakhstan has actively promoted the entry into force of the CTBT and contributed to the development of its verification system. It has consistently voted in favor of UNGA resolutions on nuclear disarmament and expressed support for addressing the humanitarian consequences and legal prohibition of nuclear weapons. It has co-sponsored the resolution on the "Effects of Nuclear War on Public Health" at the World Health Assembly in May. A state party to the TPNW, Kazakhstan is also actively engaged in issues related to victim assistance and environmental remediation. The TPNW 3MSP was held under the presidency of Kazakhstan. It has led joint statements at the NPT PrepCom and on UNGA resolutions. Kazakhstan participates in the IPNDV.			
Nuclear Non-Proliferation	**49** Points	Full Points **61**	**80.3%**
	Change compared to the *Hiroshima Report 2025* **0**		
Kazakhstan is a state party to the Central Asia Nuclear-Weapon-Free Zone Treaty. It has acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. The IAEA LEU Fuel Bank, established in Kazakhstan, became operational in 2017, and received the LEU shipment.			
Nuclear Security	**25** Points	Full Points **38**	**65.8%**
	Change compared to the *Hiroshima Report 2025* **-2**		
Kazakhstan has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. It is focusing on human resource development in cybersecurity and is vigorously working on HEU minimization. The last IPPAS mission was accepted in 2012. It has participated in almost all INFCIRC initiatives.			

21. South Korea ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**21.5** Points	Full Points **48**	**44.8%**
	Change compared to the *Hiroshima Report 2025* **1**		
South Korea supports a "progressive approach" to nuclear disarmament, favoring incremental measures over an immediate legal ban on nuclear weapons. It has not signed the TPNW and has deepened its reliance on extended nuclear deterrence. South Korea has ratified the CTBT and supports the immediate start of FMCT negotiations. It actively promotes the CTBT's entry into force and is developing its national verification capabilities. South Korea also participates in the IPNDV and actively supports education on nuclear disarmament and non-proliferation.			
Nuclear Non-Proliferation	**51** Points	Full Points **61**	**83.6%**
	Change compared to the *Hiroshima Report 2025* **0**		

South Korea acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. An appropriate export controls has also been implemented. South Korea and the U.S. agreed to build nuclear-powered submarines and to transfer nuclear fuel from the U.S.			
Nuclear Security	**29** Points	Full Points **38**	**76.3%**
	Change compared to the *Hiroshima Report 2025* **-2**		
South Korea has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. It hosted an IPPAS mission in 2014. South Korea has participated in almost all INFCIRC initiatives and continues to contribute to the NSF. South Korea remains actively engaged in capacity-building. For instance, in June 2025, it hosted an international training course for instructors on establishing and operating a National Nuclear Security Support Center.			

22. Mexico ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**39** Points	Full Points **48**	**81.3%**
	Change compared to the *Hiroshima Report 2025* **2**		
Mexico has played a leading role in advancing discussions on the humanitarian dimensions of nuclear weapons, as well as in the adoption and development of the TPNW. It is a State Party to the TPNW and it also participates in the IPNDV. It has been actively engaged in gender mainstreaming efforts .			
Nuclear Non-Proliferation	**50** Points	Full Points **61**	**82%**
	Change compared to the *Hiroshima Report 2025* **0**		
Mexico is also a state party to the Latin America Nuclear-Weapon-Free Zone Treaty. Mexico acceded to the IAEA Additional Protocol, but a broader conclusion has not yet been drawn.			
Nuclear Security	**23** Points	Full Points **38**	**60.5%**
	Change compared to the *Hiroshima Report 2025* **-3**		
Mexico has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. Mexico hosted an IPPAS follow-up mission in 2006 and. has received support from the IAEA INSSP mission in 2024. It has participated in many INFCIRC initiatives.			

