

Hiroshima Report 2024

Evaluation of Achievement in Nuclear Disarmament,
Non-Proliferation and Nuclear Security in 2023

Hiroshima Organization for Global Peace (HOPE)

Hiroshima Prefecture

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

March 2024

**Hiroshima Report 2024:
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ISBN978-4-9912950-5-8

Printed in Japan

Published by the Hiroshima Organization for Global Peace (HOPE)

Edited by the Center for Disarmament, Science and Technology (CDAST),
The Japan Institute of International Affairs

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Preface and Acknowledgements

The *Hiroshima Report 2024: Evaluation of Achievement in Nuclear Disarmament, Non-Proliferation and Nuclear Security in 2023* (hereinafter referred to as “*Hiroshima Report 2024*”) is a result of the “Hiroshima Report Publication Project,”¹ commissioned by the Hiroshima Organization for Global Peace (HOPE) to the Center for Disarmament, Science and Technology (CDAST), the Japan Institute of International Affairs (JIIA). As with the previous reports issued since 2013, the *Hiroshima Report 2024* is published in both Japanese and English.

The prospect of the total elimination of nuclear weapons remains a distant one at best. Even more concerning, the circumstances surrounding nuclear weapons are becoming ever more complicated. In response, the international community has undertaken various efforts, including the adoption of the “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament” at the G7 Hiroshima Summit, which was the first G7 Leaders’ document with a particular focus on nuclear disarmament. Despite these efforts, the worsening nuclear predicament could not be alleviated.

The five nuclear-weapon states (NWS) under the NPT—China, France, Russia, the United Kingdom and the United States—and other nuclear-armed states—India, Israel and Pakistan—as well as North Korea continue to perceive their nuclear weapons as indispensable components of their national security. They also have taken measures with a view to sustaining nuclear deterrence for a longer period, such as modernization of nuclear forces and development of new delivery vehicles. In particular, growing concerns have emerged over China’s rapid reinforcement of its nuclear arsenal, both qualitatively and quantitatively. Russia, amidst its ongoing invasion of Ukraine, continued its nuclear saber-rattling in 2023. In addition, Russia announced to suspend the implementation of the U.S.-Russian New Strategic Arms Reduction Treaty (New START), and revoked its ratification of the Comprehensive Nuclear-Test Ban Treaty (CTBT). Furthermore, there has been little progress in the further reductions of nuclear weapons by the NWS, including in negotiations between the United States and Russia, as well as between the United States and China.

Meanwhile, the status and prospects regarding nuclear non-proliferation remain gloomy as well. North Korea has repeatedly stated that it has no intention of abandoning its nuclear weapons. Instead, it has continued to aggressively develop and test various types of missiles, and has been in pursuit of the advancement of its nuclear weapons capability. Pyongyang has also repeatedly suggested the possibility of first use of nuclear weapons. Regarding the Iran nuclear issue, indirect negotiations between the United States and Iran

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

to revive the Joint Comprehensive Plan of Action (JCPOA) were held intermittently, but failed to reach an agreement, and by year's end the talks were moribund. During this period, Iran increased its stockpile of enriched uranium as well as the level of enrichment far beyond the limits set by the JCPOA, reaching a point where it could produce enough highly enriched uranium for a weapon in less than a week.

The situation regarding nuclear security continues to require attention. As Russia's military occupation of Ukrainian nuclear power plant continued and fighting intensified in the vicinity, the nuclear safety and nuclear security of the facilities was repeatedly confronted with situations that could seriously be undermined. The new challenge of responding to the threat posed by a state became even more obvious. With regard to traditional nuclear security, the threat of cyberattacks and drone sabotage against nuclear facilities has become more diverse and complex due to the development of emerging technologies such as artificial intelligence (AI), and thus require continued close monitoring. Strengthening of measures against insider threats and efforts to foster a nuclear security culture are also required. While progress has been made by countries in the Global South in joining nuclear security-related conventions, efforts by multilateral initiatives have been limited, with the exception of efforts by the G7.

The *Hiroshima Report* seeks to assist the movement toward the abolition of nuclear weapons, first and foremost, by clarifying the current status of issues and efforts surrounding nuclear disarmament, non-proliferation and nuclear security. In doing so, it aims to encourage increased debate on these issues among policymakers, experts both within and outside governments, and civil society. Furthermore, by issuing the "Report" and the "Evaluation" from Hiroshima, which once suffered the wartime use of a nuclear weapon, it endeavors to help bring attention to and further promote actions across various fields toward the realization of a world without nuclear weapons.

The Research Committee was established to conduct this project, namely producing the "Report" and the "Evaluation." This Committee met once within the Japanese fiscal year 2023 to discuss its content. The members of the Research Committee are as follows:

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Professor Tatsujiro Suzuki (Vice Director and Professor, Research Center for Nuclear Weapons Abolition, Nagasaki University)

In this edition, experts posted columns on nuclear disarmament, non-proliferation and nuclear security issues.² It also appreciates the efforts of Shintaro Kawame, Shodai Maruyama, Raemi Omori, Ritsuko Takahashi, Kazuma Takahata and Akio Tamura, who provided assistance to edit the *Hiroshima Report*.

The views or opinions expressed in the “Report,” “Evaluation” and “Columns” are those of the members of the Research Committee or respective authors, and do not necessarily represent the view of the HOPE, the Hiroshima Prefecture, the JIIA, or the organizations to which they belong. Not all of the members necessarily agree on all of the points discussed.

² The views or opinions expressed in the columns are those of the respective authors, and do not represent the view of the HOPE, the Hiroshima Prefecture, the JIIA, or the organizations to which they belong.

Special Message**Outcome of the G7 Hiroshima Summit and Future Initiatives by the Japanese Government****H.E. Mr. Fumio Kishida, Prime Minister of Japan**

I would like to offer a few words on the occasion of the publication of the *Hiroshima Report 2024*, which focuses on the outcomes of the G7 Hiroshima Summit and plays an important role in deepening our understanding of the efforts and actions of Japan and other countries around the world regarding certain issues, including nuclear disarmament. I would like to express my respect to Hiroshima Prefecture and all those who have contributed to the preparation of this report.

The G7 Hiroshima Summit, held at a time when the international community is at a historic turning point, focused on two main perspectives toward realizing cooperation among the international community, rather than division and confrontation: upholding a free and open international order based on the rule of law; and strengthening engagement with our international partners, including the so-called Global South. The G7 meeting's reaffirmation of a wide-ranging commitment, involving not only G7 members but also invited countries and institutions, to collaboratively address international challenges was a significant achievement. Equally, it was noteworthy that the leaders of the G7, the invited countries, and Ukraine discussed global peace and stability in shared recognition of the importance of the rule of law and the principles of the UN Charter.

This G7 Summit, held for the first time in Hiroshima, a city once devastated by atomic bombing and a global symbol of peace, was also of historic significance in reaffirming the commitment of the G7 leaders to realize a world without nuclear weapons. The G7 leaders visited Hiroshima Peace Memorial Museum, experienced the reality of the atomic bombing, and offered flowers to the Cenotaph in Peace Memorial Park. We held open discussions on their commitments towards a world without nuclear weapons. Based on these activities, we issued the “G7 Leaders’ Hiroshima Vision,” which is the first independently initiated G7 document focusing on nuclear disarmament. I believe that the G7 Hiroshima Summit has contributed to building momentum in the international community toward a world without nuclear weapons.

I will endeavor to maintain and bolster realistic and practical efforts through implementing, step by step, the initiatives under the “Hiroshima Action Plan” which I proposed at the Nuclear Non-Proliferation Treaty (NPT) Review Conference in 2022,

while using the “G7 Hiroshima Vision” as a significant stepping stone.

Specifically, for example, we will build on our efforts for the early entry into force of the Comprehensive Test Ban Treaty (CTBT) and the immediate commencement of negotiations for a Fissile Material Cut-off Treaty (FMCT). In September 2023, Japan hosted the Commemorative High-Level Event on a FMCT in New York, and with participation at many political levels, I believe that we succeeded in rekindling will and interest for the immediate commencement of FMCT negotiations.

The efforts of Hiroshima Prefecture, including this *Hiroshima Report* and the strong desire for peace contained therein, are the driving force and impetus toward the realization of a world without nuclear weapons. As Prime Minister of Japan, the only country to have experienced atomic bombings during war, I will continue to work tirelessly towards a world without nuclear weapons, together with the people of Hiroshima Prefecture.

Executive Summary: Nuclear Trends in 2023

Various efforts have been attempted to revitalize nuclear disarmament, nuclear non-proliferation and nuclear security, notably the adoption of the “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament” at the G7 Hiroshima Summit held in May 2023. Despite these efforts, the worsening nuclear predicament could not be alleviated. The rift over the nuclear issues also deepened not only between nuclear-weapon states (NWS) and non-nuclear-weapon states (NNWS), but even more so among NWS, making it more difficult to reach an agreement on the nuclear issues.

(1) Nuclear Disarmament

The “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament,” which was adopted at the G7 Hiroshima Summit and was the “the first G7 Leaders’ document with a particular focus on nuclear disarmament,” comprehensively outlines the actions and measures that the international community should take. In addition, other various efforts and proposals were made to revitalize nuclear disarmament. Despite these efforts, the worsening nuclear predicament could not be alleviated, and there has been little progress in agreeing on or implementing further nuclear disarmament.

Russia’s decision to suspend the implementation of the New Strategic Arms Reduction Treaty (New START) and to revoke its ratification of the

Comprehensive Nuclear-Test Ban Treaty (CTBT) has cast significant doubts on the viability of existing nuclear disarmament agreements. Russia also repeated its nuclear intimidations in 2023 amidst the ongoing war in Ukraine.

Nuclear-armed states continue to increase their awareness of the salience of nuclear deterrence for their national security, and to modernize their nuclear forces. In particular, the possibility of China’s rapid increase in its nuclear arsenal and change in its nuclear strategy has been pointed out. NNWS allied with nuclear-armed states also place a high value on extended nuclear deterrence.

The number of countries signing or ratifying the Treaty on the Prohibition of Nuclear Weapons (TPNW)—which, *inter alia*, legally bans states from possessing and using nuclear weapons—has steadily increased. In the meantime, the nuclear-armed states and their allies have not changed their policies of refusing to sign the treaty.

G7 Hiroshima Summit

- The “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament,” which was adopted at the G7 Hiroshima Summit and was the “the first G7 Leaders’ document with a particular focus on nuclear disarmament,” comprehensively outlines the actions and measures that the international community should take. Meanwhile, there was also strong criticism that it positively reaffirmed the existence of nuclear weapons and nuclear deterrence.

- The leaders of G7 participating countries, invited countries, representatives of international organizations, and the President of Ukraine visited the Peace Memorial Museum, engaged in dialogue with atomic bomb survivors, and laid flowers at the Cenotaph for the Atomic Bomb Victims.

The Status of Nuclear Forces (estimates)

- While the total number of nuclear weapons is gradually decreasing to 12,512 (estimated), it is estimated that the number of nuclear warheads excluding retired ones, as well as the number of nuclear warheads deployed with operational forces, has turned to increase.
- The pace of increase in the number of China's nuclear warheads in China has accelerated. India, Pakistan and North Korea have also been gradually increasing their stockpiles of nuclear warheads for more than a 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, steady and concrete implementation and promotion of nuclear disarmament toward the realization of this goal by the nuclear-armed states was not seen in 2023. Many NNWS intensified their criticism of this situation.
- On the Japan-led UN General Assembly (UNGA) Resolution titled “Joint courses of action and future-oriented dialogue towards a world without nuclear weapons,” 148 countries, including the United Kingdom and the United States, voted in favor. However, China, Russia, North Korea and other countries voted against it.

Humanitarian Consequences of Nuclear Weapons

- NNWS, mainly “humanitarian groups,” asserted the humanitarian dimensions of nuclear weapons at forums such as the NPT Preparatory Committee (PrepCom) and the Second Meeting of States Parties to the TPNW (2MSP).
- At the 2MSP, it was decided to study the feasibility of, and possible guidelines for, the establishment of an international trust fund for victim assistance and environmental remediation.

TPNW

- By the end of 2023, 69 countries have become states parties to the TPNW.
- The 2MSP was convened in November to December. Participating countries adopted by consensus the Declaration and the Decision. In the Declaration, they rejected the legitimacy of nuclear deterrence, and expressed their willingness to pursue a global prohibition of nuclear weapons.
- Nuclear-armed states and their allies remain opposed to the TPNW. Meanwhile, a small number of U.S. allies attended the 2MSP as observers. Japan did not attend the meeting.

Reduction of Nuclear Weapons

- In response to the U.S. certification of Russia’s non-compliance with the New START, citing Russia’s refusal to allow on-site inspections, Russia decided to suspend its implementation of the treaty. While Russia has declined to permit on-site inspections or share data as mandated by the treaty, it has asserted its commitment to adhering to the treaty’s quantitative limits. In response, the United States has taken similar countermeasures.
- The United States has indicated its willingness to engage in bilateral arms control discussions with Russia and China without preconditions. However, Russia has countered, arguing that it could not agree to such discussions unless there were alterations to what it considers hostile policies by the United States. China reiterated that it would not join such negotiations unless the two countries possessing the largest nuclear arsenals make drastic and substantive reductions.
- All nuclear-armed states continue to modernize their nuclear forces. In particular, Russia and North Korea have been aggressively pursuing the development and deployment of various new delivery vehicles for carrying nuclear warheads. China has also notably bolstered 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 Roles and Significance of Nuclear Weapons in the National Security Strategies and Policies

- Amid its ongoing invasion of Ukraine, Russia continued to reiterate its nuclear intimidations in 2023, which have raised strong concerns in the international community over the possibility of using nuclear weapons.
- North Korea has articulated that the role of its nuclear arsenal is to deter war and to take the initiative in war. 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 have been few major changes in nuclear policies regarding: the role and salience of nuclear weapons; a “sole purpose” or no first use policy; negative security assurances (NSAs); and extended nuclear deterrence.
- In response to the indication that China’s policies of minimum deterrence and no first use of nuclear weapons have been changing, China argued that its nuclear policy and posture remain unchanged.
- Russia and Belarus have agreed to deploy Russian tactical nuclear weapons in Belarus, and their shipment was completed in October. Russia clarified it retains the authority for the control and use of nuclear weapons stationed in Belarus.
- Japan and South Korea have been actively collaborating with the United States to strengthen their respective extended deterrence.

- Five NWS, as well as some NNWS participating in the Stockholm Initiative and other groups, have made various proposals on measures to reduce nuclear risks at the NPT PrepCom and other forums.

De-Alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons

- There have been few significant changes in NWS policies concerning alert status. Russian and U.S. strategic nuclear forces are considered to remain on high alert status.
- China denied an allegation that it has been putting some of its nuclear forces on higher alert.

CTBT

- Russia revoked its ratification of the CTBT. Among the 44 states listed in Annex 2 of the CTBT, whose ratification is a prerequisite for the treaty's entry into force, six states (China, Egypt, Iran, Israel, Russia and the United States) have signed but not ratified, and three (India, Pakistan and North Korea) have not even signed. The treaty has not yet entered into force.
- With the exception of North Korea, all countries which have declared possession of nuclear weapons maintain moratorium on nuclear test explosions. Russia repeatedly stated that as long as the United States does not conduct nuclear explosion tests, it would not do so either.
- Since 2018, no country has conducted a nuclear explosion test. The United

States claimed that China and Russia may have conducted non-“zero yield” nuclear tests, but China and Russia denied the allegations.

- North Korea has reportedly completed its preparedness to conduct a nuclear test explosion. However, it did not conduct such a test in 2023.
- Some nuclear-armed states are considered to have conducted nuclear tests without explosions, such as subcritical experiments and computer simulations.

FMCT

- At the 2023 session of the Conference on Disarmament (CD), negotiations of an FMCT yet again failed to be commenced. Pakistan continued to oppose even negotiating a treaty prohibiting just the production of fissile material for nuclear weapons. China, Iran, Pakistan and Russia also voted against the UN General Assembly resolution on FMCT.
- Japan co-hosted a Commemorative High-Level Event on a FMCT with Australia and the Philippines.
- China, India, Israel, Pakistan and North Korea have yet to declare a moratorium on the production of fissile material for nuclear weapons. India, Pakistan and North Korea are seen as highly likely to continue producing fissile material for nuclear weapons. There are also concerns that the advanced fast-breeder reactors and reprocessing facilities that China is developing for civilian purposes can be diverted for nuclear weapons purposes.

Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine

- There has been no significant change in nuclear-armed states' policies regarding transparency.
- While China insists that transparency of intentions and policies is important, it has not disclosed any information about the type or quantity of nuclear arsenals it possesses.

Verifications of Nuclear Weapons Reductions

- Within the UN framework, the Group of Governmental Experts to further consider nuclear disarmament verification issues published its final report, in which the members recommended the continuation of discussions on nuclear disarmament verification.
- Countries participating in the International Partnership for Nuclear Disarmament Verification (IPNDV), which was launched by the United States, continue further discussions and deliberations on verification measures—including virtual exercises.

Irreversibility

- Russia and the United States are likely to continue dismantlement or conversion of their respective strategic delivery vehicles, nuclear warheads, and fissile material declared excess for military purposes. However, neither country has provided detailed reports on the concrete status of these implementation efforts.

Disarmament and Non-Proliferation Education and Cooperation with Civil Society

- The importance of disarmament and non-proliferation education, diversity and inclusion including gender, and participations of civil society was emphasized at the NPT PrepCom and the TPNW 2MSP.
- The “Youth Leader Fund for a World Without Nuclear Weapons,” funded by Japan, initiated its first phase. This program aims to bring future leaders to Japan to experience the reality of the atomic bombings.
- Some countries have started to legislate “divestment” against, or prohibitions on lending to, organizations and companies which are involved in producing and developing nuclear weapons. The number of companies which have individually established such policies is also increasing.

Hiroshima and Nagasaki Peace Memorial Ceremonies

- Representatives from 111 countries attended the peace memorial ceremony in Hiroshima. (The ceremony in Nagasaki was held on a reduced scale due to inclement weather.)

(2) Nuclear Non-Proliferation

As of December 2023, 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 and are seen as unlikely to join the

treaty in the near future. North Korea has insisted that it has no intention to renounce its nuclear weapons. Regarding the Joint Comprehensive Plan of Action (JCPOA), as a countermeasure against the U.S. withdrawal in 2018, Iran has continued to steadily expand its suspension of adherence to the nuclear limits of the deal.

The number of countries that have accepted the International Atomic Energy Agency (IAEA) safeguards under the Additional Protocols has increased steadily. Still, more than 40 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. Pyongyang has insisted that it would never relinquish its status as a nuclear-armed state, and that it must strengthen its nuclear arsenals. North Korea has continued to bolster its nuclear and missile capabilities.
- China and Russia have repeatedly issued statements in defense of North Korea's nuclear- and missile-related activities at the UN Security Council and other forums.
- Iran has expanded its stockpile of enriched uranium, including 20% and 60% highly enriched uranium (HEU), and the number and performance of centrifuges well beyond the provisions of the JCPOA. Indirect negotiations were held intermittently by the countries involved to restore the JCPOA, but no agreement was reached during 2023.
- Israel and the United States did not participate in the fourth Conference on Establishing a Middle East Region Free of Nuclear Weapons and Other Weapons of Mass Destruction (WMD).

IAEA Safeguards

- As of 2023, 135 NPT NNWS have concluded the IAEA Additional Protocols. Some countries such as Brazil argue that the conclusion of an Additional Protocol should be voluntary, not obligatory under the NPT.
- The IAEA applied integrated safeguards to 69 NNWS by the end of 2022. In addition, as of June 2023, the Agency developed and approved state-level safeguards approaches (SLAs) for 136 countries.
- Iran continued to suspend verification and monitoring measures under the JCPOA, including the application of the Additional Protocol to the IAEA Safeguards Agreement. The IAEA was also unable to access data from surveillance cameras, online enrichment monitors and electronic seals installed at Iran's nuclear facilities.
- 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 has demanded that Iran provide further clarifications and information.
- Saudi Arabia is approaching the completion of its first research reactor. It announced its decision to rescind the

- Small Quantity Protocol (SQP) and implement the full Comprehensive Safeguards Agreement. The IAEA also said that it has been discussing with Saudi Arabia regarding the necessary inspections.
- Australia, the United Kingdom, and the United States (AUKUS) and the IAEA started technical discussions regarding the implementation of IAEA safeguards for nuclear fuel for Australia's nuclear-powered submarines. Some countries, including China, expressed criticism and concerns regarding these three countries' decision.
 - Russia's attack and occupation of nuclear facilities in Ukraine has 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) have solid export controls in place, including establishment of legislative measures and other relevant national implementation systems. On the other hand, many countries, in particular developing countries, have been requested to strengthen their systems and their implementation of export controls.
- North Korea continues to engage in illicit trafficking and procurement through, inter alia, ship-to-ship transfers and cyber activities. Russia is also likely to have procured missiles as

well as other weapons and ammunition from North Korea. Such transactions constitute a clear violation of the UN Security Council resolutions.

- China has been criticized for its export of nuclear power reactors to Pakistan, which may constitute a violation of the NSG guidelines.

Transparency in the Peaceful Use of Nuclear Energy

- Since 2018, China has not submitted their reports based on the Guidelines for the Management of Plutonium.

(3) Nuclear Security

Russia's attack and occupation of a nuclear facility in Ukraine and a situation that could seriously threaten the safety and nuclear security of the facility has continued. This has further highlighted a new challenge in dealing with threats to nuclear facilities posed by states during conflict.

The threat of cyber-attacks against nuclear facilities as well as sabotage involving drones continues to require close attention. In particular, there is growing concern about the cyber risks posed by artificial intelligence (AI) and other technologies. In addition, there is a need to strengthen efforts to counter insider threats and foster a nuclear security culture.

With regard to the global inventory of weapons-usable nuclear material, progress has been made in efforts to minimize highly-enriched uranium (HEU), and civilian stocks have decreased. On the

other hand, civilian separated plutonium has continued to increase.

Two countries under this survey have accepted the International Physical Protection Advisory Service (IPPAS).

Physical Protection of Nuclear Material and Facilities

- Regarding the global inventory of weapons-usable nuclear material, as for HEU, the stocks combined both for military and non-military declined, and downward trends continued. As for separated plutonium, the civilian stocks have increased mainly in France, and trends for increase continued.
- Twenty 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

- Turkey has ratified the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. For most of the nuclear security related conventions, the number of parties increased progressively.
- Regarding the implementation of “Nuclear Security Recommendations on the Physical Protection of Nuclear Material and Nuclear Facilities (INFCIC/225/Rev.5),” new dissemination of information by each country of their progress in reflecting the recommended measures in their domestic system continues to decrease. The IAEA’s international conference

on cybersecurity took place in June.

There is growing concern about cyber risks posed by artificial intelligence (AI) and other technologies.

Efforts to Maintain and Improve the Highest Level of Nuclear Security

- On HEU minimization for civilian use, conversion of HEU-fueled reactors to low-enriched-uranium-fueled reactors has progressed in Kazakhstan. Efforts are also continuing in Japan and Norway.
- The Netherlands has accepted its fifth IPPAS mission and Switzerland has accepted a follow-up mission. Japan is preparing to host its second IPPAS mission in mid-2024.
- With regard to 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, remained temporarily suspended from all activities after 2022. Initiatives derived from the Nuclear Security Summit Process were also not active, except for activities related to insider threats.

Introduction

(1) Items

In the *Hiroshima Report 2024*, 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 a Final Document of the 2015 NPT Review Conference;
- The final draft of a 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;
- 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) Signing and ratifying the TPNW

B) Voting behavior on UNGA resolutions on the TPNW

C) Voting behavior on for legally binding UNGA resolutions on prohibition of nuclear weapons

- (5) Reduction of Nuclear Weapons

A) Reduction of nuclear weapons

B) Concrete plans for further re-

- duction of nuclear weapons
- C) Trends on strengthening/ modernizing nuclear weapons capabilities
- (6) Diminishing the Roles and Significance of Nuclear Weapons in National Security Strategies and Policies
- A) Current status of the roles and significance of nuclear weapons
- B) Commitment to no first use, “sole purpose,” and related doctrines
- C) Negative security assurances
- D) Voting behavior on UNGA resolutions on legally binding security assurances for NNWS
- E) Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones
- F) Relying on extended nuclear deterrence
- G) Nuclear risk reduction
- H) Actions that increases nuclear risk
- (7) De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons
- (8) CTBT
- A) Signing and ratifying the CTBT
- B) Moratoria on nuclear test explosions pending 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 verification systems
- F) Nuclear testing
- (9) FMCT
- A) Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT
- B) Voting behavior on the UNGA resolution on an FMCT
- C) Moratoria on the production of fissile material for use in nuclear weapons
- D) Contribution to the development of verification measures
- (10) Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine
- (11) Nuclear Disarmament Verification
- A) Acceptance and implementation of nuclear disarmament verification
- B) Engagement in research and development for verification measures of nuclear disarmament
- C) International Atomic Energy Agency (IAEA) inspections to fissile material declared as no longer required for military purposes
- (12) Irreversibility
- A) Implementing or planning dismantlement of nuclear warheads and their delivery vehicles
- B) Decommissioning/conversion of nuclear weapons-related facilities
- C) Measures for fissile material declared excess for military purposes, such as disposition or conversion to peaceful 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 2024*, 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 are revised from 27 to 22 in order 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, with regard to 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 2024* surveys the following countries.

- Five nuclear-weapon states under the NPT (China, France, Russia, the United Kingdom and the United States)
- Non-state parties to the NPT possessing or believed to possess nuclear weapons (India, Israel and Pakistan)
- 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 Turkey
 - ✧ Nuclear security: Australia, Belgium, Brazil, Canada, Finland, Germany,

¹ Criteria for selecting countries for the survey are those with a certain level of nuclear activities or with at least 1 kg of HEU. “A certain level of nuclear activity” include possessing or planning to possess in recent years commercial nuclear reactors in operation (cf: Turkey is scheduled to begin operation in 2024) or a spent fuel final disposal site (Finland).

Iran, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, Norway, South Africa, Sweden, Switzerland, Turkey and the UAE

➤ Other (North Korea²)

(3) Approach

This project focuses on the time period of the calendar year 2023. Reference documents are primarily open sources, such as speeches and working papers delivered at disarmament fora, and official documents published by governments and international organizations.

In the evaluation section, a set of objective evaluation criteria is established by which each respective country's performance is assessed.

The Research Committee of this project recognizes the difficulties, limitations and risks of “scoring” countries' performances. However, the Committee also considers that an indicative approach is useful to draw attention to nuclear issues, so as to prompt debates over priorities and urgency.

The different numerical values within each category (i.e., nuclear disarmament, nuclear non-proliferation and nuclear security) reflect each activity's importance within that area, as determined through deliberation by the Research Committee of this project. However, the differences in overall score totals among each of the three categories do not necessarily reflect

a category's relative significance in comparison with others, as it has been driven by the differing number of items surveyed. Thus, the total value assigned to nuclear disarmament (maximum score of 109) does not mean that it is more important than nuclear non-proliferation (maximum score of 61) or nuclear security (maximum score of 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 more nuclear weapons or weapons-usable fissile material a country possesses, the greater the task of reducing them and ensuring their security. However, the Research Committee recognizes that “numbers” or “amounts” are not the sole decisive factors. Certainly, other factors—such as implications of missile defense, chemical and biological weapons, conventional force imbalances and a psychological attachment to a minimum overt or covert nuclear weapon capability—also affect the issues and process of nuclear disarmament, nuclear non-proliferation and nuclear security. However, such factors were not included in our criteria for evaluation as it was difficult to devise objective scales of the significance of these factors. In addition, in light of the suggestions and comments made with respect to the *Hiroshima Report 2013*, the Research Committee modified the criteria of the following items: the current status of the

² North Korea declared its suspension from the NPT in 1993 and its withdrawal in 2003, and conducted nuclear tests in 2006, 2009, 2013, twice in 2016, and 2017. However, there is no agreement among the states parties on North Korea's official NPT status.

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 if applicable.

As there is no way to mathematically compare the various factors contained in the different areas of disarmament, non-proliferation and nuclear security, the evaluations should be taken as indicative of performances in general and not as an exact representation or precise assessment of different countries' performances.

The *Hiroshima Report 2022* maintains basically the same structure and items as previous years' reports, while one item on the TPNW has been added since the *Hiroshima Report 2018*. Besides this, beginning with the *Hiroshima Report 2019*, the Research Committee has added an evaluation item addressing whether the respective countries attended the Hiroshima or Nagasaki Peace Memorial Ceremonies while only attendance at the Hiroshima Peace Memorial Ceremony had been evaluated until the *Hiroshima Report 2018*. (The maximum score of three points for this item remains the same.) Since the *Hiroshima Report 2020*, increases in the number of possessed nuclear weapons in the previous five years, as well as activities that are not covered by the existing evaluation items but are nevertheless deemed contrary to nuclear disarmament and non-proliferation are also negatively graded, if applicable. Furthermore, since the *Hiroshima Report 2021*, the scale of measurement used for a few of the evaluation criteria in terms of

nuclear non-proliferation and nuclear security have been slightly modified.

Furthermore, in the *Hiroshima Report 2023*, the evaluation items and evaluation criteria were modified to reflect changes in the situation in light of new trends surrounding nuclear issues and the 2022 NPT RevCon and the First meeting of States Parties to the TPNW. The changes are described in "Evaluation Points and Criteria" in Part II.

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

Part I: Report

Surveying Trends of Nuclear Disarmament,
Non-Proliferation and Nuclear Security in 2023

Special Feature

G7 Hiroshima Summit

The G7 Summit in Hiroshima in May 2023 adopted the “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament” (hereafter “Hiroshima Vision”), which was the “first G7 Leaders’ document with a particular focus on nuclear disarmament.”¹

The Hiroshima Vision commenced with a reference to the devastating impact of nuclear weapons, stating: “We, the Leaders of the G7, met at a historical juncture in Hiroshima, which together with Nagasaki offers a reminder of the unprecedented devastation and immense human suffering the people of Hiroshima and Nagasaki experienced as a result of the atomic bombings of 1945.” Subsequently, the G7 leaders “reaffirm[ed] ... [their] commitment to achieving a world without nuclear weapons with undiminished security for all.”

The G7 leaders also “underscore[d] the importance of the 77-year record of non-use of nuclear weapons,” and stated that “Russia’s irresponsible nuclear rhetoric, undermining of arms control regimes, and stated intent to deploy nuclear weapons in Belarus are dangerous and unacceptable.” In addition, they “affirm[ed] that a nuclear war cannot be won and must never be fought.” At the same time, they mentioned that “[their] security policies are based on the understanding that nuclear weapons, for as long as they exist,

should serve defensive purposes, deter aggression and prevent war and coercion.”

Subsequently, G7 leaders stated that “[t]he overall decline in global nuclear arsenals achieved since the end of the Cold War must continue and not be reversed.” They reaffirmed that the Nuclear Non-Proliferation Treaty (NPT) is the cornerstone of the international nonproliferation regime, and also “reaffirm[ed] [their] commitment to the ultimate goal of a world without nuclear weapons with undiminished security for all, achieved through a realistic, pragmatic and responsible approach.” In this context, the G7 leaders “call[ed] on Russia to enable a return to full implementation of the [New Strategic Arms Reduction Treaty (New START)],” and expressed their concern that “China’s accelerating build-up of its nuclear arsenal without transparency nor meaningful dialogue poses a concern to global and regional stability.”

Regarding transparency, the G7 leaders “welcome[d] actions already taken by the United States, France and the United Kingdom to promote effective and responsible transparency measures through providing data on their nuclear forces and the objective size of their nuclear arsenal” They, inter alia “call[ed] on nuclear-weapon States that have not yet done so to follow suit,” and “to engage with non-nuclear-weapon States in a meaningful dialogue on transparency regarding their nuclear arsenals and

¹ “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament,” May 19, 2023, https://www.g7hiroshima.go.jp/documents/pdf/230520-01_g7_en.pdf.

limiting nuclear competition.” While “stress[ing] the benefit of prenotification of relevant strategic activities,” the G7 leaders “recognize[d] the need for concrete steps by nuclear-weapon States to reduce strategic risks,” and called for substantial engagement by China and Russia in multilateral and bilateral forums.

As for multilateral nuclear disarmament, the G7 leaders called for the immediate commencement of negotiations on a Fissile Material Cut-off Treaty (FMCT), although they did not explicitly say that the Conference on Disarmament should be the negotiating forum. They also called on “all states that have not yet done so to declare and maintain voluntary moratoria on the production of fissile material for use in nuclear weapons or other nuclear explosive devices.”

On the Comprehensive Nuclear-Test-Ban Treaty (CTBT), the G7 leaders argued that nuclear explosion tests should not be conducted, and condemned any threats to carry them out. They also “emphasize[d] that bringing the [CTBT] into force is ... [an] urgent matter,” and “call[ed] on all states to declare new or maintain existing moratoriums on nuclear weapon test explosions or any other nuclear explosions.” In addition, they underscored the role of the CTBT Organization (CTBTO) Preparatory Commission, and called for the provision of sufficient resources to ensure the continuous operation and long-term sustainability of its verification regime.

In terms of nuclear nonproliferation, the G7 leaders “reiterate[d] [their] unwavering commitment to the goal of North Korea’s

complete, verifiable, and irreversible abandonment of its nuclear weapons and existing nuclear programs, and any other weapons of mass destruction (WMD) and ballistic missile programs in accordance with relevant UN Security Council Resolutions (UNSCRs),” and reaffirmed that “North Korea cannot and will never have the status of a nuclear-weapon State under the NPT.” On Iran, they were “deeply concerned about Iran’s unabated escalation of its nuclear program,” and they called on Iran to, inter alia, cease nuclear escalation, fulfill its legal obligations and political commitments regarding nuclear nonproliferation, and uphold its safeguards obligations and commitments. They also stated that a diplomatic solution remained the best way forward and that the Joint Comprehensive Plan of Action (JCPOA) “continue[d] to provide a useful reference.”

In addition, G7 leaders “urge[d] all states to take their responsibilities seriously to meet the highest standards of safeguards, safety, and security in promoting the peaceful uses of nuclear energy, science, and technology.” They also “reaffirm[ed] the importance of the implementation of the highest standards of safeguards of the [International Atomic Energy Agency (IAEA)] and the universal adoption of the Additional Protocol (AP) as fundamental components of the nuclear nonproliferation regime,” and “support[ed] further discussions within the Nuclear Suppliers Group (NSG) towards the establishment of the AP as a condition of supply in the Group’s guidelines.”

Furthermore, the G7 leaders stated that transparency in the management of civilian-use plutonium must be maintained, and “oppose[d] any attempt to produce or support the production of plutonium for military programs under the guise of civilian programs, which undermines the objectives of the NPT including the promotion of peaceful uses of nuclear energy.” They called for reporting annually holdings of all plutonium stockpiles in peaceful nuclear activities to the IAEA in accordance with the Guidelines for the Management of Plutonium. The G7 leaders also mentioned “the need to manage civil stocks of highly enriched uranium,” as well as a commitment to efforts to reduce the production and accumulation of weapon-usable nuclear materials for civilian purposes.

Finally, in their “Hiroshima Vision,” the G7 leaders argued that it is necessary to undertake “a global effort to take us from the harsh reality to the ideal”; “underscore[d] the importance of disarmament and non-proliferation education and outreach”; and “encourage[d] other leaders, youth and people from around the world to visit Hiroshima and Nagasaki to raise and sustain awareness of the realities of nuclear weapons use one can witness in Hiroshima and Nagasaki.” They also welcomed the initiatives that “support the full, equal, and meaningful participation of women in addition to the engagement

of civil society in disarmament and nonproliferation processes.”

Contrary to the “Hiroshima Vision,” which received mixed reactions, the event that conveyed the reality of the atomic bombing was widely recognized as profoundly significant. As mentioned above, the Hiroshima Vision was the first G7 Leaders’ document with a particular focus on nuclear disarmament, and it was recognized as an important achievement that the G7 leaders, including the three nuclear-weapon states (NWS), reaffirmed their commitment to a “world without nuclear weapons,” referring to “the unprecedented devastation and immense human suffering” caused by the atomic bombings. Prime Minister Fumio Kishida stated in a press conference, “[The Hiroshima Vision] holds historical significance as it powerfully demonstrates the G7 leaders’ resolve, concrete agreements, future priorities, and direction towards the realization of a world without nuclear weapons.”²

On the other hand, the Hiroshima Vision was criticized for not presenting a concrete path or roadmap towards a world without nuclear weapons, and there was little mention of efforts or measures undertaken in this regard by the G7 countries, particularly the three NWS. Furthermore, there was strong criticism, especially from atomic bomb survivor groups and peace movement organizations that inclusion of the sentence, “[their] security policies are

² “Press Conference on Impressions after the First Day of the G7 Hiroshima Summit,” Prime Minister’s Office of Japan, May 19, 2023, https://www.kantei.go.jp/jp/101_kishida/statement/2023/0519bura.html. (in Japanese)

based on the understanding that nuclear weapons, for as long as they exist, should serve defensive purposes, deter aggression and prevent war and coercion,” meant their positive reaffirmation of the existence of nuclear weapons and nuclear deterrence.

The *Chugoku Shimbun*, a local newspaper based in Hiroshima, criticized the Hiroshima Vision as “extremely unsatisfactory,” and asserted that it was “unfit to bear the name of Hiroshima, a city where many atomic bomb victims rest,” and “unforgivable for not touching upon the Treaty on the Prohibition of Nuclear Weapons (TPNW).” Similarly, the *Nagasaki Shimbun* also commented, “Prime Minister Fumio Kishida talks about bringing harsh realities closer to ideals. In light of this, we want more decisive actions.”³ During the G7 Hiroshima Summit, the G7 leaders visited the Peace Memorial Museum, spoke with atomic bomb survivors, and offered flowers at the Cenotaph for the Atomic Bomb Victims.

After the visit to Peace Memorial Museum, the G7 leaders signed and wrote in the guest book.⁴ Prime Minister Kishida commented on these series of events, saying, “In Hiroshima, a city that suffered devastating damage from the atomic bomb and then achieved remarkable reconstruction, I shared a solemn moment

with the G7 leaders as we confronted the reality of the atomic bombing. I believe this was historic, from the perspective of demonstrating our determination to the world for a world without nuclear weapons.”⁵

Leaders of the invited countries (Australia, Brazil, Comoros [African Union Chair], Cook Islands [Pacific Islands Forum Chair], India [G20 Presidency], Indonesia [ASEAN Chair], South Korea and Vietnam), representatives of international organizations (United Nations (UN), International Monetary Fund (IMF), World Bank, World Trade Organization (WTO), Organization for Economic Co-operation and Development (OECD), and International Energy Agency (IEA)), and President Volodymyr Zelenskyy of Ukraine (participating as a guest in the Ukraine session during the latter half of the Summit) also visited the Peace Memorial Museum, engaged in dialogue with atomic bomb survivors, and laid flowers at the Cenotaph for the Atomic Bomb Victims. Additionally, Prime Minister Kishida and President Yoon Suk Yeol of South Korea laid flowers at the Cenotaph for the Victims of the Korean Atomic Bombing.

³ “Discussions on nuclear abolition ‘not enough’ at G7 summit in Hiroshima,” Japan Newspaper Publishers & Editors Association, June 23, 2023, https://www.pressnet.or.jp/publication/shimen/230613_15048.html. (in Japanese)

⁴ “G7 Leaders’ Visit to the Hiroshima Peace Memorial Museum (Guest Book Entries) G7 Leaders’ Visit to the Hiroshima Peace Memorial Museum (Guest Book Entries),” May 20, 2023, https://www.mofa.go.jp/ms/g7hs_s/page1e_000682.html.

⁵ “Press Conference on Impressions after the First Day of the G7 Hiroshima Summit.” (in Japanese)

Column 1**How to Lead Nuclear Disarmament: From the G7 Hiroshima Summit**

Angela Kane

The G7 Leaders' Hiroshima Vision on Nuclear Disarmament of May 2023 was a welcome positive focus on nuclear disarmament. Prime Minister Kishida took a bold step in bringing the leaders to one of the two only places in the world that suffered an atomic attack. He was clearly sending a strong message about the fateful consequences of raging geopolitical conflict.

The Vision was the first-ever stand-alone joint statement on this issue and reaffirmed the commitment to achieving a world without nuclear weapons. While adopted by the G7 Leaders, it should be noted that eight additional countries were invited to the Summit as well as representatives of seven international organizations. This diverse group of guests enhanced the meeting by offering opportunities for a discussion platform among nuclear-weapon possessors and non-nuclear weapon states. The absence of China and Russia, however, meant that

the liberal G7 democracies, dominated by the United States, are not reflecting the changed geopolitical realities of this world.

The four-page Vision statement recalled the November 2022 Bali declaration¹ of the G20 leaders - including Russia – that “the use of threat of nuclear weapons is inadmissible” and also reminded of the January 2022 Joint Statement of the Leaders of the Five Nuclear-Weapon States on Preventing Nuclear War and Avoiding Arms Races² which affirmed that “a nuclear war cannot be won and must never be fought.”

These two statements preceding the G7 meeting were important, but the Hiroshima Vision, according to G7 host Prime Minister Kishida made the Summit a meeting of “historical significance.”³ Yet while reaffirming the commitment to achieving a world without nuclear weapons, this came with some qualifications. The commitment was conditioned with the words “with undiminished security for all, achieved through a realistic, pragmatic and responsible approach.” The Vision further observed that “our security policies are based on the understanding that nuclear weapons, for as long as the exist, should serve defensive purposes, deter aggression

¹ “G20 Bali Leaders’ Declaration,” Bali, Indonesia, November 16, 2022, https://kemlu.go.id/portal/en/read/4171/siaran_pers/g20-bali-leaders-declaration-bali-indonesia-15-16-november-2022.

² “Joint Statement of the Leaders of the Five Nuclear-Weapon States on Preventing Nuclear War and Avoiding Arms Races,” January 3, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/01/03/p5-statement-on-preventing-nuclear-war-and-avoiding-arms-races/>.