23. The Netherlands ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**19.5** Points	Full Points **48**	**40.6%**
	Change compared to the *Hiroshima Report 2025* **0.5**		
The Netherlands advocates a "progressive approach" to nuclear disarmament, favoring incremental measures over an immediate legal ban on nuclear weapons. It has not signed the TPNW but has ratified the CTBT and supports the immediate commencement of FMCT negotiations. As part of NATO's nuclear sharing policy, it hosts U.S. non-strategic nuclear weapons. The Netherlands also participates in the IPNDV.			
Nuclear Non-Proliferation	**55** Points	Full Points **61**	**90.2%**
	Change compared to the *Hiroshima Report 2025* **0**		
The Netherlands acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It has actively engaged in non-proliferation activity, including the establishment of solid export control systems.			
Nuclear Security	**25** Points	Full Points **38**	**65.8%**
	Change compared to the *Hiroshima Report 2025* **-7**		
The Netherlands has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. It has hosted five IPPAS missions in total to date and has made part of the IPPAS mission report publicly available. The Netherlands participates in many INFCIRC initiatives and continues to contribute to the NSF. There is room for improvement in capacity building efforts.			

24. New Zealand ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**36.5** Points	Full Points **48**	**76%**
	Change compared to the *Hiroshima Report 2025* **-1**		
New Zealand was actively involved in the development of the TPNW, which it has ratified, and has played a leading role in promoting discussions on the humanitarian dimensions of nuclear weapons. It has proactively advocated for nuclear disarmament in various fora, including the UN General Assembly, and co-authored the UNGA resolution establishing a scientific panel on the effects of nuclear war. It has co-sponsored the resolution on the "Effects of Nuclear War on Public Health" at the World Health Assembly in May. New Zealand has also contributed significantly to the development of the CTBT's verification system and has called for the treaty's entry into force. Additionally, it is a member of the "De-alerting Group," which advocates reducing nuclear alert levels.			
Nuclear Non-Proliferation	**57** Points	Full Points **61**	**93.4%**
	Change compared to the *Hiroshima Report 2025* **0**		
New Zealand is a state party to the South Pacific Nuclear-Free Zone Treaty. It has acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. An appropriate export control system has also been put in place.			

25. Norway ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**20.5** Points	Full Points **48**	**42.7%**
	Change compared to the *Hiroshima Report 2025* **0.5**		
Norway advocates a "progressive approach" to nuclear disarmament, favoring incremental measures over an immediate legal ban on nuclear weapons. It has increased its reliance on extended nuclear deterrence and has not signed the TPNW. Norway has actively engaged in gender mainstreaming efforts, ratified the CTBT, and supports the immediate commencement of FMCT negotiations. It also participates in the IPNDV.			
Nuclear Non-Proliferation	**54** Points	Full Points **61**	**88.5%**
	Change compared to the *Hiroshima Report 2025* **0**		
Norway acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It has engaged in non-proliferation, including the establishment of the solid export control systems.			
Nuclear Security	**23** Points	Full Points **38**	**60.5%**
	Change compared to the *Hiroshima Report 2025* **-4**		
Norway has ratified all nuclear security-related conventions and established a domestic implementation system for the A/CPPNM. They continue to work with the U.S. to minimize the use of HEU. Norway hosted an IPPAS mission in 2015, and participates in almost all INFCIRC initiatives. Norway does not contribute to the NSF, and there is room for improvement in capacity building efforts.			

26. Poland ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**16.5** Points	Full Points **48**	**34.4%**
	Change compared to the *Hiroshima Report 2025* **1.5**		
Poland maintains a cautious stance toward a legal ban on nuclear weapons and has not signed the TPNW. Along with other U.S. allies, it advocates a "progressive approach" to nuclear disarmament, favoring incremental measures over an immediate legal ban. Poland has increased its reliance on extended nuclear deterrence and has repeatedly expressed interest in participating in nuclear sharing either with France or the United States. It has ratified the CTBT and participates in the IPNDV.			
Nuclear Non-Proliferation	**53** Points	Full Points **61**	**86.9%**
	Change compared to the *Hiroshima Report 2025* **0**		

Poland acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It has engaged in non-proliferation, including the establishment of solid export control systems.