³ “Historical Significance of the G7 Hiroshima Summit,” July 14, 2023, https://www.japan.go.jp/kizuna/2023/07/historical_significance_of_g7.html.

and prevent war and coercion.”

What then are the concrete measures that the Vision outlines? Let me list them:

- Enhance transparency with regard to nuclear weapons;
- Engage with non-nuclear-weapon States in a meaningful dialogue on transparency and limiting nuclear competition;
- Pre-notify of relevant strategic activities to reduce risk;
- Call on Russia and China to engage substantively in multilateral and bilateral fora in line with their NPT obligations, including Article VI;
- Immediate commencement of negotiations of a treaty banning the production of fissile material; and
- Bring the CTBT into force.

In addition to these concrete steps, the Vision affirmed the G7’s unwavering commitment to the goal of North Korea’s complete, verifiable, and irreversible abandonment of its nuclear weapons and urged Iran to cease nuclear escalations.

The steps proposed were tangible but not new; these were issues that have been under discussion for many years in international fora without making much progress. Still, it was an unprecedented

public stance for the three G7 nuclear-weapon possessors (France, United Kingdom and United States). Since then, six months have passed, and it is difficult to see any progress in the proposed actions.

When the United States Assistant Secretary, Bureau of International Security and Nonproliferation, spoke⁴ in December about the Hiroshima Vision, his remarks focused nearly exclusively on the threat Russia poses to peace and security and its reckless actions regarding Ukraine’s nuclear facilities. No mention of any steps taken by the United States to implement the measures outlined in the Vision. In fact, the Federation of American Scientists pointed out that the US, while advocating nuclear transparency abroad, stopped disclosure of warhead stockpile and dismantlement numbers. The article was accompanied by a table showing the trend for all nuclear possessors, which for the United States, Russia, China and the United Kingdom was “decreasing.”⁵

The United Kingdom, according to a Joint Statement⁶ with Japan of November 7, 2023, was equally non-committal as to implementing concrete actions that would enhance disarmament. The Statement

⁴ Assistant Secretary Eliot Kang’s Keynote Remarks at the Integrated Support Center for Nuclear Nonproliferation and Nuclear Security International Forum, Tokyo, Japan, 14 December 2023, <https://www.state.gov/assistant-secretary-eliot-kangs-keynote-remarks-at-the-integrated-support-center-for-nuclear-nonproliferation-and-nuclear-security-international-forum/>.

⁵ “While Advocating Nuclear Transparency Abroad, Biden Administration Limits It at Home”, Federation of American Scientists, July 31, 2023, <https://fas.org/publication/while-advocating-nuclear-transparency-abroad-biden-administration-limits-it-at-home/>.

⁶ “Japan-UK Foreign and Defence Ministerial Meeting 2023 – Joint Statement,” November 7, 2023, <https://mofa.go.jp/files/100577337.pdf>.

says:

Reaffirming the Vision set out in the Hiroshima Accord, the four Ministers focused on expansion and deepening efforts towards interoperable, resilient and cross-domain defence and security cooperation. This will be realized through more frequent and complex joint exercises and operational cooperation, driving cutting-edge defence equipment and technology cooperation.

It is difficult to find published material on the Hiroshima Vision other than the statement itself; is it because no country wants to admit to the weakness or lack of implementation of the proposals? Civil society organizations, like World Beyond War and the International Campaign to Abolish Nuclear Weapons were dismissive and called the Vision “a gross failure of global leadership.”⁷ Clearly, nuclear abolitionists were disappointed and while this may also have been true for the States Parties and supporters of the Treaty on the Prohibition of Nuclear Weapons (TPNW), they remained apparently silent.

No city has more nuclear symbolism than Hiroshima, but the Summit showed that normative ambitions cannot supersede security interests and geopolitical *realpolitik*. Only when the security interests of major powers are safeguarded, is it possible to take steps to disarm. Russia’s invasion of Ukraine, Putin’s veiled threats

to use nuclear weapons, together with China’s increase in the nuclear weapons arsenal, have made unilateral disarmament steps highly unlikely. Calling on China and Russia – who were not at the table – to engage substantively in multilateral and bilateral fora in line with their NPT obligations including Article VI, is disingenuous, considering that the P-3 have also shortcomings in this regard, as substantial commitments made at NPT Review Conferences (RevCon) have not been implemented.

For the hibakusha (and many others), the omission of any reference to the humanitarian impact of nuclear bombings must have been devastating. The humanitarian initiative has been a powerful rallying force for those opposing nuclear weapons and led to the negotiation of the TPNW in 2017 (it entered into force in 2021 and currently has 69 states parties and 93 signatories). The TPNW was clearly an expression of frustration, primarily by the Global South, with what they see as the stagnant pace of disarmament efforts overall.

Acknowledging the validity and power of the humanitarian impact of nuclear weapons would have strengthened the Hiroshima Vision, as would have an agreement to attend the TPNW Meetings of States Parties as observers.⁸

Still, the Hiroshima Vision’s action points,

⁷ “G7 Leaders Falter Over Nuclear Disarmament in Hiroshima,” *IDN-InDepthNews*, May 22, 2023, <https://indepthnews.net/g7-leaders-falter-over-nuclear-disarmament-in-hiroshima/>.

⁸ In 2022, 34 non-member States observed the first TPNW Meeting of the States Parties, including States under the nuclear umbrella. In 2023, 35 did. Of the G7, only Germany attended as an observer; Japan did not take part, but the mayors of Hiroshima and Nagasaki as well as atomic bomb survivors were in attendance.

particularly on transparency, meaningful dialogue with non-nuclear-weapon States, and pre-notification of strategic activities should be taken up. The G7 should report on the status of implementation and what they intend as the way forward. The Vision should not suffer the fate of the 2010 NPT RevCon outcome and the consensus agreement on the 64-point Action Plan which was adopted without a timeline and remained unimplemented in the disarmament section. It was later dismissed by the nuclear possessors as outdated and unrealistic in view of the changed security situation.

Three important meetings are on the multilateral agenda in 2024. The 50th anniversary of the G7 Summit will take place in Italy in June. It will be followed by the G20 Summit in Brazil in December. The United Nations' Summit for the Future will take place in September 2024. These high-level gatherings – preceded by working-level discussions and negotiations – offer crucial opportunities for making progress on the international agenda. It is my hope that the Hiroshima Vision will be given priority and visibility, and that the stated commitment by the G7 will be followed by concrete implementation. The hibakushas, the peoples of this world who want to see nuclear weapons abolished, deserve no less.

Former Under-Secretary-General and High Representative for Disarmament Affairs of the United Nations

Column 2

How to Advance Nuclear Disarmament from the G7 Hiroshima Summit

Nobushige Takamizawa

The G7 Summit in 2023, hosted by Japan, took place in Hiroshima, the first city to suffer atomic bombing. Many participants, including leaders from G7 and invited countries, and representatives of seven international organizations, offered prayers at the Hiroshima Peace Memorial Park, visited the Peace Memorial Museum, listened to survivors' stories, and deepened their understanding of the realities of the atomic bombing. Awareness of Hiroshima and Nagasaki has continued to grow not only domestically, but also internationally, leading to an increase in visitors to these museums. The significance of the visits facilitated by the summit is widely appreciated.

The “G7 Hiroshima Vision on Nuclear Disarmament” is seen as the first joint document by the G7 leaders with a specific focus on nuclear disarmament. Its content is diverse and includes comprehensive measures to be implemented, covering not only nuclear disarmament but also nuclear non-proliferation and the peaceful use of nuclear energy. It incorporates all five pillars of the “Hiroshima Action Plan” proposed by Prime Minister Kishida during the 10th NPT Review Conference

in 2022: (1) Continuing the record of non-use of nuclear weapons; (2) Enhancing transparency; (3) Maintaining the trend toward decreasing the global nuclear stockpile; (4) Securing nuclear non-proliferation and promoting the peaceful uses of nuclear energy; and (5) Encouraging visits to the atomic-bombed sites (Hiroshima and Nagasaki) by international leaders and others.

While the significance of holding the summit in Hiroshima, a bombed city is highly appreciated, evaluations of the “Hiroshima Vision” vary. Some question the practicality of G7 members advocating for “a world without nuclear weapons” amid the increasing importance of nuclear deterrence. Practitioners and experts, among others, appreciate the issuing of the “Hiroshima Vision” itself as an accomplishment, as it involved reconciling differing opinions among G7 countries. They believe the concrete measures outlined in the vision are reflecting the G7 leaders’ collective understanding of the current status of arms control and disarmament as a starting point. What is more important is to embody and implement these specific measures. I share this assessment, particularly given the height of confrontation right now.

However, the most common criticism is that this vision is not worthy of being associated with Hiroshima, an atomic-bombed city. This is directed at the statement in the Hiroshima Vision that asserts, “Our security policy, as long as nuclear weapons exist, is based on the understanding that they play a role for

defense purposes, deter aggression, and prevent war and intimidation.” The criticism is that clinging to nuclear deterrence theory even when it is considered flawed justifies the G7’s possession of nuclear weapons. The 2023 Peace Declaration by the Mayor of Hiroshima emphasized that world leaders need to confront the fact that nuclear deterrence theory is flawed, and underscores the importance of urging policymakers to break free from it. The political declaration from the second TPNW conference in December 2023 also acknowledges that justifying nuclear deterrence theory increases the risk of nuclear proliferation.

The existing perception gap is huge, and it appears that the divisive debate over whether we should be choosing deterrence or disarmament is intensifying. In reality, the “Hiroshima Vision” does not clearly articulate why nuclear deterrence remains effective as the fundamental security policy of G7 amid changes in the international security environment or how our understanding of the role of nuclear weapons differs from the past. Moreover, there are no stated goals for reducing both the role of nuclear weapons and dependence on them.

Nevertheless, the “Hiroshima Vision” does not just attest to the persistence of nuclear deterrence but includes the premise of “as long as it exists.” It emphasizes that the overall decline in global nuclear arsenals achieved since the end of the Cold War must continue and not be reversed.

Additionally, the United States' national security strategy refers to reducing the salience and the role of nuclear weapons in U.S. strategy as well as seeking to identify and assess the ability of non-nuclear capabilities to contribute to deterrence, as well as integrating these capabilities into operational plans, as appropriate. It further elaborates that “while taking steps to advance the goal of reducing reliance on nuclear weapons, more far-reaching opportunities to move in this direction will require enduring improvement in the security environment, a commitment to verifiable arms control among the major nuclear powers, further progress in developing non-nuclear capabilities, and an assessment of how nuclear-armed competitors and adversaries may react.”

The United States deeply recognizes various challenges to traditional nuclear deterrence in its strategic approach and is considering responses from both hard and soft perspectives. While the outcome of this consideration is uncertain, it is worth noting that the United States is exploring possibilities such as “reducing the role of nuclear weapons” and “decreasing dependence on nuclear weapons,” including the issue of “no first use (NFU) of nuclear weapons.” While not necessarily achieving the goal of “building security without relying on nuclear deterrence,” it is important to observe that the United States has committed to the overall reduction of nuclear weapons, as reflected in the Hiroshima Vision.

How do we ensure national security while avoiding overreliance on the U.S. extended

deterrence and ensuring security without increasing the number of nuclear weapons? How can we enhance “comprehensive security capabilities” by taking measures in various fields—both hard and soft aspects—not limited to the military? Discussions should address how to achieve peace and stability while reducing dependence on nuclear weapons under different environmental and temporal conditions. Broader discussions need to be undertaken among governments on this important question.

“The Hiroshima Vision” calls for nuclear-weapon states to “engage with non-nuclear-weapon states in a meaningful dialogue on transparency regarding their nuclear arsenals and limiting nuclear competition, including through an open explanation of national reports coupled with an interactive discussion with non-nuclear-weapon states and civil society participants at future NPT-related meetings.” The explicit mention of civil society participants is crucial and serves as an important foundation. The 2023 UNGA resolution on nuclear disarmament proposed by Japan also endorses the role of civil society in this context. This will facilitate dialogues among stakeholders, including all five nuclear-armed nations, on effectiveness or collapse of nuclear deterrence in a professional manner with civility in discourse during disarmament processes such as the NPT.

To capitalize on such opportunities and set in stone the trend of “mainstreaming” nuclear disarmament, both the government and civil society must

sincerely and earnestly address these “challenging issues” both from their respective positions and collectively. From this perspective, it is important to deepen discussions in international forums, such as the “International Group of Eminent Persons for a World without Nuclear Weapons,” the “Japan Chair for a world without nuclear weapons,” and a global network of young people for nuclear abolition, making use of the Youth Leader Fund for a World Without Nuclear Weapons. During these discussions, information should be made as clear and understandable as possible—not only for think tanks and experts but also for civil society as a whole. Prime Minister Kishida’s words, “There is nothing stronger than national understanding and support in diplomacy and security,” are increasingly applicable to the relationship between deterrence and disarmament.

Visiting Professor at the University of Tokyo; Former Ambassador of Japan to the Conference on Disarmament in Geneva

Column 3

Evaluation of the Hiroshima Summit and Its Significance

Kengo Oishi

Evaluation and Significance of the G7 Hiroshima Summit

Amidst the increasingly distressing international environment surrounding nuclear weapons, including concerns about the growing risk of their use, it is profoundly significant that the G7 Leaders were able to gather at the Hiroshima Summit held last year in the A-bombed city of Hiroshima. There, the G7 leaders of the participating countries were able to observe the tangible impact of the atomic bombings and to release the “G7 Leaders Hiroshima Vision for Nuclear Disarmament,” a commitment to realize a world without nuclear weapons. We believe this document is of tremendous significance, and once again, we would like to express our utmost respect for the efforts of all those involved.

All of the messages written by the heads of state who visited the museum directed their thoughts to the Hibakusha and pledged to strive for a “world without nuclear weapons.” We are confident that this visit to the A-bombed city deeply engraved the horrific nature of atomic bombing and the inhumanity of nuclear weapons in the hearts of these leaders.

However, while the Hiroshima Vision reaffirms the January 2022 joint statement by the five nuclear-weapon states that “nuclear war must never be waged,” it also

clearly states that “nuclear weapons serve a defensive purpose,” thereby affirming nuclear deterrence.

Although this statement is a reflection of the current grave security environment in the international community, the other A-bombed city of Nagasaki has strongly urged that all countries, not just the G7 nations, take concrete actions toward the complete abolition of nuclear weapons based on the Hiroshima Vision.

Role as an A-bombed Prefecture (The Legacy of Atomic Bombing)

Japan is the only country to have ever experienced the horrors of atomic bombing and the aftermath of exposure. As a result, its people are united in the recognition that all nuclear weapons must be eliminated, due to their inhumane nature.

However, the time will surely come in the not-too-distant future when the Hibakusha who have been calling for the abolition of nuclear weapons will no longer be with us. Therefore, we believe that it is an important mission of the A-bombed cities to pass on the reality of the atomic bombings to the younger generation and to continue conveying it to the world.

This year, a study tour to Hiroshima and Nagasaki is planned by future leaders of both nuclear-weapon and non-nuclear-weapon states as part of the training program of the Youth Leader Fund for a World Without Nuclear Weapons established by the UN Office for Disarmament Affairs (UNODA).

This is an excellent opportunity for many young people around the world, who will

play a leadership role in the next generation, to experience the reality of the atomic bombings and deepen their understanding of the inhumanity of nuclear weapons.

Through this project, we hope to form a global network of young leaders working towards nuclear disarmament and to offer a platform for a wide variety of discussions on nuclear disarmament in the future.

The Efforts and Future Aspirations of Nagasaki Prefecture

As the movement toward nuclear disarmament stalls, we believe that it will become increasingly important to build momentum for the abolition of nuclear weapons in civil society.

The year before last, in cooperation with Hiroshima Prefecture, Nagasaki Prefecture began working to include the elimination of nuclear weapons as one of the goals of the next SDGs. Just as with climate change and similar issues, the goal is to have everyone think about nuclear weapons and their impact on the future existence of humankind, and to perceive this issue as a matter of personal concern.

We look forward to the power of civil society to pursue the abolition of nuclear weapons, creating a great ripple effect that will move nations.

As the governor of a prefecture once subjected to atomic bombing, I will continue to work toward the expeditious abolition of nuclear weapons and the realization of lasting world peace, in close cooperation with Hiroshima Prefecture and other stakeholder organizations.

Governor of Nagasaki Prefecture

Column 4**Looking Ahead from the G7 Hiroshima Summit****Mihoko Kumamoto**

The views or opinions expressed in this column are those of the author and do not represent the views of United Nations Institute for Training and Research (UNITAR).

Hiroshima is well known throughout the world as the site of the atomic bombing and as a center of peace. My work takes me to many places in Asia, the Middle East, Africa, Europe, and South America, and no matter where I go, everyone knows Hiroshima. Even in South Sudan – the newest of the 193 UN member states, joining in 2011 – all the government officials that I met with in Juba, the capital, were well informed about Hiroshima.

In 2023, Hiroshima attracted more international attention than ever before as the host city of the G7 Summit. The idea of gathering world leaders in Hiroshima had been laid out before. Notably, in 2022, Prime Minister Kishida attended the 10th Review Conference of the Nuclear Non-Proliferation Treaty (NPT) at the UN Headquarters in New York – the first time a Japanese prime minister ever attended an NPT Review Conference. There, he proposed the Hiroshima Action Plan, one of whose five pillars is to “promote the accurate understanding on the realities of nuclear weapons use through encouraging visits to Hiroshima and Nagasaki by

international leaders and others.”

Experiencing the atomic bombing sites is a powerful element in promoting nuclear disarmament and non-proliferation, and the visit by the G7 leaders, I believe, was a major step forward.

But what next? How do we use this momentum and actually create a world without nuclear weapons? The current global situation is discouraging as far as nuclear disarmament and non-proliferation are concerned. The conflicts in Ukraine and Gaza have fostered a tendency towards arms proliferation rather than disarmament. To resist such headwinds, we can only continue to take one step at a time. Governments, the private sector and civil society actors around the world are discussing and taking actions. At the same time, we also need to inject fresh, new perspectives.

We must engage not only the experts who have long been involved in the nuclear disarmament and nonproliferation field but also a wider range of people – so more individuals understand and support nuclear disarmament and non-proliferation. Already, we see more women and youth becoming involved and generating highly positive energy. We must also collaborate with experts in other fields to discover new perspectives. Global-scale issues are deeply interconnected. By tapping into the deep knowledge of many specializations – peace, environment, development, humanitarian aid, health, business, and information and communication technology (ICT) – we may find new paths to disarmament and

nonproliferation.

In September 2024, the Summit of the Future will be held at UN Headquarters in New York. The Summit is a global high-profile, high-level meeting to review progress toward the Sustainable Development Goals (SDGs), consider governance for a better future, and accelerate progress toward the SDGs and their 2030 target. The milestone event will be an opportunity to see how peace and disarmament will be discussed, how they will be considered in connection to other issues such as the eradication of poverty, women's empowerment, and climate change and the environment, and how the course for the future will be charted.

The world's leaders gathered in Hiroshima for the G7 Hiroshima Summit. From there, it is up to all of us to continue making progress toward nuclear disarmament and nonproliferation, step by step.

Director, Division for Prosperity, United Nations Institute for Training and Research (UNITAR)

Column 5

How to Lead Nuclear Disarmament from the G7 Hiroshima Summit

Sumiko Hatakeyama

Expectations were high for the G7 Summit to be held in Hiroshima. This was partly because Prime Minister Kishida Fumio, who considers nuclear disarmament to be his life's work, had shown strong commitment to holding the summit in Hiroshima, where the atomic bomb was dropped. Many atomic-bomb survivors (hibakusha), who have long called for nuclear abolition, saw the summit as a uniquely valuable opportunity to move forward with nuclear disarmament, which has stagnated over the decades. I was involved in developing policy recommendations via the Civil 7 (C7) process, hoping to reflect hibakusha's strong wish for nuclear disarmament in the summit's communiqué. I was in charge of the nuclear disarmament working group within C7, and after half a year of discussions with 125 domestic and international organizations, we compiled a set of policy recommendations. Our recommendations first of all called for the G7 leaders to hear directly from hibakusha and to acknowledge the harm nuclear weapons cause to people and the environment. The recommendations then called for "An unequivocal condemnation of any and all threats to use nuclear weapons," "A concrete plan for negotiations for the elimination of nuclear

weapons,” “A cooperative stance toward the TPNW and a commitment to provide assistance to victims and environmental remediation,” “Support negotiations on a follow-on to the New START,” “Steps to reduce nuclear risks,” and “Importance of disarmament education for youth” to be included in the final communiqué.¹

At the G7 Summit in Hiroshima, the G7 leaders visited the Peace Memorial Park and the Peace Memorial Museum and met with a hibakusha. It may not have been enough, but our appeal that they witness the reality of the atomic bombings was partly achieved. On the other hand, our other recommendations were scarcely reflected in the outcome document entitled “G7 Leaders’ Hiroshima Vision on Nuclear Disarmament.” While the document articulates, “We reaffirm our commitment to achieving a world without nuclear weapons,” it is accompanied by the phrase “With undiminished security for all,” and what followed was a retreat of what had been stated at the NPT Review Conferences and other meetings. Conversely, the statement “The use or threat of use of nuclear weapons is inadmissible” from the G20 Bali Leaders’ Declaration in November 2022 was changed to “Threats by Russia of nuclear weapon use, let alone any use of nuclear weapons by Russia, are inadmissible.” I see this as a step backward in that it trivialized the nuclear issue into a Russian problem. Furthermore, I find it disappointing that not only were key

phrases such as “Abolition of nuclear weapons” and “Treaty on the Prohibition of Nuclear Weapons” absent from the text, but the text included the phrase “Nuclear weapons, for as long as they exist, should serve defensive purposes, deter aggression, and prevent war and coercion,” which could be seen as an affirmation of nuclear deterrence.

The year 2023 was not only the year of Russia’s continued full-scale military invasion to Ukraine but also the year of Israel’s intensified attack on Gaza. As two nuclear powers wield the threat of nuclear weapons while depriving people of life and dignity, we ought to consider anew whether nuclear deterrence really works as a security policy. To this end, it is imperative to turn our attention back to the reality of the humanitarian and environmental consequences of nuclear weapons as well as of war more generally, as experienced by citizens around the world. In light of these facts, is nuclear deterrence still effective? We must accelerate our efforts to bring our voices to the Japanese government and world leaders. We are the ones who will move politicians toward a world without nuclear weapons.

Executive Committee, Peace Boat

¹ “Civil 7 Communiqué 2023: Design and Implement Sustainable Policies for Peace, Prosperity, and Transparency,” April 2023, https://civil7.org/wpC7/wp-content/uploads/2023/04/C7_communique2023_0412.pdf.

Column 6**The G7 Hiroshima Summit from the Perspective of Young People Who Will Lead the Next Generation**

Issa Souther

I took part in the Hiroshima G7 Summit Junior Conference as a representative of Japanese youth. Together with youth from the G7 countries, we discussed the challenges facing the world, including environmental, political and social issues, and produced an outcome document that summarizes our thoughts and ideas. It included our desire for Japan to participate in the Meetings of the States Parties to the Treaty on the Prohibition of Nuclear Weapons (TPNW), even if as an observer; and our views on the role that youth should play in addressing the challenges and the actions that the government should take. On April 5, 2023, I handed the outcome document to Prime Minister Fumio Kishida. I felt some sense of accomplishment, hoping that our work would be put to good use at the subsequent G7 Summit.

A month later, the G7 Summit was convened. I felt disappointed and even betrayed. Most of the issues we raised in the outcome document had not even been addressed. I also believed that no progress had been made on the problems that are happening in society today and that need immediate solutions. In addition, the “G7 Leaders’ Hiroshima Vision on Nuclear

Disarmament,” adopted at the Summit, contained positive statements about nuclear weapons and nuclear deterrence. Many Hibakusha were also discouraged. Furthermore, although the G7 Summit had been positioned as a meeting to promote peace, it did not discuss any ceasefire in the ongoing Russian–Ukrainian war. Instead, it was used as a forum for the provision of arms to the Ukrainian military. Did the historic G7 Summit held in Hiroshima, the city of the atomic bombing, turn into just an anti-Russia/China meeting? Do they really want peace, or have they just exacerbated the existing divisions of the world? The pledge and thought of “No More Hiroshima,” as well as wishes of the Hibakusha, had been completely ignored. I had thought that when world leaders visited Hiroshima and witnessed its tragic history, they would understand how inhumane nuclear weapons are, and would realize that no one should possess the power to inflict the kind of destruction experienced in Hiroshima and Nagasaki. In retrospect, perhaps it was naive of me to hold such hopes.

The G7 Summit did not yield the changes at the governmental level that I had anticipated. However, one thing has become clearer: the change depends on us, the people, and our communities. Despite the disappointing outcomes from the G7 Summit, I was able to connect with my peers at the Junior Conference. Meeting with like-minded youth from different countries has been a great inspiration to me. I used to wonder what would happen if I acted alone, but now I

feel like I am part of a community of people who share a simple goal: to build a brighter future. I have become convinced that one person cannot bring about great change alone, but that community is essential—a community of people who share ideas, take action, and create small changes. When looking at major changes in the world, many of them are based on community movements. I believe that the issue of nuclear abolition will have a bright future if we continue to work together with our friends and press our claims for it.

Senior year, Takeda High School

Chapter 1

Nuclear Disarmament¹

(1) Status of Nuclear Forces (estimates)

As of December 2023, 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 having them are India, Pakistan and North Korea. 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 to possess them.² (There is no conclusive evidence that Israel has conducted a nuclear explosive test.) In 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 in

Table 1-1: Number of nuclear weapons—2012-2023

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
China	250	250	260	260	270	280	290	320	350	350	410
France	300	300	300	300	300	300	300	290	290	290	290
Russia	8,500	8,000	7,500	7,290	7,000	6,850	6,500	6,375	6,255	5,977	5,889
U.K.	225	225	215	215	215	215	200	195-215	225	225	225
U.S.	7,700	7,300	7,260	7,000	6,800	6,450	6,185	5,800	5,550	5,428	5,244
India	90-110	90-110	90-110	100-120	120-130	130-140	130-140	150	156	160	164
Pakistan	100-120	100-120	100-120	100-130	130-140	140-150	150-160	160	165	165	170
Israel	80	80	80	80	80	80	80-90	90	90	90	90
N. Korea^(a)	6-8	6-8	6-8	10	10-20	10-20	20-30	30-40	40-50	20	30
Total^(b)	17,270	16,350	15,850	15,395	14,935	14,465	13,865	13,400	13,080	12,705	12,512

(a) Respective estimates from 2012-2021 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 2012-2021 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).

¹ This chapter is authored by Hirofumi Tosaki.

² In an interview, Israeli far-right cabinet minister Amichai Eliyahu, Minister of Heritage, said that “that is one way” regarding the possibility of a nuclear attack on the Gaza Strip. In response, Prime Minister Benjamin Netanyahu issued a statement saying, “Eliyahu’s words are detached from reality.” “Netanyahu Rushes for Damage Control, Suspends Minister for Gaza Nuclear Bombing Remark,” *Wion*, November 5, 2023, <https://www.wionews.com/world/netanyahu-rushes-for-damage-control-bans-minister-over-nuclear-bombing-remark-on-gaza-655362>.

Table 1-2: Status of nuclear forces (estimates, as of January 2023)

	Total nuclear stockpile	Breakdown			Nuclear warheads	Delivery vehicles	
U.S.	5,244	Retired / Awaiting dismantlement					
		1,536					
		Operational	Non-deployed				
		3,708	1,938				
		Deployed	Non-strategic				
		1,770	200				
			Strategic	ICBM	800	400	
			3,508	SLBM	1,920	280	
				Strategic bomber	788	66	
Russia	5,889	Retired / Awaiting dismantlement					
		1,400					
		Operational	Non-deployed				
		4,489	2,815				
		Deployed	Non-strategic				
		1,674	1,816				
			Strategic	ICBM	1,197	321	
			2,673	SLBM	896	176	
				Strategic bomber	580	70	
U.K.	225	Deployed		SLBM	120	64	
		120					
France	290	Deployed		SLBM	240	64	
		280		Attack aircraft (including carrier based aircraft)	50	50	
China	410	Land-based ballistic missile				318	382
		SLBM				72	72
		Attack aircraft				20	20
		Other stockpile					
India	164	Land-based missile				80	80
		Attack aircraft				48	84
		SLBM				16	14
		Other stockpile				20	
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	30						
World	12,512	(Deployed)					
		(3,844)					

ICBM: Inter-Continental Ballistic Missile SLBM: Submarine Launched Ballistic Missile

Source: SIPRI, *SIPRI Yearbook 2023*, chapter 10.

the world, which grew to approximately 70,000 at the peak of the Cold War era, has been reduced significantly since the late 1980s. According to the estimates by

the Stockholm International Peace Research Institute (SIPRI), however, 12,512 nuclear weapons (including those of awaiting dismantlement) still exist on

the Earth as of January 2023, with the U.S. and Russian nuclear stockpiles together constituting approximately 90% of the total. This amount includes retired warheads; if these are excluded, the number of nuclear warheads in arsenals in the world has increased from 9,440 in the previous year to 9,576. In addition, the number of nuclear warheads deployed with operational forces has also increased from 3,732 in the previous year to 3,844.³ Furthermore, all of the nuclear-armed states have been actively pursuing the modernization of their nuclear forces, and emphasizing the role of nuclear weapons in their security strategies.

Among nuclear-armed states, France and the United Kingdom have disclosed the maximum number of their nuclear stockpiles. In 2015, France declared it possesses not more than 300 nuclear weapons, and reported that “[i]t has no undeployed weapons. All of its weapons are deployed and operational.”⁴ Meanwhile, the United Kingdom announced in the *Integrated Review of Security, Defence, Development and Foreign Policy* published in March 2021 that it would increase the overall nuclear warheads stockpile ceiling from no more than 180 to no more than 260.⁵ Since these statements, neither country has provided additional details about their nuclear weapons stockpiles.

In recent years, China has accelerated the expansion of its nuclear arsenal.

According to SIPRI’s estimates in 2023, there has been an increase of 60 warheads compared to the previous year. It is also estimated that India and Pakistan have each added about 10 warheads annually over the past several years. In addition, North Korea has been bolstering its nuclear capability both qualitatively and quantitatively.

(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

³ Stockholm International Peace Research Institute, *SIPRI Yearbook 2023: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2023), chapter 10.

⁴ NPT/CONF.2015/10, March 12, 2015.

⁵ United Kingdom, *Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy*, March 2021, p. 76.

or the vision of a world without nuclear weapons. Their commitment to nuclear disarmament has been reiterated in various fora, including the NPT review process and the United Nations General Assembly (UNGA). However, such “commitment” does not necessarily mean that 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 in 2023, the nuclear armed states have reemphasized the role of nuclear weapons in their national security, and there have been few proactive efforts toward nuclear disarmament.

Nuclear-armed states

Prior to the Russia’s invasion in Ukraine commenced in February 2022, the five NWS had engaged in a degree of cooperative efforts on nuclear disarmament issues in the context of the NPT, such as holding regular meetings and issuing joint statements at the NPT RevCons and their Preparatory Committees (PrepComs). Although no NWS meeting had been held since the Russia’s invasion, a NWS working group was reportedly convened in Dubai in early February 2023 to discuss nuclear

nonproliferation issues.⁶ In addition, on June 13-14, as part of “a routine, continuing dialogue” (according to John Kirby, Coordinator for Strategic Communications),⁷ a working-level expert meeting of the five NWS was held in Cairo to discuss strategic risks and risk reduction measures. The United States as a chair country stated, “[Five NWS] welcomed the professional approach of the delegations and noted the significance of the substantive and informative expert-level discussions over the course of the last year. They also affirmed the need to continue these challenging but important discussions.”⁸ Meanwhile, as at the 10th NPT RevCon in 2022, the five NWS did not issue a joint statement at the First Preparatory Committee for the 11th NPT RevCon (hereafter “NPT PrepCom) held in July-August 2023, again demonstrating the seriousness of the rift among the NWS.

Each NWS also individually expressed its commitment and approach to nuclear disarmament at the NPT PrepCom and other forums in 2023.

China stated, “The international community should practice true multilateralism, uphold a vision of common, comprehensive, cooperative and sustainable security, resolutely resist the

⁶ “Five Nuclear Powers Held Talks in Dubai in February: Kommersant,” *Bloomberg*, February 8, 2023, <https://www.bloomberg.com/news/articles/2023-02-08/five-nuclear-powers-held-talks-in-dubai-in-february-kommersant>.

⁷ “US Convenes Nuclear Weapons Meeting with China, France, Russia, UK,” *Reuters*, June 24, 2023, <https://www.reuters.com/world/us-convenes-nuclear-meeting-with-china-france-russia-uk-state-dept-2023-06-23/>.

⁸ U.S. Department of State, “Nuclear Weapon States Working-Level Experts Meeting on Strategic Risk Reduction,” August 4, 2023, <https://www.state.gov/nuclear-weapon-states-working-level-experts-meeting-on-strategic-risk-reduction/>.

cold war mentality and bloc confrontation, uphold the object and purpose of the [NPT], strengthen the universality, authority and effectiveness of the NPT, and jointly promote the international nuclear disarmament process.”⁹ China proposed to: maintain the international consensus on nuclear disarmament; strive to reduce strategic risks; effectively reduce the role of nuclear weapons in national and collective security policies; and maintain and strengthen the international nuclear disarmament and nuclear non-proliferation regime with NPT as its cornerstone.

France explained that it “has taken considerable unilateral disarmament measures, as part of a gradual and credible approach based on the strategic context, in line with its commitments under the NPT.”¹⁰ France also emphasized that the elimination of nuclear weapons requires a step-by-step approach to nuclear disarmament based on a strategic context, which is the only credible approach to a world without nuclear weapons.¹¹

Russia stated that it remained “unwaveringly committed to seeking ways towards a world free of nuclear threat, in full compliance with Article VI of the NPT in its entirety.” It also argued that “[i]n the current circumstances, the

validity of the argument we have consistently advocated about the counter-productivity of those approaches to nuclear disarmament that imply an immediate and complete ban on nuclear weapons or the establishment of both tight and artificial deadlines for reaching ‘nuclear zero’ becomes doubly evident. It is important to understand that a sustainable and secure nuclear-weapon-free world is not equal to the world in its current deplorable state minus nuclear weapons. Radicalism contradicts the NPT logic and will not lead to the ultimate goal of enhanced security for all.”¹² Moreover, Russia insisted that “further progress on the nuclear disarmament track will require the West to abandon its destructive policy of undermining Russia’s security.”¹³

The United Kingdom stated, “[It] remains committed to our Article VI obligation to pursue negotiations in good faith toward disarmament. We must lay the groundwork for future disarmament while recognising the challenges of the deteriorating security environment. The UK will continue our efforts on practical initiatives, based on the fundamental principles of irreversibility, verification and transparency on which we have all agreed, to help bring the prospect of a world without nuclear weapons closer.”¹⁴

The United States stated, “[It] stands by

⁹ “Statement of China,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

¹⁰ “Statement of France,” General Debate, First PrepCom for the 11th NPT RevCon, August 1, 2023.

¹¹ “Statement of France,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

¹² “Statement of Russia,” General Debate, First PrepCom for the 11th NPT RevCon, August 1, 2023.

¹³ “Statement of Russia,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

¹⁴ “Statement of the United Kingdom,” General Debate, First PrepCom for the 11th NPT RevCon, July

our obligation under the NPT to pursue negotiations in good faith on effective measures on nuclear disarmament—in bilateral treaties, through multilateral fora, and actions to advance NPT disarmament goals. It is a commitment based on our national security interests and our understanding of the humanitarian impacts of the use of nuclear weapons.” In its statement, the United States also outlined nuclear disarmament measures which it is addressing or focusing on.¹⁵

While no progress was reported in 2023 concerning the Creating an Environment for Nuclear Disarmament (CEND)—which the United States launched in 2019, and in which 43 countries, including NWS, NNWS, non-NPT states, NAM countries, U.S. allies, and proponent countries of the Treaty on the Prevention of Nuclear Weapons (TPNW), have participated—, the three subgroups continue to work on the following issues with the support of nongovernmental expert facilitators:

- Reducing perceived incentives for states to retain, acquire, or increase their holdings of nuclear weapons and increasing incentives to reduce and eliminate nuclear weapons (co-chaired by the Netherlands and Morocco);
- Mechanisms to bolster nonproliferation efforts and build confidence in and

further advance nuclear disarmament (co-chaired by South Korea and the United States); and

- Interim measures to reduce the risks associated with nuclear weapons (co-chaired by Finland and Germany).

Nuclear-armed states outside the NPT have stated their commitment to nuclear disarmament and their own approaches at the UN General Assembly, its First Committee, and other fora. India stated, “We remain firmly committed to global nuclear disarmament, which must be universal, non-discriminatory and verifiable. We are convinced that this goal can be achieved in a time-bound manner by a step-by-step process underwritten by a universal commitment and an agreed multilateral framework. This framework must be global and non-discriminatory.”¹⁶ Pakistan also made a similar statement, arguing that “[it] remains committed to the goal of a nuclear weapons free world that is achieved in a universal, verifiable and non-discriminatory manner.”¹⁷ On the other hand, Israel did not mention in its speeches to the UNGA First Committee any policies regarding a world without nuclear weapons or the abolition of nuclear weapons.

North Korea reiterated its criticism of the United States and its allies and stated, “Building a world free of war and nuclear

31, 2023.

¹⁵ “Statement of the United States,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

¹⁶ “Statement by India,” Thematic Debate on Nuclear Weapons, First Committee, UNGA, October 16, 2023.

¹⁷ “Statement by Pakistan,” Thematic Debate on Nuclear Weapons, First Committee, UNGA, October 16, 2023.

weapons has been the task of utmost importance for humanity since the founding of the UN. However, today, international nuclear disarmament regime is on the brink of collapse and international peace and security are faced with unprecedented challenges owing to the persistent arms build-up and nuclear criminal acts perpetrated by the U.S. in pursuance of excessive ambition for hegemony and military supremacy.”¹⁸

NNWS

Regarding approaches to nuclear disarmament, while the five NWS have argued for a step-by-step approach, some NNWS allied with the United States have proposed a “progressive approach” based on building-block principles, and the Non-Aligned Movement (NAM) countries have called for launching negotiations on a phased program for the complete elimination of nuclear weapons within a specified time frame.

At the NPT PrepCom in 2023, the New Agenda Coalition (NAC: Brazil, Egypt, Ireland, Mexico, New Zealand and South Africa) stated, “Our approach is based not on frustration, but firmly rooted in the legal obligations enshrined in the NPT, and on the clear evidence of urgency regarding the implementation of those obligations. In our 25th year as a group, we remain determined that the nuclear

disarmament commitments, voluntarily entered into by all States Parties, can be fully implemented without delay.”¹⁹

The NAM countries “reaffirm[ed] the urgent necessity of negotiating and bringing to a conclusion a phased programme for the complete elimination of nuclear weapons with a specified time frame.” The group also “reiterate[d] its call to the Conference on Disarmament [(CD)] to immediately establish, as the highest priority, a subsidiary body to negotiate and conclude a comprehensive convention on nuclear weapons to prohibit their possession, development, production, acquisition, testing, stockpiling, transfer and use or threat of use and to provide for their destruction.”²⁰

Among the TPNW-promoting countries, Austria stated:

We cannot afford to wait for some utopic day to make progress on nuclear disarmament. Nuclear armed states have tried to focus all attention on security perspectives of nuclear possessors. But undiminished and increased security concerns the security of all of us. And all our common security is being critically and potentially catastrophically diminished by nuclear weapons. The humanitarian consequences of nuclear weapons do not know borders. In fact, their effects already extend globally in even a limited nuclear conflict, thereby

¹⁸ “Statement of North Korea,” Thematic Debate on Nuclear Weapons, First Committee, UNGA, October 16, 2023.

¹⁹ “Statement by Mexico on behalf of the NAC,” General Debate, First PrepCom for the 11th NPT RevCon, July 31, 2023.

²⁰ NPT/CONF.2026/PC.I/WP.8, June 14, 2023. Meanwhile, in its working paper on nuclear disarmament, Iran repeated its criticism of the United States and the United Kingdom, but made no mention of Chinese and Russian attitudes regarding nuclear disarmament. NPT/CONF.2026/PC.I/WP.20, July 6, 2023.

diminishing all of our security. The principle of undiminished security for all must therefore be seen correctly as a call for acceleration of disarmament efforts, rather than as a conditionality or a means to delay or avoid the implementation of [Article VI].

Moreover, the mantra of needing nuclear weapons for security is a powerful driver of proliferation and in clear contradiction to the goals of the NPT. We urge all of those who point to the current security environment as an argument to re-emphasize the alleged security benefit of nuclear weapons to consider that they are providing a driver for the proliferation of these weapons.²¹

Brazil also said, “We are not naïve to the point of denying that the security environment has a bearing on disarmament. But disarmament – and expressions of willingness to engage towards that goal – shapes and alters said environment by breeding confidence and good will.”²²

Among the NNWS allied with the United States, Japan stated, “‘G7 Leaders’ Hiroshima Vision on Nuclear Disarmament’ issued at the G7 Hiroshima Summit this May has provided a solid platform to work towards a world without nuclear weapons. Japan will continue to advance realistic and practical efforts in

line with the ‘Hiroshima Action Plan.’”²³

Germany said that “the Stockholm Initiative’s Stepping Stones remain important suggestions to fulfil disarmament obligations and related commitments.”²⁴ South Korea also argued, “[T]he reality is that nuclear disarmament cannot be achieved overnight, as we learned from more than half a century of experience. In this regard, a gradual and long-term approach is realistic and essential. We must continue various efforts to make meaningful progress, however small, and bridge the gap between nuclear-weapon states and non-nuclear-weapon states.”²⁵

At the NPT PrepCom, many NNWS were highly critical of the current state of nuclear disarmament. For instance, the NAC pointed out that nuclear disarmament commitments remain unmet and unimplemented even after the 10th NPT RevCon, and that “disarmament-related multilateral fora are increasingly becoming politicised.” The NAC also argued that “[t]his new Review Cycle must break the negative pattern.”²⁶ South Africa stated, “There continues to be an implementation gap between the disarmament and non-proliferation obligations, which destroys confidence in the grand bargain between nuclear-weapon States and non-nuclear-weapon

²¹ “Statement by Austria,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

²² “Statement by Brazil,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

²³ “Statement by Japan,” General Debate, First PrepCom for the 11th NPT RevCon, July 31, 2023.