27. Saudi Arabia ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**18** Points	Full Points **48**	**37.5%**
	Change compared to the *Hiroshima Report 2025* **2.5**		
Saudi Arabia has consistently voted in favor of most UNGA resolutions on nuclear disarmament, reflecting support for initiatives related to the humanitarian dimensions of nuclear weapons and their legal prohibition. However, it does little to actively promote nuclear disarmament and has not signed the TPNW or the CTBT. It has also abstained from voting on UNGA resolutions concerning the TPNW, the CTBT, and an FMCT.			
Nuclear Non-Proliferation	**33** Points	Full Points **61**	**54.1%**
	Change compared to the *Hiroshima Report 2025* **0**		
Saudi Arabia stated that its first research reactor is nearing completion and that it has decided to abandon the SQP. It started the full implementation of the IAEA Comprehensive Safeguards Agreement. It has not signed the IAEA Additional Protocol. Nor it establish a sufficient export control system. Saudi Arabia opposes renouncing a right to conduct enrichment and reprocessing activities in negotiations on a Saudi-U.S. civil nuclear cooperation agreement.			

28. South Africa ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**34.5** Points	Full Points **48**	**71.9%**
	Change compared to the *Hiroshima Report 2025* **2**		
South Africa has played a leading role in advancing discussions on the humanitarian dimensions of nuclear weapons and in promoting the TPNW, to which it is a State Party. However, it has taken a cautious stance on condemning Russia's nuclear intimidations. South Africa has ratified the CTBT and has expressed growing concern over the challenges facing the NPT and its review process, calling for renewed efforts toward nuclear disarmament. It has been designated as the President of the first Review Conference of the TPNW, which will be held in New York in November 2026.			
Nuclear Non-Proliferation	**54** Points	Full Points **61**	**88.5%**
	Change compared to the *Hiroshima Report 2025* **0**		
South Africa is also a state party to the Africa Nuclear-Weapon-Free Zone Treaty. It acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It considers that the conclusion of an Additional Protocol should be voluntary.			
Nuclear Security	**19** Points	Full Points **38**	**50%**
	Change compared to the *Hiroshima Report 2025* **-1**		
South Africa ratified the A/CPPNM in 2024, and with this, it has ratified all nuclear security-related conventions. South Africa has never hosted an IPPAS missions. It possesses civilian HEU. It does not contribute to the NSF. There is room for improvement in capacity building and participation in international efforts.			

29. Sweden ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**21** Points	Full Points **48**	**43.8%**
	Change compared to the *Hiroshima Report 2025* **1**		
Sweden proposed the "Stockholm Initiative" and has actively advocated for the reduction of nuclear risks. It maintains that it cannot sign the TPNW in its current form. Sweden has strengthened its reliance on extended nuclear deterrence. It has also worked actively to promote the CTBT's entry into force and the development of its verification system. Sweden participates in the IPNDV and has proactively engaged in cooperation with civil society, as well as in gender mainstreaming efforts.			

Nuclear Non-Proliferation	**54** Points	Full Points **61**	**88.5%**
	Change compared to the *Hiroshima Report 2025* **0**		
Sweden acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It has engaged in non-proliferation, including the establishment of solid export control systems.			
Nuclear Security	**27** Points	Full Points **38**	**71.1%**
	Change compared to the *Hiroshima Report 2025* **-3**		
Sweden has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. It received an IPPAS mission in 2016 and has made part of the IPPAS mission report publicly available. Sweden participates in a number of INFCIRC initiatives. Sweden has contributed to the NSF. There is room for improvement in capacity building efforts.			

30. Switzerland ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**29** Points	Full Points **48**	**60.4%**
	Change compared to the *Hiroshima Report 2025* **1**		
Switzerland argues that it cannot sign the TPNW in its current form. It has ratified the CTBT and advocates the immediate commencement of FMCT negotiations. Switzerland participates in the IPNDV and is actively engaged in cooperation with civil society. It has enacted domestic laws to limit investments in nuclear weapons.			
Nuclear Non-Proliferation	**53** Points	Full Points **61**	**86.9%**
	Change compared to the *Hiroshima Report 2025* **0**		
Switzerland acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It has engaged in non-proliferation, including the establishment of solid export control systems. It submitted a report to the IAEA in accordance with the Guidelines for the Management of Plutonium.			
Nuclear Security	**28** Points	Full Points **38**	**73.7%**
	Change compared to the *Hiroshima Report 2025* **-3**		
Switzerland has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. It received an IPPAS follow-up mission in 2023 and made part of their IPPAS mission reports available to the public. Switzerland has established a national cyber security policy. It has implemented cybersecurity measures, including the development of cybersecurity regulatory guidelines. Switzerland continues to contribute to the NSF. There is room for improvement in capacity building efforts.			