²⁴ “Statement by Germany,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

²⁵ “Statement by South Korea,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

²⁶ “Statement by Mexico on behalf of the NAC,” First PrepCom for the 11th NPT RevCon, July 31, 2023.

States. The 1995, 2000 and 2010 commitments [agreed at the NPT RevCons], many of which continue to be unfulfilled, remain valid until fully implemented. Attempts to reinterpret, backtrack or even abandon these commitments continue to erode trust and undermine the NPT process, casting doubt on the value of new commitments.”²⁷

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

In 2023, the UNGA again adopted the following three resolutions: “Steps to building a common roadmap towards a world without nuclear weapons”²⁸ proposed by Japan and others; “Towards a nuclear-weapon-free world: accelerating the implementation of nuclear disarmament commitments”²⁹ proposed by the New Agenda Coalition (NAC); and “Nuclear disarmament”³⁰ proposed by NAM members. The voting behavior of the countries surveyed in this project on these three documents is presented below.

- “Steps to building a common roadmap towards a world without nuclear weapons”—148 in favor (Australia, Canada, Germany, Japan, Kazakhstan, South Korea, Mexico, Netherlands, Norway, Poland, Sweden, Switzerland, Turkey, United Kingdom, United States and others); 7 against (China, Iran,

North Korea, Nicaragua, Russia, South Africa, Syria and Syria); 29 abstentions (Austria, Brazil, Egypt, France, India, Indonesia, Israel, New Zealand, Pakistan, Saudi Arabia and others)

- “Towards a nuclear-weapon-free world: accelerating the implementation of nuclear disarmament commitments”—133 in favor (Austria, Brazil, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, Saudi Arabia, South Africa, Switzerland, Syria and others); 26 against (France, India, Israel, North Korea, Poland, Russia, Turkey, United Kingdom, United States and others); 25 abstentions (Australia, Canada, China, Germany, Japan, South Korea, Netherlands, Norway, Pakistan, Sweden and others)
- “Nuclear disarmament”—121 in favor (Brazil, China, Egypt, Indonesia, Iran, Kazakhstan, Mexico, Saudi Arabia, Syria and others); 44 against (Australia, Canada, France, Germany, Israel, South Korea, Netherlands, Norway, Poland, Russia, Sweden, Switzerland, Turkey, United Kingdom, United States and others); 17 abstentions (Austria, India, Japan, North Korea, New Zealand, Pakistan, South Africa and others)

Regarding the UNGA resolution on nuclear disarmament proposed by Japan, Foreign Minister Yoko Kamikawa stated, “Cognizant of the need to present a way

²⁷ “Statement by South Africa,” First PrepCom for the 11th NPT RevCon, July 31, 2023.

²⁸ A/RES/78/40, December 4, 2023.

²⁹ A/RES/78/42, December 4, 2023.

³⁰ A/RES/78/53, December 4, 2023.

forward for realistic and practical measures to achieve a world without nuclear weapons, the Government of Japan calls on, inter alia, the implementation of concrete measures related to FMCT ...and enhancement of transparency, taking into account the deliberations at the G7 Hiroshima Summit and the NPT Preparatory Committee held this year. The resolution aims to embody and promote the ‘Hiroshima Action Plan’ proposed by Prime Minister KISHIDA Fumio at the 10th NPT Review Conference held in August 2022.”³¹ And the resolution proposed a series of measures, as follows:

- Urging all States, especially the NWS, to make every effort to ensure that nuclear weapons are never used again, and to refrain from any inflammatory rhetoric concerning the use of nuclear weapons;
- Calling upon the NWS not to use or threaten to use nuclear weapons against NNWS (negative security assurances: NSA);
- Calling upon all States, in particular the NWS, to apply the principles of irreversibility, verifiability and transparency in relation to the implementation of their obligations under the NPT, and to pursue enhanced transparency measures by providing information regarding nuclear weapons stockpiles and arsenals, including status of production of fissile material for use in nuclear weapons or other nuclear explosive devices;
- Emphasizing that maintaining the overall decreasing trend of the global stockpile of nuclear weapons is vital in getting closer to a world free of nuclear weapons, and urging all States, especially the NWS, to undertake further efforts to reduce and ultimately eliminate all types of nuclear weapons;
- Calling upon the CD to immediately commence and bring to an early conclusion of negotiations on an FMCT, and upon the NWS to maintain or declare voluntary moratoriums on the production of fissile material for nuclear weapons and other nuclear explosive devices;
- Emphasizing that the transparency of the management of civil plutonium must be maintained;
- Urging all States that have yet to sign and/or ratify the Comprehensive Nuclear–Test–Ban Treaty (CTBT) to do so in all expediency;
- Calling upon all States, in particular the NWS, to commit to further identifying, exploring and implementing effective risk reduction measures;
- Calling upon all States to strengthen support for initiatives to develop multilateral disarmament verification and capacity-building in support of nuclear disarmament;
- Underscoring the importance of complying with non-proliferation obligations and addressing all non-

³¹ “Adoption of the Draft Resolution on the Elimination of Nuclear Weapons submitted by Japan to the First Committee of the United Nations General Assembly (Statement by Foreign Minister KAMIKAWA Yoko),” October 28, 2023, https://www.mofa.go.jp/press/release/press4e_003321.html.

Table 1-3: Voting behavior on selected UNGA resolutions in 2023

	Joint courses of action and future-oriented dialogue 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	○	△	×	×	×	×	△	×
Mexico	○	○	○	○	○	○	○	○
Netherlands	○	△ ^{*)}	×	×	△ ^{*)}	×	△	×
New Zealand	△ ^{*)}	○	△	○	○	×	○	○
Norway	○	△ ^{*)}	×	×	△ ^{*)}	×	△	×
Poland	○	× ^{*)}	×	×	×	×	×	×
Saudi Arabia	△ ^{*)}	○	○	△	○	△ ^{*)}	○	○
South Africa	×	○	△	○	○	○	○	○
Sweden	○	△ ^{*)}	×	×	×	×	△	×
Switzerland	○	○	×	△	○	×	○	△
Syria	×	○	○	?	○	○	○	○
Turkey	○	× ^{*)}	×	×	×	×	△	×
North Korea	×	× ^{*)}	△	×	△	△	△	△

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

^{*)} Changing voting behavior in 2021 from the previous year.

- compliance matters;
- Reaffirming the commitment to achieving the complete, verifiable and irreversible dismantlement of all nuclear weapons and existing nuclear programs, as well as all other existing WMD and ballistic missile programs, of North Korea, urging North Korea

- to return at an early date to full compliance with the NPT and IAEA safeguards, and confirming that North Korea cannot and will never have the status of a NWS under the NPT; and
- Welcoming various concrete measures for nuclear disarmament and non-proliferation education.

In addition, following the previous year's version, the preamble of the resolution proposed by Japan in 2023 acknowledged that "the [TPNW] was adopted on 7 July 2017, and noting that it was opened to signature by the Secretary General of the United Nations on 20 September 2017, entered into force on 22 January 2021 and held its first Meeting of States parties from 21 to 23 June 2022." The resolution also mentioned "[r]eiterating deep concern at the catastrophic humanitarian consequences of the use of nuclear weapons and reaffirming that this awareness ought to continue to underpin our approaches and efforts towards nuclear disarmament, and welcoming the visits of leaders, youth and others to Hiroshima and Nagasaki in this regard."

(3) Humanitarian consequences of nuclear weapons

A) Main arguments

Discussions on the humanitarian consequences of nuclear weapons began at the Oslo Conference in 2013, and continued through the Nayarit and Vienna Conferences in 2014. Since the 2015 NPT RevCon, the Humanitarian Group, which focuses on the humanitarian dimensions of nuclear weapons, has emphasized the significance of starting negotiations on a legally binding instrument on prohibiting nuclear weapons. The result was the

adoption of the TPNW in 2017.

At the NPT PrepCom in 2023, a number of NNWS referred to the humanitarian dimensions of nuclear weapons. For instance, the NAM countries argued 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."³² In their joint statement, the state parties and signatory states to the TPNW stated, "Any use of nuclear weapons would inflict indiscriminate destruction, death and displacement, as well as profound long-term damage to the environment, ecosystems and sustainable development, impact the global economy, food security and the health of current and future generations, including a disproportionate impact they have on women and girls."³³ The NAC also "call[ed] upon States to continue building our collective understanding of the catastrophic humanitarian consequences of nuclear weapons, including the disproportionate gendered impact of ionizing radiation, and the widespread impact of nuclear testing in the Pacific and elsewhere."³⁴

Austria introduced that it had commissioned the University of York to prepare an overview over the recent peer-reviewed scientific findings on the humanitarian consequences and risks of

³² NPT/CONF.2026/PC.I/WP.8, June 14, 2023.

³³ "Joint Statement of the States Parties and Signatory States to the TPNW," Cluster 1, First PrepCom for the 11th NPT RevCon, August 2, 2023.

³⁴ NPT/CONF.2026/PC.I/WP.5, June 13, 2023.

nuclear weapons.³⁵ Japan said, “As the only country to have suffered atomic bombings during war, Japan is fully aware of the catastrophic humanitarian consequences of the use of nuclear weapons. Such tragedy must never be repeated again.”³⁶

At the UNGA in 2023, as in the previous year, countries mainly belonging to the Humanitarian Group proposed a resolution titled “Humanitarian consequences of nuclear weapons.”³⁷ The resolution, inter alia, “[s]tresses that the catastrophic effects of a nuclear weapon detonation ... cannot be adequately addressed,” and called to prevent the use of nuclear weapons and to achieve nuclear disarmament. The voting behavior of countries surveyed in this project on this resolution is as follows:

- 141 in favor (Austria, Brazil, Egypt, India, Indonesia, Iran, Japan, Kazakhstan, Mexico, New Zealand, Saudi Arabia, South Africa, Switzerland, Syria and others); 11 against (France, Israel, Poland, Russia, United Kingdom, United States and others); 33 abstentions (Australia, Canada, China, Germany, South Korea, North Korea, Netherlands, Norway, Pakistan, Sweden, Turkey and others)

Furthermore, voting behavior on the resolution titled “Ethical imperatives for a nuclear-weapon-free world,”³⁸ which

emphasized the inherent immorality of nuclear weapons and the need for their elimination, led by the Humanitarian Group countries, was:

- 135 in favor (Austria, Brazil, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, Saudi Arabia, South Africa, Syria and others); 38 against (Australia, Belgium, Canada, France, Germany, Israel, South Korea, the Netherlands, Norway, Poland, Russia, Sweden, Turkey, the United Kingdom, the United States and others), 12 abstentions (China, India, Japan, North Korea, Pakistan, Switzerland and others)

As in the previous year, the UNGA resolution on nuclear disarmament led by Japan in 2023 stated, “Reiterating deep concern at the catastrophic humanitarian consequences of the use of nuclear weapons and reaffirming that this awareness ought to continue to underpin our approaches and efforts towards nuclear disarmament, and welcoming the visits of leaders, youth and others to Hiroshima and Nagasaki in this regard.”

B) Victim assistance and environmental remediation

Assistance to victims of nuclear weapons-related activities, including their use, test and production, and remediation of the contaminated environment are also

³⁵ “Statement by Austria,” General Debate, First PrepCom for the 11th NPT RevCon, July 31, 2023.

³⁶ “Statement by Japan,” Cluster One Specific Issue, First PrepCom for the 11th NPT RevCon, August 3, 2023.

³⁷ A/RES/78/34, December 4, 2023.

³⁸ A/RES/78/41, December 4, 2023.

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, and implementation of necessary and appropriate measures towards the environmental remediation of areas so contaminated. There are also some cases that countries which have not signed or ratified the TPNW addressed on an individual basis.

At the Second Meeting of States Parties to the TPNW (2MSP), Kazakhstan and Kiribati, as co-facilitators for these issues, submitted the “Report of the Co-Chairs of the informal working group on victim assistance, environmental remediation, international cooperation and assistance.” The Decision 4, which was adopted at the 2MSP, stipulated that “focused discussions will be held under the informal working group on victim assistance, environmental remediation, international cooperation and assistance”; and “a report will be submitted to the third Meeting of States Parties with recommendations related to the feasibility of, and possible guidelines for, the establishment of an international trust fund for victim assistance and environmental remediation, with the aim of examining the establishment of such a trust fund at the third Meeting of States Parties as a priority.”

At the NPT PrepCom in 2023, Kazakhstan and Kiribati stated in their

joint statement:³⁹

- “[NWS] must recognize the necessity of helping victims of nuclear weapons and remediating contaminated environments. In this regard, we urge the [NWS] and their allies to support nuclear justice initiatives in order to address the nuclear harm from the past development, testing and use of nuclear weapons.”
- “We urge the [NWS] to also recognize that beyond the physical harm caused by nuclear weapons and long-term genetic disturbances, victims also continue to experience posttraumatic stress disorders and other forms of trauma, as well as disruptions to cultural practices, displacement, and environmental damage on a long-term or permanent basis as a result of nuclear testing and maintenance.”
- “We request the [NWS] to provide adequate financial compensation and engage in information exchanges with States Parties whose territories served as test sites.”
- “The exchange of scientific and technical information is an important component of any framework for cooperation. States Parties and other actors should also share information with affected states parties regarding the potential effects of nuclear contamination and types of responses. These measures would help address both humanitarian and environmental damages caused by nuclear test

³⁹ “Joint Statement on behalf of Kiribati and Kazakhstan,” First PrepCom for the 11th NPT RevCon, July 31, 2023.

explosions; and thereby help the victims of nuclear weapons.”

The NAM countries mentioned that “the Group acknowledges the existence of a special responsibility towards the affected people and areas, including those in the former United Nations Trust Territories that have been adversely affected as a result of the nuclear weapon tests conducted in the past.”⁴⁰ Among the NNWS allied with the United States, for instance, Germany stated, “Victims’ assistance and environmental remediation from the long-term damages of nuclear testing likewise deserve broader attention and engagement. As expressed before, Germany wants to engage in dialogue and co-operation in addressing these issues.”⁴¹ Australia said that it was “aware that in Australia and in the Pacific, as in other parts of the world, the impact of nuclear weapons testing has been disproportionately borne by First Nations land and people.”⁴²

The UNGA resolution “Addressing the legacy of nuclear weapons: providing victim assistance and environmental remediation to Member States affected by the use or testing of nuclear weapons”⁴³—proposed by Kazakhstan and Kiribati and adopted for the first time at the General Assembly—encourages international cooperation and discussion on victim assistance and environmental restoration, and “[urged] that Member

States, which have used or tested nuclear weapons or any other nuclear explosive devices, to share, as appropriate, technical and scientific information regarding the humanitarian and environmental consequences of such use and testing with Member States affected by the use or testing of nuclear weapons or any other nuclear explosive devices, and calls upon Member States, in a position to do so, to contribute technical and financial assistance, as appropriate.” The voting behavior of countries surveyed in this project on this resolution is as follows: 161 in favor (Australia, Austria, Brazil, Canada, Egypt, Germany, Indonesia, Iran, Japan, Kazakhstan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Saudi Arabia, South Africa, Sweden, Switzerland, Syria, Turkey and others); 4 against (France, North Korea, Russia, the United Kingdom); 6 abstentions (including China, India, Israel, Pakistan and the United States).

In addition to the issues mentioned above, the following developments were reported in 2023 regarding victim assistance and environmental remediation:

- In October 2023, the United States signed a 20-year economic assistance agreement with the Republic of the Marshall Islands (RMI), finally overcoming a stalemate over the issue of compensation for past US nuclear testing. The agreed \$2.3 billion

⁴⁰ NPT/CONF.2026/PC.I/WP.8, June 14, 2023.

⁴¹ “Statement by Germany,” Cluster, First PrepCom for the 11th NPT RevCon, August 3, 2023.

⁴² “Statement by Australia,” General Debate, First PrepCom for the 11th NPT RevCon, August 1, 2023.

⁴³ A/RES/78/240, December 22, 2023.

- assistance package includes a \$700 million trust fund that the RMI government states will use to address the needs of those affected by the nuclear testing program.⁴⁴
- The U.S. Senate endorsed a major expansion of a compensation program for people sickened by exposure to radiation during nuclear weapons testing and the mining of uranium during the Cold War. The provisions would extend health care coverage and compensation to so-called downwinders exposed to radiation during weapons testing to several new regions stretching from Guam to the New Mexico site where the world's first atomic bomb was tested in 1945. The Senate-backed plan also would extend compensation to more former uranium industry workers. Coverage would be expanded to New Mexico, Colorado, Idaho, Missouri, Montana and previously excluded areas of Nevada, Utah and Arizona.⁴⁵ Because the House of Representatives did not adopt similar provisions, the expansion of the compensation program was not included in the final National Defense Authorization Act passed in December 2023.⁴⁶
 - Spain announced that it has asked the United States to begin procedures to remove soil contaminated with radioactivity after a mid-air collision dumped four U.S. hydrogen bombs near a southern Spanish village nearly 60 years ago.⁴⁷
 - Concerned U.S. citizens raised alarm that the Radiation Exposure Compensation Act (RECA), which stipulates compensation for fallout victims in Utah, Nevada and Arizona from nuclear weapons testing, is set to expire in July 2024. Unless RECA is extended, the program's demise would end compensation for workers at the test site in Nevada and "downwinders" who developed illnesses due to aboveground atomic testing, as well as for those who mined, milled or transported uranium.⁴⁸
 - Japan provides assistance to victims under the "Atomic Bomb Survivors' Assistance Act," but there continues to be debates and court cases regarding

⁴⁴ Congressional Research Service, "The Compacts of Free Association," Updated November 23, 2023, <https://crsreports.congress.gov/product/pdf/IF/IF12194>.

⁴⁵ Morgan Lee, "US Senate Votes to Expand Radiation-Exposure Compensation, from Guam to Original A-Bomb Test Site," *AP News*, July 28, 2023, <https://apnews.com/article/us-senate-radiationexposure-compensation-b3e256163f1d0aaefec04642233a6d20>.

⁴⁶ Mike Crapo, U.S. Senator for Idaho, "Crapo Delivers Remarks Expressing Disappointment in Lack of Radiation Compensation in Defense Bill," News Release, December 13, 2023, <https://www.crapo.senate.gov/media/newsreleases/crapo-delivers-remarks-expressing-disappointment-in-lack-of-radiation-compensation-in-defense-bill>.

⁴⁷ Ciarán Giles, "Spain Asks U.S. to Begin Cleanup of Nuclear Accident Site," *AP*, March 7, 2023, <https://apnews.com/article/spain-us-b52-hydrogen-bomb-plutonium-accident-palomares-dd5e024d2cd5247a1dba0195600b188d>.

⁴⁸ "Time Running out for Utah Downwinders Seeking Compensation for Exposure to Radioactive Fallout," *Salt Lake Tribune*, November 1, 2023, <https://www.sltrib.com/news/2023/11/01/time-running-out-utah-downwinders/>.

the certification of atomic bomb survivors and the scope of assistance.

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

A) Signature and Ratifications

The number of countries signing and/or ratifying the TPNW which was adopted on September 20, 2017, has steadily increased. As the number of ratifying countries reached 50 on October 24, 2020, the TPNW entered into force on January 22, 2021, in accordance with Article 15 of the treaty. As of the end of 2023, 69 of the 93 have ratified the treaty. Among the countries surveyed, those that have ratified are Austria, Kazakhstan, Mexico, New Zealand and South Africa, and those that have only signed are Brazil and Indonesia.

B) Meeting of States Parties

The Second Meeting of States Parties (2MSP) was held on November 27-December 1 at the UN Headquarters. The conference was attended by 56 states parties, international organizations such as the UN, and 122 nongovernmental organizations. In addition, 33 countries, including Australia, Belgium, Brazil, Egypt, Germany, Indonesia, Norway, and Switzerland participated as observers.⁴⁹

During the five-day meeting, the High-level session, Thematic discussion on the

humanitarian impact of nuclear weapons, General exchange of views, and Consideration of the status and operation of the Treaty and other matters important for achieving the objectives and purpose of the Treaty were held.

The following reports were submitted to the 2MSP from the intersessional structure for the implementation of the Treaty, which was established based on the Decision of the First Meeting of States Parties:

- Report of the Co-Chairs of the informal working group on victim assistance, environmental remediation, international cooperation and assistance;
- Report of the co-chairs of the informal working group on universalization;
- Report of the gender focal point;
- Report of the informal facilitators to further explore and articulate the possible areas of tangible cooperation between the TPNW and the NPT, and other relevant nuclear disarmament and non-proliferation instruments;
- Report of the Scientific Advisory Group on its annual activities;⁵⁰
- Report of the Scientific Advisory Group on the status and developments regarding nuclear weapons, nuclear weapon risks, the humanitarian consequences of nuclear weapons,

⁴⁹ At the First Meeting of States Parties in 2022, 34 countries, including Australia, Belgium, Brazil, Germany, Indonesia, the Netherlands, Norway, Sweden and Switzerland participated as observers.

⁵⁰ The Scientific Advisory Group was established in March 2023, and 15 members were appointed. The Group's report focused on the status of nuclear weapons, nuclear weapon risks, the humanitarian consequences of nuclear weapons, nuclear disarmament, and related issues in accordance with the Group's mandate.

nuclear disarmament and related issues; and

- Report of the Co-Chairs of the informal working group on the implementation of Article 4.

In addition, discussions were undertaken to formulate final documents, among others, based on the following working papers.

- Working paper 1: The Treaty on the Prohibition of Nuclear Weapons: toward an ethic of disarmament (submitted by Holy See)
- Working paper 2: Intersessional structure for the implementation of the Treaty (submitted by the Chairperson)
- Working paper 3: Thematic debates of Meetings of States Parties to the Treaty (submitted by the Chairperson)
- Working paper 9: Universalizing the security concerns of States under the Treaty on the Prohibition of Nuclear Weapons (submitted by Austria)

On the last day of the 2MSP, participating countries adopted the “Declaration” and “Decisions.”

Declaration

In the “Declaration,” titled “Our commitment to upholding the prohibition of nuclear weapons and averting their catastrophic consequences,”⁵¹ participating countries stated their intention to deny the legitimacy of nuclear deterrence, and to pursue a global ban on nuclear weapons under the TPNW,

including the following points:

- We reaffirm our grave concern about the catastrophic humanitarian consequences of nuclear weapons, which cannot be adequately addressed, transcend national borders, pose grave implications for human survival and well-being and would be incompatible with respect for the right to life.
- The 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 the creation of the Treaty and guide its implementation. These considerations must be at the center of all disarmament policies, highlighting the human cost of nuclear weapons and the need to protect human life and the environment.
- New scientific research has underscored the multifaceted and cascading effects of the catastrophic humanitarian impact of nuclear weapons and associated risks.
- The continued existence of nuclear weapons and lack of meaningful progress on disarmament undermine the security of all States, aggravate international tensions, heighten the risk of nuclear catastrophe and pose an existential threat to humanity as a whole. The only guarantee against the use of nuclear weapons is their

⁵¹ TPNW/MSP/2023/14, December 13, 2023.

complete elimination and the legally binding assurance that they will never be developed again.

- We remain deeply alarmed by and firmly deplore threats to use nuclear weapons, as well as increasingly strident nuclear rhetoric. We stress that any use or threat of use of nuclear weapons is a violation of international law, including the Charter of the United Nations, and further underscore that any use of nuclear weapons would be contrary to international humanitarian law. ... We condemn unequivocally any and all nuclear threats, whether they be explicit or implicit and irrespective of the circumstances.
- We reject attempts to normalize nuclear rhetoric and any notion of so-called “responsible” behavior as far as nuclear weapons are concerned.
- Far from preserving peace and security, nuclear weapons are used as instruments of policy, linked to coercion, intimidation and heightening of tensions. The renewed advocacy, insistence on and attempts to justify nuclear deterrence as a legitimate security doctrine gives false credence to the value of nuclear weapons for national security and dangerously increases the risk of horizontal and vertical nuclear proliferation.
- The TPNW clearly prohibits receiving the transfer of, or control over, nuclear weapons or to allow their stationing, installation or deployment. We urge all States with such nuclear arrangements

to put an end to them, and join the Treaty.

- We are more determined than ever in our unyielding commitment to delegitimizing, stigmatizing and totally eliminating nuclear weapons.
- We are playing our part to advance and strengthen the disarmament and non-proliferation architecture as a whole, including under other complementary treaties such as the [NPT], ... the [CIBT], and treaties establishing nuclear-weapon free-zones.
- As fully committed States Parties to the NPT, the TPNW States Parties reaffirm the complementarity between the TPNW and the NPT. We continue to implement our obligations and comply with our responsibilities, undertakings and agreements under the NPT. We are pleased to have advanced the implementation of Article VI of the NPT by bringing into force a comprehensive legal prohibition of nuclear weapons.
- We unequivocally affirm that our commitment to the TPNW and its object and purpose remains unaffected when completing fulfilment of obligations emanating from treaties previously subscribed to, where these do not conflict with obligations of the TPNW.

Decisions: Agreements on institutional issues

The “Decisions”⁵² on the institutional issues adopted at the 2MSP, firstly as Decision 1, stipulated to establish three

⁵² Ibid.

informal working groups as the Intersessional structure for the implementation of the Treaty: Universality (co-chaired by South Africa and Uruguay); Victim assistance, environmental remediation, international cooperation and assistance (co-chaired by Kazakhstan and Kiribati); and Implementation of Article 4 (co-chaired by Malaysia and New Zealand). Mexico was also appointed as a gender focal point to assist in the implementation of the gender provisions of the TPNW. In addition, Ireland and Thailand were appointed as informal intersessional facilitators on the complementarity of the TPNW with the existing nuclear disarmament and nonproliferation regime.

Decision 4 states that “focused discussions will be held under the informal working group on victim assistance, environmental remediation, international cooperation and assistance,” and that “a report will be submitted to the third Meeting of States Parties with recommendations related to the feasibility of, and possible guidelines for, the establishment of an international trust fund for victim assistance and environmental remediation, with the aim of examining the establishment of such a trust fund at the third Meeting of States Parties as a priority.”

Decision 5 stipulates to establish a “Consultative process on security concerns of States under the TPNW,” and to appoint Austria as a coordinator for this consultative process. In this process, states parties to and signatories of the TPNW, with the involvement of the

Scientific Advisory Group, the International Committee of the Red Cross (ICRC), the International Campaign to Abolish Nuclear Weapons (ICAN) and other stakeholders and experts, are expected to consult and submit a report to the third MSP containing a comprehensive set of arguments and recommendations:

- To better promote and articulate the legitimate security concerns, threat and risk perceptions enshrined in the Treaty that result from the existence of nuclear weapons and the concept of nuclear deterrence; and
- To challenge the security paradigm based on nuclear deterrence by highlighting and promoting new scientific evidence about the humanitarian consequences and risks of nuclear weapons and juxtaposing this with the risks and assumptions that are inherent in nuclear deterrence.

C) Arguments by signatory and ratification countries

Countries that support the TPNW advocated the importance of TPNW at the NPT PrepCom in 2023, particularly in terms of the humanitarian consequences and legal prohibition of nuclear weapons as well as effective measures to implement NPT Article VI, and argued that it is complementary to the NPT. In their joint statement, the states parties and signatory states to the TPNW stated, “As fully committed states parties to the NPT, we continue to fully implement our obligations, comply with our responsibilities and agreements under the

NPT and under other complementary treaties, such as the CTBT, those establishing nuclear weapons free-zones and the TPNW itself.” They also said, “We urge all states to join the [TPNW] without delay. We appeal to those states that are not yet ready to take this step to engage cooperatively and constructively with the TPNW States parties and Signatory States, and encourage all states to attend the upcoming Second Meeting of TPNW States Parties.”⁵³

The NAC also argued, “The TPNW seeks to address the imbalance in the global disarmament architecture and the disparity between the treatment of biological and chemical weapons, on the one hand, and nuclear weapons on the other. It reinforces and complements the NPT, including in the way it incorporates a humanitarian approach to nuclear weapons, and emphasises the urgency of the implementation of Article VI. We expect to see the complementarity between the two treaties reflected appropriately.”⁵⁴

At the 2023 UNGA, a resolution was adopted titled “Treaty on the Prohibition of Nuclear Weapons,”⁵⁵ which called 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 countries surveyed in this project on this resolution was as fol-

lows.

- 123 in favor (Austria, Brazil, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, South Africa, the UAE and others); 43 against (Canada, China, France, Germany, India, Israel, Japan, South Korea, North Korea, the Netherlands, Norway, Pakistan, Poland, Russia, Sweden, Turkey, the United Kingdom, the United States and others); 17 abstentions (Australia, Saudi Arabia, Switzerland and others) – Syria did not vote.

Regarding the legal prohibition of nuclear weapons, the UNGA in 2022 adopted resolutions “Follow-up to the advisory opinion of the International Court of Justice on the legality of the threat or use of nuclear weapons”⁵⁶ and “Convention on the prohibition of the use of nuclear weapons.”⁵⁷ The voting behaviors of respective countries with respect to these resolutions 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”— 135 in favor (Austria, Brazil, China, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, Pakistan, Saudi Arabia, South Africa, Switzerland, Syria and others); 35 against (Australia, France, Germany, Israel, South Korea, Poland, Russia,

⁵³ “Joint Statement on the TPNW,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

⁵⁴ “Statement by Mexico on behalf of the NAC,” First PrepCom for the 11th NPT RevCon, July 31, 2023.

⁵⁵ A/RES/78/35, December 4, 2023.

⁵⁶ A/RES/78/33, December 4, 2023.

⁵⁷ A/RES/78/55, December 4, 2023.

Sweden, Turkey, the United Kingdom, the United States and others); 15 abstentions (Canada, India, Japan, North Korea, the Netherlands, Norway and others)

- “Convention on the prohibition of the use of nuclear weapons”—120 in favor (China, Egypt, India, Indonesia, Iran, Kazakhstan, Mexico, South Africa, Syria and others); 50 against (Australia, Austria, Canada, France, Germany, Israel, South Korea, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, Turkey, the United Kingdom, the United States and others); 14 abstentions (Brazil, Japan, North Korea, Pakistan, Russia, Saudi Arabia and others)

D) Countries not signing the TPNW

Nuclear-armed states maintained their position of refusing 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 assert that the treaty does not create any legal obligations for states that have not signed the treaty.

Most NWS did not necessarily express strong criticism of the TPNW at the NPT PrepCom. However, Russia voiced stern objections: “We believe that schemes involving a ‘shortcut’ to ‘nuclear zero,’ including by simply outlawing nuclear weapons, are completely unfeasible. Guided by these considerations, we have

consistently stated that such endeavors as the TPNW are counterproductive. While sharing the idea of a nuclear-weapon-free world as the ultimate goal of nuclear disarmament, we are at the same time convinced that the hasty drafting and conclusion of the TPNW have not brought this goal closer. They have only deepened the divisions among the parties to the NPT and thereby have weakened its viability.”⁵⁸

Among the NNWS surveyed in this report that have not signed or ratified the TPNW, Australia, Brazil, Egypt, Germany, Indonesia, Norway and Switzerland participated in the 2MSP as observers. In their speeches at the meeting, Belgium, Germany and Norway, respectively, argued their support for nuclear deterrent posture of the North Atlantic Treaty Organization (NATO), and also explicitly ruled out joining the TPNW. Meanwhile, Germany expressed its intention “to support concrete project work on victim assistance and environmental remediation. This includes, inter alia, support for international cooperation and workshops on victim assistance and environmental remediation, statistical research on the effects of nuclear testing, feminist perspectives on victims assistance as well as further research on the effects of radiation on women and girls.”⁵⁹

As at the previous MSP, Japan did not attend the 2MSP. At a press conference, Foreign Ministry spokesperson Maki Kobayashi said, “[T]he TPNW is an

⁵⁸ “Statement of Russia,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

⁵⁹ “Statement by Germany,” TPNW 2MSP, November 29, 2023.

important treaty, but there is no roadmap toward an exit to ‘a world without nuclear weapons’ without the participation of any [NWS]. In this situation, as the only country to have suffered atomic bombings during war, Japan will make efforts to involve [NWS], and it is from this perspective that Japan has decided not to participate as an observer at the meeting.”⁶⁰ In the meantime, Japan’s 2023 UNGA resolution on nuclear disarmament, as did the resolution in 2022, referred to the TPNW, albeit only in factual terms, such as the treaty’s adoption and entry into force.

(5) Reduction of Nuclear Weapons

A) Reduction of nuclear weapons

Russia and the United States had conducted the on-site inspections stipulated in the New Strategic Arms Reduction Treaty (New START)—which entered into force in February 2011 and whose deadline was extended for five years in February 2021—since it entered into force. However, on-site inspections have been suspended since April 1, 2020, due at first to the global pandemic of COVID-19. Then, after Russia invaded Ukraine in February 2022, Moscow criticized Washington in August 2022 for

its inability to conduct on-site inspections in the United States due to U.S. sanctions against Russia and other factors. The United States refuted the Russia’s claim, and called for dialogues to resume on-site inspections. Although both countries agreed to hold a Bilateral Consultative Committee (BCC) meeting at the end of November 2022, Russia subsequently postponed it.

Ambassador Bruce Turner, the U.S. Permanent Representative to the CD, stated in January 2023, “We are ... disappointed that Russia—as recently as yesterday—has refused to reschedule the session within the timeframe prescribed by the Treaty.”⁶¹ On the other hand, Russia’s Deputy Foreign Minister Sergei Ryabkov criticized the United States, stating, “The situation does not, frankly speaking, allow for setting a new date ... taking into account this escalation trend in both rhetoric and actions by the United States.”⁶² He also said, “The entire situation in the sphere of security, including arms control, has been held hostage by the US line of inflicting strategic defeat on Russia,”⁶³ and “New START may well fall victim to this. We are

⁶⁰ “Press Conference by Foreign Press Secretary KOBAYASHI Maki,” Ministry of Foreign Affairs of Japan, November 22, 2023, https://www.mofa.go.jp/press/kaiken/kaikenwe_000001_00002.html.

⁶¹ “U.S. Statement at the 2023 Session of the Conference on Disarmament Delivered by Ambassador Bruce Turner,” January 24, 2023, <https://geneva.usmission.gov/2023/01/24/u-s-statement-at-the-2023-session-of-the-conference-on-disarmament/>.

⁶² “No Date Set for Talks with US on Nuclear Arms Treaty, Moscow Says,” *Alarabiya News*, January 23, 2023, <https://english.alarabiya.net/News/world/2023/01/23/Moscow-sees-no-prospects-for-US-Russia-meeting-on-New-START-treaty-Agencies>.

⁶³ Matthew Gault, “The Last Existing U.S.-Russia Nuclear Treaty Could Soon Fail,” *Vice*, January 31, 2023, <https://www.vice.com/en/article/5d3xkz/the-last-existing-us-russia-nuclear-treaty-could-soon-fail>.

ready for such a scenario.”⁶⁴

On January 31, 2023, the U.S. Department of State reported as follows in its annual report to Congress on the implementation of New START:

Based on the information available as of December 31, 2022, the United States cannot certify the Russian Federation to be in compliance with the terms of the New START Treaty. In refusing to permit the United States to conduct inspection activities on Russian territory, based on an invalid invocation of the “temporary exemption” provision, Russia has failed to comply with its obligation to facilitate U.S. inspection activities, and denied the United States its right to conduct such inspection activities. The Russian Federation has also failed to comply with the obligation to convene a session of the Bilateral Consultative Commission (BCC) within the timeline set out by the Treaty.⁶⁵

The annual report also stated, “The United States also has a concern regarding Russian compliance with the New START Treaty warhead limit. This concern stems from Russia’s noncompliance with its obligation to facilitate inspection activities, coupled with its close proximity to the New START Treaty warhead limit. ... [I]t is not a determination of non-

compliance. ... The United States also assesses that Russia was likely under the New START warhead limit at the end of 2022.” Furthermore, the United States concluded as following: “While the United States cannot certify that the Russian Federation is in compliance with the terms of the New START Treaty, it does not determine ... that Russia’s non-compliance specified in this report threatens the national security interests of the United States.”⁶⁶

Russia responded that it “categorically reject[ed] the US representatives’ allegations about Russia’s non-compliance with the provisions of the New START Treaty,”⁶⁷ and stated:

Regarding the suspension of inspection activities under the treaty, we would like to note that it was the US activities that violated the standard inspection procedures. Washington adopted anti-Russia restrictions, which prevented the Russian Federation from holding unobstructed inspections in the territory of the United States and thereby created obvious unilateral advantages for the American party.

The US’s intention to resume inspections in Russia without prior arrangement forced us to temporarily withdraw our strategic facilities from the inspection

⁶⁴ “Nuclear Arms Control Treaty with US Could Be in Danger, Russia Warns,” *Press TV*, January 30, 2023, <https://www.presstv.ir/Detail/2023/01/30/697290/Russia-US-nuclear-arms-New-START>.

⁶⁵ U.S. Department of State, “Report to Congress on Implementation of the New START Treaty,” January 31, 2023, <https://www.state.gov/wp-content/uploads/2023/01/2022-New-START-Implementation-Report.pdf>.

⁶⁶ *Ibid.*

⁶⁷ Russian Ministry of Foreign Affairs, “Foreign Ministry statement regarding the Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START),” February 8, 2023, https://mid.ru/ru/foreign_policy/news/1852877/?lang=en.

regime of the treaty, which is envisaged in its provisions. These measures do not run contrary to the New START Treaty. Their goal is to ensure the stable operation of all the treaty mechanisms in strict compliance with the principles of parity and equality of the sides, which have been put in question by the United States' activities.

Subsequently, in his annual address to the Federal Assembly on February 21, President Putin said that while Russia had not withdrawn from New START, “[t]hey want[ed] to inflict a strategic defeat on us and also to get to our nuclear sites.” And he stated, “In this regard, I am compelled to announce today that Russia is suspending its membership in the New START Treaty.” In addition, President Putin argued: “Before we come back to discussing this issue, we must have a clear idea of what NATO countries such as France or Great Britain have at stake, and how we will account for their strategic arsenals.”⁶⁸

The Ministry of Foreign Affairs of Russia stated on the same day that the decision by President Putin was the result of the “destructive actions” by the United States, and argued that “Washington [had] long been substantially violating the fundamental provisions of the Treaty on the quantitative restrictions of the parties' relevant armaments,” including the unilateral withdrawal from the

accountability by renaming its strategic weapons. At the same time, Russian Foreign Ministry stated, “[Russia] will continue to strictly comply with the quantitative restrictions stipulated in the Treaty for strategic offensive arms within the life cycle of the Treaty. Russia will also continue to exchange notifications of [intercontinental ballistic missile (ICBM) and submarine-launched ballistic missile (SLBM)] launches with the United States in accordance with the relevant Soviet-US agreement signed in 1988.” It also said, “The decision to suspend the New START Treaty can be reversed if Washington demonstrates the political will and takes honest efforts towards general de-escalation and the creation of conditions for resuming the comprehensive operation of the Treaty and, consequently, its viability.”⁶⁹

The law stipulating the suspension of Russia's implementation of the New START was approved by the Russian Federal Assembly (both the State Duma and the Federation Council) on February 22, and was signed by the President on February 28. On the same day, the Russian Foreign Ministry formally notified the United States of the suspension of the treaty's implementation.

Russia continued to criticize the U.S. response. On March 1, Deputy Foreign Minister Ryabkov said that Washington and Moscow had confidential discussions

⁶⁸ “Presidential Address to Federal Assembly,” February 21, 2023, <http://en.kremlin.ru/events/president/news/70565>.

⁶⁹ “Foreign Ministry Statement in Connection with the Russian Federation Suspending the Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START),” Ministry of Foreign Affairs of Russia, February 21, 2023, https://mid.ru/en/foreign_policy/news/1855184/.

on matters related to the treaty, and that Russia would be open to such an exchange of views in the future. At the same time, he emphasized that “[u]ntil the United States changes its behavior, until we see signs of common sense in what they are doing in relation to Ukraine ... we see no chance for the decision to suspend New START to be reviewed or re-examined.”⁷⁰ In his statement at the CD on March 2, Deputy Foreign Minister Ryabkov once again justified his country’s actions, stating: “The situation has further degraded following the US attempts to ‘probe’ the security of the Russian strategic facilities declared under the New START Treaty by assisting the Kiev regime in conducting armed attacks against them. Against this background, we perceived as highly cynical those demands by Washington to regain access to Russia’s nuclear facilities for inspecting them under the Treaty. ... Under these circumstances, we were forced to announce the suspension of the Treaty.”⁷¹

Russia suspended to provide data on its strategic nuclear forces to the United States as part of its suspension of implementation of New START. In response, the United States announced on

March 28 that it would also no longer provide data on its strategic nuclear weapons as a countermeasure. John Plumb, Assistant Secretary of Defense for Space Policy, said that “Russia responded that they [would] not be providing that information” while the United States had pressed Russia about the exchange of information, due at the end of March.⁷² Principal Deputy Spokesperson Vedant Patel also said, “the suspension [by Russia] was legally invalid. Russia’s failure to exchange this data will therefore be a violation of the treaty, adding on to its existing violations of the New START Treaty and, as a result, lawful countermeasures intended to encourage Russia to return to compliance with the treaty. And the U.S. will likewise not provide its biannual data update to Russia.”⁷³

On March 29, Russian Deputy Foreign Minister Sergei Ryabkov announced that Russia would suspend advance notification of missile launch tests under New START as a countermeasure to the U.S. refusal to provide data.⁷⁴ On April 4, he also stated that the suspension of New START implementation would prevent the United States from conducting

⁷⁰ “Russia Will Not Rejoin Nuclear Treaty Unless U.S. Changes Ukraine Stance - Deputy Foreign Minister,” *Reuters*, March 1, 2023, <https://www.reuters.com/world/europe/russia-will-not-rejoin-nuclear-treaty-unless-us-changes-ukraine-stance-deputy-2023-03-01/>.