31. Syria ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**2.5** Points	Full Points **48**	**5.2%**
	Change compared to the *Hiroshima Report 2025* **-8.5**		
Syria has consistently supported most UNGA resolutions on nuclear disarmament, including those addressing the humanitarian dimensions and the legal prohibition of nuclear weapons. However, it is not actively engaged in promoting nuclear disarmament and has not signed the TPNW or the CTBT. Syria did not vote on any disarmament resolution during the 2025 UNGA.			
Nuclear Non-Proliferation	**23** Points	Full Points **61**	**37.7%**
	Change compared to the *Hiroshima Report 2025* **3**		
Syrian interim government has begun cooperating with the IAEA and has allowed access to relevant facility regarding suspicions of a clandestine nuclear reactor construction. Syria has not concluded the IAEA Additional Protocol, and has yet to take appropriate measures on export controls.			

32. Türkiye ■ Non-Nuclear-Weapon State

Nuclear Disarmament	**14** Points	Full Points **48**	**29.2%**
	Change compared to the *Hiroshima Report 2025* **1.5**		
Türkiye advocates a "progressive approach" toward nuclear disarmament through incremental measures rather than an immediate legal ban on nuclear weapons. It relies on U.S. extended nuclear deterrence and hosts U.S. nuclear weapons on its territory. It has not signed the TPNW. Türkiye participates in the IPNDV.			
Nuclear Non-Proliferation	**53** Points	Full Points **61**	**86.9%**
	Change compared to the *Hiroshima Report 2025* **0**		
Türkiye acceded to the IAEA Additional Protocol, and a broader conclusion was drawn. However, it has not applied the integrated safeguards. It has engaged in non-proliferation, including the establishment of solid export control systems.			
Nuclear Security	**26** Points	Full Points **38**	**68.4%**
	Change compared to the *Hiroshima Report 2025* **-1**		
Türkiye ratified all nuclear security-related conventions. It established a national implementation system for the A/CPPNM. Türkiye accepted an IPPAS mission in 2021 to strengthen its national legal system and apply the recommended measures of INFCIRC/225/Rev.5. In June 2025, Türkiye hosted a regional training course on computer security fundamentals for nuclear security.			

33. The UAE ■ Non-Nuclear-Weapon State

Nuclear Security	**24** Points	Full Points **38**	**63.2%**
	Change compared to the *Hiroshima Report 2025* **-1**		
The UAE is a country with newly introduced nuclear power generation, having started operation in 2021. It has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. The UAE hosted an IPPAS mission in 2016. The UAE contributed to the NSF for the first time in 2024. The UAE also hosted a regional meeting to share lessons learned in implementing the Code of Conduct on the Safety and Security of Radioactive Sources.			

(4) Other

34. North Korea ■ Other

Nuclear Disarmament	**-14.7** Points	Full Points **106**	**-13.9%**
	Change compared to the *Hiroshima Report 2025* **-1**		
North Korea has repeatedly conducted missile launch tests and drills, including with novel ICBMs, and its nuclear warhead stockpile is likely to continue increasing. The regime has stated that its nuclear arsenal serves to deter war and enable it to take the initiative in conflict, explicitly indicating the possibility of first-use. It has reaffirmed that the development of its nuclear program and its alleged status as a "nuclear-weapons state" were irreversible. North Korea is strengthening its nuclear capabilities from both strategic and tactical perspectives. It opposed the UNGA resolution on nuclear disarmament proposed by Japan, abstained from voting on the FMCT resolution, and opposed the UNGA resolution calling for the early entry into force of the CTBT. It has not signed the TPNW or the CTBT, is likely to continue producing fissile material for nuclear weapons, and has withdrawn its moratorium on nuclear testing.			
Nuclear Non-Proliferation	**0** Points	Full Points **61**	**0.0%**
	Change compared to the *Hiroshima Report 2025* **0**		

North Korea clearly stated that it had no intention to renounce its nuclear forces. Nor has it responded to talks on North Korea's denuclearization. North Korea, which declared to withdraw from the NPT in 2003, ignores or reneges on most of the nuclear-related treaties, agreements, obligations and norms. North Korea continues its nuclear and missile development in violation of UN Security Council resolutions. It procures related technologies and funds through cyber activities and dispatching IT workers abroad. It continues cooperation with Russia, with activities including those related to ballistic missiles and nuclear technology.