⁷¹ “Statement by Russia,” CD, March 2, 2023, https://docs-library.unoda.org/Conference_on_Disarmament_-_2023/russian_federation_English.pdf.

⁷² Darya Tarasova and Tim Lister, “Russia Says It Has Suspended All Nuclear Notifications With US, According to State Media,” *CNN*, March 29, 2023, https://edition.cnn.com/europe/live-news/russia-ukraine-war-news-03-29-23/h_2b78bd8f12b5b50d4a41612998336ecf.

⁷³ “Department Press Briefing,” U.S. Department of State, March 28, 2023, <https://www.state.gov/briefings/department-press-briefing-march-28-2023/>.

⁷⁴ “Russia Suspends Advance Notice of Missile Tests, including ICBMs,” *Nikkei*, March 29, 2023, <https://www.nikkei.com/article/DGXZQOGN290BR0Z20C23A3000000/>. (in Japanese)

inspections and sharing data, thereby hindering U.S. intelligence gathering, which had been employing “any channel, any window to see into our military world.”⁷⁵ At the same time, Russia stated that the advanced notification of missile tests to the United States under the Ballistic Missile Launch Notification Agreement signed in 1988 would be continued.⁷⁶ In fact, both countries gave advance notice to the other concerning ICBM launch tests that each conducted in 2023.

On June 1, the United States adopted the following measures as the “additional lawful countermeasures for the purpose of encouraging the Russian Federation to return to compliance with the treaty”:⁷⁷

- The United States began to withhold from the Russia all the notifications required under paragraph 2 of Article VII of the New START. The United States will continue to provide notification of ICBM and SLBM launches in accordance with the 1988 Ballistic Missile Launch Notification Agreement and to provide notifications of exercises in accordance with the 1989 Agreement on Reciprocal Advance Notification of Major

Strategic Exercises.

- The United States is refraining from facilitating Russian New START Treaty inspection activities on U.S. territory, specifically by revoking existing visas issued to Russian New START Treaty inspectors and aircrew members, denying pending applications for such visas, and by revoking the standing diplomatic clearance number issued for Russian inspection airplanes.
- The United States will not provide telemetric information on launches of U.S. ICBMs and SLBMs.

Meanwhile, both Washington and Moscow have expressed their intention to continue to comply with the treaty’s obligations regarding the quantitative limits on their strategic nuclear arsenals.

In this regard, the United States stated on July 1, “[It] assesses that, as of July 1, 2023, the Russian Federation has not engaged in significant activity above the New START Treaty central limits. U.S. confidence in the Russian Federation’s adherence to the treaty’s central limits will diminish over time if the Russian Federation persists in not implementing the treaty’s verification provisions.”⁷⁸

⁷⁵ “Moscow Suspends New START to Thwart US Intel Collection,” *Press TV*, April 6, 2023, <https://www.presstv.ir/Detail/2023/04/04/700973/Russia-US-New-START-Ryabkov-Ukraine-Putin-Biden-nuclear-weapons>.

⁷⁶ Vladimir Isachenkov, “Russia to Keep Missile Test Notices under Cold War-Era Deal,” *AP*, March 31, 2023, <https://apnews.com/article/russia-us-nuclear-start-treaty-test-warnings-5e7efae0ab2d52ece5d5e1e8609152b0>.

⁷⁷ “Report on the Reasons That Continued Implementation of the New START Treaty Is in the National Security Interest of the United States,” U.S. Department of State, July 6, 2023, <https://www.state.gov/report-on-the-reasons-that-continued-implementation-of-the-new-start-treaty-is-in-the-national-security-interest-of-the-united-states/>.

⁷⁸ *Ibid.*

Table 1-4: Russian and U.S. strategic (nuclear) delivery vehicles and warheads under the 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 situation of nuclear forces in both countries. The New START counts a heavy bomber as one delivery system and one nuclear warhead, despite the fact that the bombers can actually load 6-20 warheads. Also, according to its counting rule stipulated in the Treaty, for ICBMs and SLBMs, the number of warheads shall be the number of reentry vehicles emplaced on deployed ICBMs and on deployed SLBMs.

Sources: The 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/>; The U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," <https://www.state.gov/>.

National Security Advisor Jake Sullivan stated on June 2 that the United States was prepared to discuss without preconditions how the United States and Russia could manage nuclear risks and how a new nuclear arms control framework could be established.⁷⁹ However, there were neither U.S.-Russian

talks on re-implementation of the New START during 2023, nor concrete proposals from them for its re-implementation or for future bilateral nuclear arms control.

In the meantime, many countries urged Russia to re-implement New START at

⁷⁹ "Remarks by National Security Advisor Jake Sullivan for the Arms Control Association (ACA) Annual Forum", The White House, June 2, 2023, <https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/06/02/remarks-by-national-security-advisor-jake-sullivan-for-the-arms-control-association-aca-annual-forum/>.

the NPT PrepCom in 2023. However, Russia justified its actions on the New START by stating:

The destructive actions of the United States continued to have a devastating effect on the arms control architecture, which it had already largely destroyed. This led, in particular, to the suspension of the New START Treaty. Russia's forced decision was a justified, legitimate and practically inevitable reaction to Washington's undermining of the fundamental principles and understandings on which the New START Treaty was based and to the following fundamental change of circumstances. The American side's failure to observe the central quantitative limits under the New START Treaty and its assistance to the Kiev regime in attacking our strategic facilities subject to the Treaty also dealt a severe blow to its viability.

Given the “freezing” of the New START Treaty and the earlier collapse of the [Intermediate-Range Nuclear Forces Treaty (INF Treaty)] caused by the United States, Russia is taking a number of measures to maintain predictability and stability in the nuclear missile sphere. We continue to adhere to the central quantitative limits stipulated in the New START Treaty, inform the United States of launches of ICBMs and SLBMs through an exchange of relevant notifications, and observe a unilateral moratorium on the deployment of ground launched intermediate- and

shorter-range missiles until similar U.S.-made weapons emerge in relevant regions. At the same time, this moratorium is under serious pressure in view of the Pentagon's active preparations for the deployment of ground-launched intermediate- and shorter-range missiles in Europe and the Asia-Pacific region.⁸⁰

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 homepage, as a result of Russia's suspension of implementation, the data as of March 2023 only includes the number of U.S. strategic forces. In addition, even the data for the United States as of September 2023 has not been published (see Table 1-4).⁸¹ According to the data as of February 5, 2018—the deadline for reducing their strategic arsenals under the treaty—the number of Russian and U.S. deployed strategic delivery vehicles and deployed/non-deployed strategic delivery vehicles/launchers, besides deployed strategic warheads, fell below the limit.

B) A concrete plan for further reduction of nuclear weapons

In 2023, there was no new proposal by nuclear-armed states to take concrete measures for further reductions of their nuclear arsenals.

In his speech in June 2023, U.S. National Security Advisor Sullivan expressed that “we have stated our willingness to engage

⁸⁰ “Statement of Russia,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

⁸¹ The United States also had declassified the number of each type of its strategic delivery vehicles through September 2020. However, it has not done so since then.

in bilateral arms control discussions with Russia and with China without preconditions.” He also said, “[R]ather than waiting to resolve all of our bilateral differences—the United States is ready to engage Russia now to manage nuclear risks and develop a post-2026 arms control framework.” Regarding China, he argued that Beijing “has thus far opted not to come to the table for substantive dialogue on arms control.”⁸² The United States also called for arms control dialogues with Russia and China at the NPT PrepCom, stating: “It is time for Russia to return to compliance with New START and engage with us to manage nuclear risks and discuss a post-2026 nuclear arms control framework. It is time for the PRC substantively to engage with us on strategic nuclear issues in order to avoid risks of miscalculation and miscommunication.”⁸³

On the other hand, Russian Deputy Foreign Minister Ryabkov said, “I would like to say that on the basis that the Americans are now proposing, we are not ready to conduct this dialogue and will not be, because they ignore several key points in the entire configuration. Namely, we must, first of all, make sure that the US course, which is fundamentally hostile towards Russia, is changing for the better

for us. This is not happening, not even close.”⁸⁴ In October, he said that Moscow had received an informal memo from the United States calling for renewed dialogue. He added, “[Washington] suggests putting dialogue on strategic stability and arms control on a systematic footing, doing so in isolation from everything that is going on. ... We are not ready for this. It is simply impossible to return to dialogue on strategic stability, including New START... without changes in the United States’ deeply, fundamentally hostile course towards Russia.”⁸⁵

China has consistently insisted that any participation on its part in the nuclear weapons reduction process would be premature. At the NPT PrepCom in 2023, China stated, “The priority now is that the countries with the largest nuclear arsenals should fulfil their special and primary responsibilities for nuclear disarmament, continue to effectively implement the New START Treaty and further reduce their nuclear arsenals in a significant and substantive manner, so as to create the conditions for other nuclear-weapon States to join the nuclear disarmament process.”⁸⁶ China also argued: “Requiring countries with vast difference in nuclear policies and numbers of nuclear weapons to undertake the same nuclear

⁸² “Remarks by National Security Advisor Jake Sullivan for the Arms Control Association (ACA) Annual Forum.”

⁸³ “Statement of the United States,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

⁸⁴ Mohammad Ali, “Russia Did Not Receive US Proposals on Arms Control - Foreign Ministry,” *Urdupoint*, July 21, 2023, <https://www.urdupoint.com/en/world/russia-did-not-receive-us-proposals-on-arms-c-1727105.html>.

⁸⁵ “Russia Says U.S. Must End ‘Hostility’ for Nuclear Talks,” *The Moscow Times*, October 25, 2023, <https://www.themoscowtimes.com/2023/10/25/russia-says-us-must-end-hostility-for-nuclear-talks-a82882>.

⁸⁶ “Statement of China,” General Debate, First PrepCom for the 11th NPT RevCon, August 1, 2023.

disarmament obligations is against the historical and realistic logic, and will surely lead the international nuclear disarmament process to a dead end.”⁸⁷

In November, China and the United States held their first arms control dialogue at the director-general/assistant secretary level since the Barack Obama administration. According to the U.S. Department of State, “The two sides held a candid and in-depth discussion on issues related to arms control and nonproliferation as part of ongoing efforts to maintain open lines of communication and responsibly manage the U.S.-PRC relationship.” It also reported that “[t]he United States emphasized the importance of increased PRC nuclear transparency and substantive engagement on practical measures to manage and reduce strategic risks across multiple domains, including nuclear and outer space.”⁸⁸ However, no substantive progress was made, and there was reportedly no agreement on holding the next round of talks.⁸⁹

C) Trends on strengthening/modernizing nuclear weapons capabilities

While nuclear-armed states have reiterated their commitments to promoting nuclear

disarmament, they continue to modernize and/or strengthen their nuclear weapons capabilities. At the NPT PrepCom, many NNWS expressed strong concerns about the trend toward modernization of nuclear forces. For instance, the NAM countries stated, “The Group of Non-Aligned States Parties to the Treaty reiterates with concern that improvements in existing nuclear weapons and the development of new types of nuclear weapons as provided for in the military doctrines of some nuclear-weapon States, including the United States Nuclear Posture Review, violate their legal obligations on nuclear disarmament, as well as the commitments made to diminish the role of nuclear weapons in their military and security policies, and contravene the negative security assurances provided by the nuclear-weapon States.”⁹⁰

According to a report published by the ICAN in June 2023, the total amount of nuclear weapons-related expenditures (including modernization of nuclear forces) by nine nuclear-armed states in 2022 was estimated at \$82.9 billion, of which \$43.7 billion was spent by the United States, approximately \$11.7 billion by China, \$9.6 billion by Russia, \$6.8 billion by the United Kingdom, and \$5.6

⁸⁷ “Statement of China,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

⁸⁸ “Assistant Secretary Mallory Stewart’s Meeting with the People’s Republic of China’s (PRC) Ministry of Foreign Affairs Director-General of Arms Control Sun Xiaobo,” U.S. Department of State, November 7, 2023, <https://www.state.gov/assistant-secretary-mallory-stewarts-meeting-with-the-peoples-republic-of-chinas-prc-ministry-of-foreign-affairs-director-general-of-arms-control-sun-xiaobo/>.

⁸⁹ Jonathan Landay and Arshad Mohammed, “US Says China Reveals Little in Arms Control Talks,” *U.S. News*, November 7, 2023, <https://www.usnews.com/news/world/articles/2023-11-07/us-chinese-officials-held-arms-control-talks-on-monday-state-dept>.

⁹⁰ NPT/CONF.2026/PC.I/WP.8, June 14, 2023.

billion by France.⁹¹

China

China has reiterated that “[it] always keeps its nuclear capabilities at the minimum level required for national security, and does not seek parity with other countries in terms of its nuclear-weapons investment, quantity or scale. China never participates in arms race in any form.”⁹² However, Beijing has not disclosed any information regarding development and deployment of its nuclear arsenals. Consequently, the actual status of these arsenals remains unclear.

In recent years, there is growing concern that China’s nuclear weapons modernization has accelerated. According to the annual report on Chinese military and security developments published in November 2023, the U.S. Department of Defense estimated as following: “[China] will probably have over 1,000 operational nuclear warheads by 2030, much of which will be deployed at higher readiness levels and will continue growing its force to 2035 in line with its goal of ensuring [People’s Liberation Army (PLA)] modernization is “basically complete” that year, which serves as an important milestone on the road to [Xi Jinping’s]

goal of a “world class” military by 2049.⁹³ In February 2023, a senior U.S. military official reportedly informed Congress that as of the October 2022, China had more ground-based fixed and mobile ICBM launchers than the number of U.S. ICBM launchers.⁹⁴

The main component of China’s strategic nuclear forces is ICBMs. For a long time, China’s only strategic nuclear forces capable of reaching the U.S. homeland were the 20 DF-5 silo-based ICBMs which began to be deployed in 1981. However, since the latter half of the 2000s, it has introduced DF-31A/AG mobile ICBMs, DF-5B silo-based ICBMs with MIRVs that can carry three to five warheads per a missile, and DF-41 MIRVed ICBMs which can mount up to 10 warheads per a missile (while it is also considered to carry about three warheads as well as some decoys). The U.S. Department of Defense assesses that “[t]he PRC probably completed the construction of its three new solid-propellant silo fields in 2022, which consists of at least 300 new ICBM silos, and has loaded at least some ICBMs into these silos,”⁹⁵ and estimates that China has respectively 350 ICBM launchers and 500 ICBMs in its arsenal.⁹⁶

⁹¹ ICAN, *Wasted: 2022 Global Nuclear Weapons Spending*, June 2023, https://www.icanw.org/wasted_2022_global_nuclear_weapons_spending.

⁹² NPT/CONF.2020/WP.28, November 29, 2021.

⁹³ The U.S. Department of Defense (DOD), *Military and Security Developments Involving the People’s Republic of China 2023*, October 2023, p. viii.

⁹⁴ “China’s ICBM Launches Surpass United States, U.S. Military Officials Inform Congress,” CNN, February 8, 2023, <https://www.cnn.co.jp/usa/35199740.html>. (in Japanese)

⁹⁵ The U.S. DOD, *Military and Security Developments Involving the People’s Republic of China 2023*, p. viii.

⁹⁶ *Ibid.*, p. 67.

China is also strengthening its SLBM capabilities. The U.S. Defense Department assesses that China is conducting continuous at-sea deterrence patrols with its six JIN-class (Type 094) SSBNs, which are equipped to carry JL-2 or JL-3 SLBMs.⁹⁷ The JL-3 is China's latest SLBM with a range estimated at over 10,000 km and is capable of striking the U.S. mainland from the Chinese coast.

Meanwhile, China is completing its strategic nuclear triad with the H-6N strategic bomber which can carry nuclear-capable air-launched ballistic missiles (ALBM), and the H-6K strategic bomber which can carry nuclear-capable cruise missiles.

Regarding non-strategic nuclear forces, China is estimated to maintain a high level of ground-launched short- and intermediate-range missile forces, both qualitatively and numerically. The U.S. Defense Department's annual report on China's military forces estimates that China has 250 intermediate-range ballistic missile (IRBM) launchers and 500 missiles, 300 medium-range ballistic missile (MRBM) launchers and more than 1,000 missiles, 200 short-range ballistic missile

(SRBM) launchers and more than 1,000 missiles.⁹⁸

In addition to ballistic and cruise missiles, China has been actively developing hypersonic missiles. It started to deploy DF-17 hypersonic missiles in 2020. It was also reported in 2023 that China had begun secretly operating the DF-27 hypersonic missile (range 5,000-8,000 km) from 2019 and conducted flight tests.⁹⁹ Furthermore, it was reported in October 2021 that China conducted a test of the Fractional Orbital Bombardment System (FOBS).¹⁰⁰

China criticized the above analysis and estimates by the U.S. Department of Defense, stating: "This U.S. report, like previous ones, is nonfactual and biased. It calls China a threat only to find a convenient pretext for the US to sustain its military hegemony. China is strongly opposed to this."¹⁰¹

France

In 2015, France announced that it possessed not more than 300 nuclear weapons, and its nuclear deterrent consists of 54 middle-range ALCMs and three sets of 16 SLBMs.¹⁰² In 2022, there was no

⁹⁷ Ibid., p. 108.

⁹⁸ Ibid., p. 67.

⁹⁹ "Leaked Classified Documents, Information on China: Hypersonic Glide Weapons 'Break Through U.S. System with High Probability,'" *Yomiuri Shimbun*, April 12, 2023, <https://www.yomiuri.co.jp/world/20230412-OYT1T50170/>. (in Japanese)

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-hypersonic-glide-vehicle/>.

¹⁰¹ "Foreign Ministry Spokesperson Mao Ning's Regular Press Conference," Ministry of Foreign Affairs of China, October 20, 2023, https://www.fmprc.gov.cn/eng/xwfw_665399/s2510_665401/202310/t20231020_11165059.html.

¹⁰² François Hollande, "Nuclear Deterrence—Visit to the Strategic Air Forces," February 19, 2015, <http://basedoc.diplomatique.gouv.fr/vues/Kiosque/FranceDiplomatique/kiosque.php?fichier=baen2015-02-23>.

change in this nuclear force posture.

France plans to complete development of the M51.3 SLBMs by 2025, which incorporate a new third stage for extended range and further improved accuracy. The first M51.3 launch test was conducted in November 2023.¹⁰³ In addition, France launched a program in 2021 to develop a third-generation SSBN (SNLE 3G) to be in service by 2035, and an M51.4 SLBM to be mounted on it by the early 2040s.¹⁰⁴ As for the successor to the air-to-surface medium-range cruise missile (ASMPT), France has begun design and development of the ASN4G (air-sol nucléaire 4ème génération), which is scheduled to enter into service around 2035. France is also developing a hypersonic glide glider which is designed to carry a nuclear or conventional warhead. The first test of the prototype was conducted in June 2023.¹⁰⁵

Russia

Russia has been actively promoting the development and deployment of various types of delivery vehicles, including the

replacement of nuclear forces built during the Cold War era, mainly aiming to maintain nuclear deterrence against the United States.

Regarding Russia's strategic nuclear forces, in September 2023, it was reported that the RS-28 (Sarmat) ICBM, which is expected to be the core of Russia's future strategic nuclear capability, had been deployed.¹⁰⁶ In December, it was also reported that the RS-28 would be deployed to a unit in southwestern Uzhul in the Krasnoyarsk region of Eastern Siberia.¹⁰⁷ Meanwhile, Russia's Strategic Rocket Forces announced that Russia was set to complete the replacement of the older Topol-M missiles with the RS-24.¹⁰⁸

As for its sea-based nuclear forces, the conversion to Borei-class SSBNs has begun, with three ships in service, and five more under construction.

Russia has also been active in developing "exotic" nuclear delivery systems, and there were various developments in 2023 as in the previous years. In January, it was reported that the first set of nuclear-

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¹⁰³ "France Says Successfully Tests Ballistic Missile," *Barron's*, November 18, 2023, <https://www.barrons.com/news/france-says-successfully-tests-ballistic-missile-6cee866d>.

¹⁰⁴ "France Launches Program to Build New Generation of Nuclear Submarines," *Marine Link*, February 19, 2021, <https://www.marinelink.com/news/france-launches-program-build-new-485431>; Timothy Wright and Hugo Decis, "Counting the Cost of Deterrence: France's Nuclear Recapitalization," *Military Balance Blog*, May 14, 2021, <https://www.iiss.org/blogs/military-balance/2021/05/france-nuclear-recapitalisation>.

¹⁰⁵ "France Conducts Maiden Test of Hypersonic Glider," *Reuters*, June 28, 2023, <https://www.reuters.com/business/aerospace-defense/france-conducts-maiden-test-hypersonic-glider-2023-06-27/>.