Nuclear Security	**-1** Points	Full Points **38**	**-2.6%**
	Change compared to the *Hiroshima Report 2025* **0**		

North Korea continues to have not ratified any conventions related to nuclear security. There continues to be no dissemination of information on nuclear security efforts, and progress in this area remains unclear.

Appendix

Chronology (January-December 2025)

Jan	U.S. Department of State report to Congress on the implementation of the New START Treaty (17th) Iran-Russia Treaty on the Comprehensive Strategic Partnership (17th)
Feb	First Meeting of the Multilateral Sanctions Monitoring Team (MSMT) Steering Committee (Washington, D.C.) (19th)
Mar	Third Meeting of States Parties to the Treaty on the Prohibition of Nuclear Weapons (TPNW) (New York) (3rd–7th) France proposed to open a debate on the protection of the European continent by French nuclear deterrence (5th)
Apr	Third Preparatory Committee for the 2026 NPT Review Conference (New York) (Apr 28– May 9)
May	India-Pakistan military clashes (7th~10th) World Health Assembly adopted a resolution on the “Effects of Nuclear War on Public Health” (26th)
Jun	Ukrainian strikes on Russian nuclear-capable bombers and other aircraft (1st) IAEA Board of Governors resolution condemning Iran's breach of the Comprehensive Safeguards Agreement (CSA) (Vienna) (12th) Israeli strikes on nuclear facilities and other targets in Iran (13th–24th) U.S. strikes on nuclear facilities in Iran (21st–22nd) U.K. announced intention to restore air-launched nuclear capabilities with F-35 acquisition (25th)
Jul	34th Plenary Meeting of the Nuclear Suppliers Group (NSG) (Cape Town) (24th–25th)
Aug	Hiroshima Peace Memorial Ceremony (6th) Nagasaki Peace Memorial Ceremony (9th) E3 notified the UN Security Council of the activation of the Iran sanctions snapback mechanism (28th)
Sep	China unveiled new nuclear-capable missiles at military parade in presence of North Korean and Russian leaders (Beijing) (3rd) 69th General Conference of the IAEA (Vienna) (15th–19th) Pakistan-Saudi Arabia Strategic Mutual Defense Agreement (17th) First FMCT Friends Ministerial Meeting (New York) (24th) 14th Conference on Facilitating the Entry into Force of the CTBT (New York) (26th) UN sanctions against Iran reimposed (27th)
Oct	Termination of the JCPOA (18th) U.S. President ordered the resumption of nuclear testing (29th)
Nov	China released white paper on arms control, disarmament, and non-proliferation (27th)
Dec	U.S. National Security Strategy (NSS) (5th)

Acronyms

ABACC	Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials
A/CPPNM	Amendment to the Convention on the Physical Protection of Nuclear Material
AEOI	Atomic Energy Organization of Iran
AG	Australia Group
AI	Artificial Intelligence
ALBM	Air-Launched Ballistic Missile
ALCM	Air-Launched Cruise Missile
ANNPA	AUKUS Naval Nuclear Propulsion Agreement
AP	Additional Protocol
ASEAN	Association of Southeast Asian Nations
ASMP-A	Air-to-Surface Medium-Range Cruise Missile
ATACMS	Army Tactical Missile System
AUKUS	The Trilateral Security Partnership Between Australia, the U.K. and the U.S.
AWE	Atomic Weapons Establishment
BCC	Bilateral Consultative Commission
CAR	Conflict Armament Research
CBO	Congressional Budget Office
CBRN	Chemical, Biological, Radiological, and Nuclear
CD	Conference on Disarmament
CEND	Creating an Environment for Nuclear Disarmament
CMX	Collaborative Materials Exercise
CNS	Convention on Nuclear Safety
CNSC	Canadian Nuclear Safety Commission
CPPNM	Convention on the Physical Protection of Nuclear Material
CRP	Coordinated Research Projects
CSA	Comprehensive Safeguards Agreement
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	CTBT Organization
DBT	Design Basis Threat
DGA	France’s Defence Procurement and Technology Agency
DIV	Design Information Verification

DPCT	U.S.-PRC Defense Policy Coordination Talks
DRDO	Defence Research and Development Organization
EC	European Commission
EDD	Extended Deterrence Dialogue
EDF	Électricité de France
EDPC	Extended Deterrence Policy Committee
ELWR	Experimental Light Water Reactor
ETTG	Evidence and Testimony Task Group
EU	European Union
EURATOM	European Atomic Energy Community
FAA	Federal Aviation Administration
FANR	Federal Authority for Nuclear Regulation
FEP	Fuel Enrichment Plant
FFEP	Fordow Fuel Enrichment Plant
FMCT	Fissile Material Cut-Off Treaty
FNCA	Forum for Nuclear Cooperation in Asia
FOBS	Fractional Orbital Bombardment System
FPU	First Production Unit
GAO	Government Accountability Office
GBSD	Ground-Based Strategic Deterrent
Global FTPRNT	Global Forum to Prevent Radiological/Nuclear Terrorism
GICNT	Global Initiative to Combat Nuclear Terrorism
GLCM	Ground-Launched Cruise Missile
GTRI	Global Threat Reduction Initiative
G7GP	Group of Seven Global Partnership
HALEU	High-Assay Low-Enriched Uranium
HEU	Highly Enriched Uranium
HWPP	Heavy Water Production Plant
IAEA	International Atomic Energy Agency
ICAN	International Campaign to Abolish Nuclear Weapons
ICBM	Intercontinental Ballistic Missile
ICJ	International Court of Justice

ICONS	International Conference on Nuclear Security
ICSANT	International Convention for the Suppression of Acts of Nuclear Terrorism
IDC	International Data Centre
IGEP	International Group of Eminent Persons for a World without Nuclear Weapons
IMO	International Maritime Organization
IMS	International Monitoring System
INF	Intermediate-Range Nuclear Forces
INSA	International Nuclear Non-proliferation Security Academy
INSEN	International Nuclear Security Education Network
INSServ	International Nuclear Security Advisory Service
INSSP	Integrated Nuclear Security Support Plan, or Integrated Nuclear Security Sustainability Plan
INTERPOL	International Criminal Police Organization
IPCS	Institute of Peace and Conflict Studies
IPEN	Instituto de Pesquisas Energéticas e Nucleares
IPNDV	International Partnership for Nuclear Disarmament Verification
IPPAS	International Physical Protection Advisory Service
IRBM	Intermediate-Range Ballistic Missile
IRGC	Islamic Revolutionary Guard Corps
ISCN	Integrated Support Center for Nuclear Nonproliferation and Nuclear Security
ISAMZ	IAEA Support and Assistance Mission to Zaporizhzhia
ISAMRAD	The IAEA Support and Assistance Mission on the Safety and Security of Radioactive Sources in Ukraine
ITDB	Incident and Trafficking Database
ITMP	Insider Threat Mitigation Programme
ITWG	Nuclear Forensics International Technical Working Group
JAEA	Japan Atomic Energy Agency
JAEC	Japan Atomic Energy Commission
JCPOA	Joint Comprehensive Plan of Action
JHL	Jaber Ibn Hayan Multipurpose Laboratory
JNFL	Japan Nuclear Fuel Limited
KCNA	Korean Central News Agency
KHRR	Khondab Heavy Water Research Reactor
KKNPS	Kashiwazaki-Kariwa Nuclear Power Station

KUCA	Kyoto University Critical Assembly
LEU	Low-Enriched Uranium
LOW	Launch on Warning
LRSO	Long Range Stand-Off Weapon
MBA	Material Balance Area
MFFF	Mixed Oxide Fuel Fabrication Facility
MIRV	Multiple Independently-Targetable Reentry Vehicle
MMCA	Military Maritime Consultative Agreement
MNSR	Miniature Neutron Source Reactor
MOX	Mixed Oxide
MPE	Major Public Events
MRBM	Medium-Range Ballistic Missile
MSMT	Multilateral Sanctions Monitoring Team
MTCR	Missile Technology Control Regime
NAC	New Agenda Coalition
NAM	Non-Aligned Movement
NATO	North Atlantic Treaty Organization
NCG	Nuclear Consultative Group
NDV	Nuclear Disarmament Verification
NEA	Nuclear Energy Agency
NFU	No First Use
NGO	Non-Governmental Organization
NNSA	National Nuclear Security Administration
NNWS	Non-Nuclear Weapon States
NPDG	Non-Proliferation Directors Group
NPDI	Non-Proliferation and Disarmament Initiative
NPG	Nuclear Planning Group
NPR	Nuclear Posture Review
NPT	Nuclear Non-Proliferation Treaty
NRC	Nuclear Regulatory Commission
NRSWG	Nuclear and Radiological Security Working Group
NSC	National Security Council

NSCG	Nuclear Security Contact Group
NSDD	Nuclear Smuggling Detection and Deterrence
NSF	Nuclear Security Fund
NSG	Nuclear Suppliers Group
NSGC	Nuclear Security Guidance Committee
NSSC	Nuclear Security Training and Support Centres
NSSG	Nuclear Safety and Security Group
NSTDC	Nuclear Security Training and Demonstration Center
NTI	Nuclear Threat Initiative
NuDiVe	The Nuclear Disarmament Verification
NWFZ	Nuclear Weapon Free Zone
NWS	Nuclear Weapon States
ODNI	Office of the Director of National Intelligence
OECD	The Organization for Economic Co-operation and Development
ONR	Office for Nuclear Regulation
OPAMAL	Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean
PCENS	Pakistan's Centre of Excellence for Nuclear Security
PFEP	Pilot Fuel Enrichment Plant
PLA	People's Liberation Army
PMDA	Plutonium Management and Disposition Agreement
PNRA	Pakistan Nuclear Regulatory Agency
PreCom	Preparatory Committee
PSI	Proliferation Security Initiative
RCSM	Radiological Crime Scene Management
RECA	Radiation Exposure Compensation Act
RECNA	Research Center for Nuclear Weapons Abolition
RevCon	Review Conference
RISS	Advisory Mission on Regulatory Infrastructure for Radiation Safety and Nuclear Security
SAG	Scientific Advisory Group
SIPRI	Stockholm International Peace Research Institute
SLA	State-Level Approach
SLBM	Submarine-Launched Ballistic Missile

SLC	State-Level Concept
SLCM	Sea-Launched Cruise Missile
SMR	Small Modular Reactors
SQP	Small Quantity Protocol
SRBM	Short-Range Ballistic Missile
SSBN	Nuclear-Powered Ballistic Missile Submarine
SSN	Nuclear-Powered Attack Submarine
SSOD	United Nations Special Sessions on Disarmament
SSP	Stockpile Stewardship Program
START	Strategic Arms Reduction Treaty
TPNW	Treaty on the Prohibition of Nuclear Weapons
UAE	United Arab Emirates
UAV	Unmanned Aerial Vehicle
UCF	Uranium Conversion Facility
UNICRI	United Nations International Crime and Justice Research Institute
UNOCT	United Nations Office of Counter-Terrorism
UNODC	United Nations Office for Drugs and Crime
UOC	Uranium Ore Concentrate
UTR-KINKI	The Kinki University Reactor
VLS	Vertical launching system
VOA	Voluntary Offer Agreement
WA	Wassenaar Arrangement
WINS	World Institute for Nuclear Security
WMD	Weapons of Mass Destruction
WNA	World Nuclear Association
WTO	World Trade Organization
ZNPP	Zaporizhzhia Nuclear Power Plant

Online Questionnaire

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https://www.pref.hiroshima.lg.jp/site/hiroshimaforpeace-en/

Hiroshima Organization for Global Peace (HOPe)