¹⁰⁶ "Russia Deploys Sarmat ICBM for Combat Duty," *The Moscow Times*, September 1, 2023, <https://www.themoscowtimes.com/2023/09/01/russia-deploys-sarmat-icbm-for-combat-duty-a82333>.

¹⁰⁷ "Russian ICBMs Deployed in Eastern Siberia, Latest Heavyweight 'Sarmat,'" *Kyodo News*, December 16, 2023, <https://www.47news.jp/10273993.html>.

¹⁰⁸ Michael Starr, "Russia to Modernize Nuclear Forces in 2023, Add More Multi-Warhead Nukes," *Jerusalem Post*, January 3, 2023, <https://www.jpost.com/international/article-726527>.

propelled, long-range Status-6 (Poseidon) nuclear torpedoes had been produced.¹⁰⁹ The Status-6, with a range of over 10,000 km, will be installed on the new nuclear submarine Belgorod. In March, as a base for two nuclear submarines carrying Status-6s, Russia also reportedly planned to complete construction of infrastructure facilities along its Pacific coast in early 2024.¹¹⁰ Further deployment of the Avangard hypersonic glide vehicle, which began in 2021, was also underway. In November 2023, Russian rocket forces reportedly loaded an ICBM equipped with the Avangard into a launch silo in southern Russia.¹¹¹

In October, President Putin said that Russia had “conducted the last successful test of the Burevestnik nuclear-powered global-range cruise missile,”¹¹² or the SSC-X-9 (Skyfall). This is considered to be their first successful attempt while Russia is believed to have conducted more than 10 launch tests previously, all of which ended in failure.

The United Kingdom

As mentioned above, in 2021 the United

Kingdom declared in its *Integrated Review of Security, Defence, Development and Foreign Policy* that it would move to an overall nuclear warheads stockpile ceiling from not more than 180 of no more than 260 warheads.¹¹³ In addition, the United Kingdom in its national report submitted to the NPT RevCon stated, “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.”¹¹⁴ In October 2017, the United Kingdom started to construct a new Dreadnought-class of four SSBNs to replace the existing Vanguard-class SSBNs. The first new SSBN is expected to enter into service in the early 2030s, but construction has been delayed due to technical problems. The SLBMs to be mounted on the new SSBNs are planned to be equipped with the W93 nuclear warhead, which is under consideration in cooperation with the United States.

¹⁰⁹ Guy Faulconbridge, “Russia Produces First Set of Poseidon Super Torpedoes – TASS,” *Reuters*, January 17, 2023, <https://www.reuters.com/world/europe/russia-produces-first-nuclear-warheads-poseidon-super-torpedo-tass-2023-01-16/>.

¹¹⁰ “Russia to Complete Infrastructure for ‘Poseidon’ Equipped Submarines in 2024,” *Reuters*, March 27, 2023, <https://www.usnews.com/news/world/articles/2023-10-05/russia-has-tested-a-nuclear-powered-missile-and-could-revoke-a-global-atomic-test-ban-putin-says>. (in Japanese)

¹¹¹ “Russia Loads Missile with Nuclear-Capable Glide Vehicle into Launch Silo,” *Reuters*, November 16, 2023, <https://www.reuters.com/world/europe/russia-installs-one-more-hypersonic-nuclear-missile-ifax-2023-11-16/>.

¹¹² “Russia Has Tested a Nuclear-Powered Missile and Could Revoke a Global Atomic Test Ban, Putin Says,” *U.S. News & World Report*, October 5, 2023, <https://www.usnews.com/news/world/articles/2023-10-05/russia-has-tested-a-nuclear-powered-missile-and-could-revoke-a-global-atomic-test-ban-putin-says>.

¹¹³ United Kingdom, *Global Britain in a Competitive Age*, p. 76.

¹¹⁴ NPT/CONF.2020/33, November 5, 2021.

The United States

The United States maintains the following modernization plans of its strategic nuclear forces:

- Constructing 12 Colombia-class SSBNs, the first of which commence operation in 2031;
- Building 400 Sentinel Ground Based Strategic Deterrent (GBSD, the new ICBMs) for replacing 450 Minuteman III; and
- Developing and deploying B-21 next generation strategic bombers as well as the Long Range Stand-Off Weapon (LRSO).

The United States reported that development of the LRSO was progressing well toward a production decision in 2027,¹¹⁵ with nine successful test flights in 2022.¹¹⁶ In November, the first test flight of a B-21 was also conducted. On the other hand, it is reported that development of the Sentinel ICBM could be delayed two years from its initial deployment goal of May 2029 due to supply chain issues and an absence of skilled engineers.¹¹⁷

Regarding nuclear-armed sea-launched

cruise missiles (SLCM-N), for which the Biden administration decided to discontinue development, some members of Congress and senior military officials remain to seek the maintenance of the development budget as in the previous year. In December 2023, the U.S. Congress authorized a budget of \$260 million for SLCM-N for fiscal year 2024, and President Biden signed the National Defense Authorization Act (NDAA). Meanwhile, the U.S. Defense Department announced that it would pursue to develop the B61-13, a successor to the B61-7 nuclear gravity bomb. The B61-13 will have a yield similar to the B61-7, which is higher than that of the B61-12.¹¹⁸

The United States in its national report submitted to the NPT RevCon in 2022 reaffirmed the followings:¹¹⁹

- A decision has been taken, in conjunction with NATO, not to deploy land-based nuclear-armed missiles within Europe;
- The current U.S. nuclear modernization plan will not increase the number of ICBMs.
- The United States has no program to develop nuclear-armed nuclear-

¹¹⁵ John A. Tirpak, “LRSO Stealth Nuclear Missile on Track for Production Decision in 2027,” *Air & Space Forces Magazine*, April 25, 2023, <https://www.airandspaceforces.com/lrso-production-decision-2027/>.

¹¹⁶ John A. Tirpak, “New Details of Secret LRSO Missile: Nine Successful Flight Tests in 2022,” *Air & Space Forces Magazine*, October 2, 2023, <https://www.airandspaceforces.com/secret-lrso-missile-nine-successful-flight-tests-2022/>.

¹¹⁷ Shannon Bugos and Gabriela Iveliz Rosa Hernández, “New U.S. ICBMs May Be Delayed Two Years,” *Arms Control Association*, May 2023, <https://www.armscontrol.org/act/2023-05/news/new-us-icbms-may-delayed-two-years>.

¹¹⁸ “Department of Defense Announces Pursuit of B61 Gravity Bomb Variant,” U.S. Department of Defense, October 27, 2023, <https://www.defense.gov/News/Releases/Release/Article/3571660/department-of-defense-announces-pursuit-of-b61-gravity-bomb-variant/>.

¹¹⁹ NPT/CONF.2020/47, December 27, 2021.

- powered cruise missiles or torpedoes;
- The United States has no program or intent to deploy nuclear warheads on hypersonic glide vehicles or hypersonic cruise missiles.

India

India appears to be pursuing the possession of a strategic nuclear triad. In 2023, India was reportedly developing an Agni-6 ICBM (with a range of 10,000 km).¹²⁰ India is also considered to be developing a MIRV, although the status of development remains unknown.

Concurrently, India is progressing with the construction of its fourth SSBN, which is slated for launch. Moreover, India conducted test launches of the Pritvi-2 SRBM¹²¹ and the Agni Prime MRBM¹²² in 2023.

Israel

Israel¹²³ has neither confirmed nor denied possessing nuclear weapons, and its nuclear activities are opaque. In terms of nuclear delivery means, Israel has developed and deployed both nuclear capable IRBMs and SLCMs. In January

2020, it reportedly conducted a test launch of its Jericho long-range ballistic missile.¹²⁴ It is also considered that Israel is upgrading from the two-stage Jericho II IRBM to the three-stage Jericho III with a range of over 4,000 km.

Pakistan

Pakistan has prioritized the development and deployment of nuclear-capable short-, medium- and intermediate-range missiles for ensuring deterrence against India. In October 2023, Pakistan conducted test launches of the Ababeel MIRVed IRBM and the single-warhead Hatf-5 IRBM. It is also developing the Hatf-7 ground launched cruise missile (GLCM), which is designed to be capable of carrying a nuclear warhead.

North Korea

North Korea continued its active nuclear and missile development in 2023.¹²⁵

During the military parade on February 8, 2023, commemorating the 75th anniversary of the North Korean People's Army, there was a prominent display of

¹²⁰ Vaibhav Agrawal, "Rocketing to Uncertainty: Agni 6 ICBM – India's Bold Aspiration or Reckless Ambition?" *Frontier India*, September 26, 2023, <https://frontierindia.com/rocketing-to-uncertainty-agni-6-icbm-indias-bold-aspiration-or-reckless-ambition/>.

¹²¹ "India Successfully Test-Fires Short-Range Ballistic Missile Prithvi-II," *PGurus*, January 11, 2023, <https://www.pgurus.com/india-successfully-test-fires-short-range-ballistic-missile-prithvi-ii/>.

¹²² "India Successfully Flight-Tests New-Generation Ballistic Missile 'Agni Prime,'" *Telegraph*, June 8, 2023, <https://www.telegraphindia.com/india/india-successfully-flight-tests-new-generation-ballistic-missile-agni-prime/cid/1943354>.

¹²³ See, for instance, 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/>.

¹²⁴ Don Jacobson, "Israel Conducts Second Missile Test in 2 Months," *UPI*, January 31, 2020, https://www.upi.com/Top_News/World-News/2020/01/31/Israel-conducts-second-missile-test-in-2-months/3481580486615/.

¹²⁵ See also "North Korean Missile Launches & Nuclear Tests: 1984-Present," CSIS Missile Threat Project, <https://missilethreat.csis.org/north-korea-missile-launches-1984-present/>.

12 mobile launchers for the Hwasong-17 ICBM, alongside 24 launchers for SRBM and land-attack cruise missile (LACM) launchers designated as “tactical nuclear weapons operation units.”¹²⁶ The Korean Central News Agency (KCNA) reported that the ICBMs “demonstrat[ed] the signal development of the military capability and tremendous nuclear strike capability” of North Korea, and that its “tactical nuclear weapons operation units entered the ... powerful war deterrent and counterstrike ability.”¹²⁷

On February 18, North Korea conducted a launch drill of a Hwasong-15 ICBM. According to the KCNA, the missile was launched on a lofted trajectory, with a maximum altitude of 5,768.5 km and a range of 989 km for 4,015 seconds before hitting the pre-set area in open waters of the Sea of Japan. It also reported that “[t]he drill was suddenly organized without previous notice,” and that “through a sudden launching drill, the reliability of the weapon system should be re-confirmed and verified while getting the combat preparedness of the DPRK nuclear force recognized and proving confidence and guarantee for correct operation, reactivity, reliability,

effectiveness and combat capability of the components of the state nuclear deterrence.”¹²⁸

On March 16, it conducted a launch drill of a Hwasong-17 ICBM, flying 1,000.2 km in 4,151 seconds at a maximum altitude of 6,045 km. The KCNA reported that “[t]he drill confirmed the war readiness of the ICBM unit,” and that Chairman Kim Jong Un “stressed the need to strike fear into the enemies, really deter war and reliably guarantee the peaceful life of our people and their struggle for socialist construction by irreversibly bolstering up the nuclear war deterrent.”¹²⁹ Another commentary said, “They can be used anytime, if necessary, to discharge the sacred mission of defending the country, and they should be preemptively used anytime according to the strategic plan, if a conflict with possibility of dangerous escalation occurs. The recent ICBM Hwasongpho-17 launching drill is clear evidence of it.”¹³⁰

On April 13 and July 13, North Korea conducted launch tests of a new type of solid-fuel ICBM, the Hwasong-18. The KCNA reported that the latter test was a “new record” with a maximum altitude of 6,648.4 km and a flight time of 4,491

¹²⁶ Vann H. Van Diepen, “North Korea’s Feb. 8 Parade Highlights ICBMs and Tactical Nukes,” *38 North*, February 15, 2023, <https://www.38north.org/2023/02/north-koreas-feb-8-parade-highlights-icbms-and-tactical-nukes/>.

¹²⁷ “Military Parade Marks 75th KPA Birthday,” *KCNA*, February 9, 2023, <http://www.kcna.co.jp/item/2023/202302/news09/20230209-01ee.html>.

¹²⁸ “ICBM Launching Drill Staged in DPRK,” *KCNA*, February 19, 2023, <http://www.kcna.co.jp/item/2023/202302/news19/20230219-01ee.html>.

¹²⁹ “Demonstration of Toughest Response Posture of DPRK’s Strategic Forces,” *KCNA*, March 17, 2023, <http://www.kcna.co.jp/item/2023/202303/news17/20230317-01ee.html>.

¹³⁰ “On Root of Escalated Tension in Korean Peninsula,” *KCNA*, March 17, 2023, <http://www.kcna.co.jp/item/2023/202303/news17/20230317-02ee.html>.

seconds.¹³¹ Furthermore, North Korea also conducted a “launch drill” (not a test launch) for the Hwasong-18 on December 18. According to the KCNA, “[t]he missile traveled up to a maximum altitude of 6,518.2 km and flew a distance of 1,002.3 km for 4,415s before accurately landing on the preset area in the open waters off” the Sea of Japan.¹³²

North Korea has also consistently demonstrated a persistent commitment to the development and enhancement of its non-strategic nuclear forces. On February 20, “relevant multiple launch rocket firepower sub-units of the KPA long-range artillery unit on the western front set virtual targets 395 km and 337 km away from the launching points respectively and fired two shells of 600 mm multiple rocket launchers.” The KCNA reported that the multiple rocket launchers were a “tactical nuclear attack means,” which “can reduce to ashes the enemy’s operational airfield to paralyze its function, and that North Korea “fully demonstrated its full readiness to deter and will to counter the U.S. and south Korean combined air force bragging about their air superiority.”¹³³ The U.S.

Forces’ Gunsan Air Base is situated roughly 390 km away from the designated launch sites. Additionally, the South Korean Air Force’s Cheongju Air Base is located approximately 340 kilometers from the launch site.

North Korea conducted a launch drill of four Fasal-2 strategic cruise missiles on February 23, and reported that it flew 2,000 km for 2 hours and 50 minutes in an elliptical and eight-shaped flight orbits, and hit the target.¹³⁴ During the “Nuclear Counterattack Simulation Drill” on March 18-19, it was reported that “[t]he tactical ballistic missile launched in Cholsan County, North Phyongan Province accurately exploded at 800 meters above the target waters in the East Sea of Korea set in its 800 km strike range, thus proving once again the reliability of the operation of nuclear explosion control devices and detonators fitted in the nuclear warhead.”¹³⁵ In November, North Korea also announced that it had successfully conducted tests on solid-fuel engines for IRBMs.¹³⁶

North Korea’s launch tests and drills, using submarines as platforms for

¹³¹ “Respected Comrade Kim Jong Un Guides Test-fire of ICBM Hwasongpho-18,” *KCNA*, July 13, 2023, <http://www.kcna.co.jp/item/2023/202307/news13/20230713-01ee.html>.

¹³² “Clear Display of DPRK Strategic Forces’ Toughest Retaliation Will and Overwhelming Strength: Launch Drill of ICBM Hwasongpho-18 Conducted,” *KCNA*, December 19, 2023, <http://www.kcna.co.jp/item/2023/202312/news19/20231219-01ee.html>.

¹³³ “Multiple Rocket Launching Drill by KPA,” *KCNA*, February 20, 2023, <http://www.kcna.co.jp/item/2023/202302/news20/20230220-08ee.html>.

¹³⁴ “Strategic Cruise Missile Launching Drill Conducted,” *KCNA*, February 24, 2023, <http://www.kcna.co.jp/item/2023/202302/news24/20230224-09ee.html>.

¹³⁵ “Nuclear Counterattack Simulation Drill Conducted in DPRK,” *KCNA*, March 20, 2023, <http://www.kcna.co.jp/item/2023/202303/news20/20230320-01ee.html>.

¹³⁶ “New IRBM Solid-fuel Engine Test Conducted in DPRK,” *KCNA*, November 15, 2023, <http://www.kcna.co.jp/item/2023/202311/news15/20231115-17ee.html>.

deploying nuclear forces, garnered attention. On March 12, it executed an underwater launch drill using a submarine to deploy two strategic cruise missiles. According to the state media, these missiles precisely hit the preset target on the Sea of Japan after traveling the 1,500km-long eight-shaped flight orbits for 7,563 to 7,575 seconds.¹³⁷ This event is regarded as the first instance of a cruise missile launch drill being executed from a submarine.

On March 24, Pyongyang conducted a test launch of “Unmanned Underwater Nuclear Attack Craft ‘Haeil,’” and detonated a test warhead after more than 59 hours of cruising. The KCNA reported that “[t]he mission of the underwater nuclear strategic weapon is to stealthily infiltrate into operational waters and make a super-scale radioactive tsunami through underwater explosion to destroy naval striker groups and major operational ports of the enemy.”¹³⁸ In early April, it also launched the Haeil-2, which North Korea positioned as a “underwater strategic system.” It cruised “1,000 km of simulated underwater distance in elliptical and ‘8’ patterns set ... for 71 hours and 6 minutes,” and “the test

warhead accurately detonated underwater.”¹³⁹

On September 8, the “Hero Kim Kun Ok,” a tactical nuclear attack submarine capable of carrying SLBMs, was unveiled. Chairman Kim Jong Un stated at a ceremony for launching newly-built submarine on September 6, “[T]his submarine constitutes 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 strike at the hostile states in any waters.”¹⁴⁰ It is estimated that this submarine is equipped with 10 vertical launch tubes for missiles, and that four large hatches would be for the Puksuksong SLBMs and the six smaller missile hatches may be used for the modified KN-23 SLBM.¹⁴¹

During the year, North Korea conducted multiple launches of the “Chollima-1” rocket, which carried a reconnaissance satellite. The attempts in May and August resulted in failure. However, following the Russo-North Korean summit, North Korea proclaimed the November launch of the Chollima-1 as a success. It also announced that the reconnaissance

¹³⁷ “Underwater Launching Drill of Strategic Cruise Missiles Conducted,” *KCNA*, March 13, 2023, <http://www.kcna.co.jp/item/2023/202303/news13/20230313-01ee.html>.

¹³⁸ “Important Weapon Test and Firing Drill Conducted in DPRK,” *KCNA*, March 24, 2023, <http://www.kcna.co.jp/item/2023/202303/news24/20230324-01ee.html>.

¹³⁹ “Underwater Strategic Weapon System Tested in DPRK,” *KCNA*, April 8, 2023, <http://www.kcna.co.jp/item/2023/202304/news08/20230408-01ee.html>.

¹⁴⁰ “Respected Comrade Kim Jong Un Makes Congratulatory Speech at Ceremony for Launching Newly-Built Submarine,” *KCNA*, September 8, 2023, <http://www.kcna.co.jp/item/2023/202309/news08/20230908-02ee.html>.

¹⁴¹ Joseph S. Bermudez Jr., Victor Cha and Jennifer Jun, “North Korea Launches New Ballistic Missile Submarine,” *CSIS Beyond Parallel*, September 11, 2023, <https://beyondparallel.csis.org/north-korea-launches-new-ballistic-missile-submarine/>.

satellite “Malligyong-1” had been successfully placed into space orbit.¹⁴²

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

A) The current status of the roles and significance of nuclear weapons

In the latter half of the 2010s, as great power and geopolitical competitions have become more intense, nuclear-armed states have reaffirmed the roles and significance of their nuclear weapons within their national security. While no nuclear-armed states and their allies have announced new nuclear strategies or policies in 2023, there is an observable trend of these states increasingly relying on nuclear deterrence in response to ongoing and complex security challenges. Among those countries, Russia and North Korea continued to notably intensify their rhetoric on the strategic value of their nuclear arsenals throughout 2023, underscoring a pronounced emphasis on their nuclear capabilities.

While continuing its invasion of Ukraine,

Russia repeated its nuclear intimidation in 2023. In January, Deputy Chairman of the Security Council of Russia Dmitry Medvedev said, “The defeat of a nuclear power in a conventional war may trigger a nuclear war.”¹⁴³ In March, he also threatened a possible nuclear strike, saying that if the Ukrainian military attacked to retake the Crimean Peninsula, currently under effectively Russian control, “it would clearly be grounds to use all means of defense, including those specified in the nuclear deterrence doctrine.”¹⁴⁴ Furthermore, in July, he stated, “In general, any war, even a world war, can be ended very quickly. Either if a peace treaty is signed, or if you do what the Americans did in 1945, when they used their nuclear weapons and bombed two Japanese cities Hiroshima and Nagasaki. They, indeed, then curtailed the military campaign. The price is the life of almost 300,000 civilians.”¹⁴⁵ Shortly thereafter, he warned: “Just imagine that the offensive ... in tandem with NATO, succeeded and ended up with part of our land being taken away. Then we would have to use nuclear weapons by virtue of the stipulations of the Russian Presidential Decree.”¹⁴⁶

¹⁴² “DPRK NATA’s Report on Successful Launch of Reconnaissance Satellite,” *KCNA*, November 22, 2023, <http://www.kcna.co.jp/item/2023/202311/news22/20231122-02ee.html>.

¹⁴³ Guy Faulconbridge and Felix Light, “Putin Ally Warns NATO of Nuclear War If Russia Is Defeated in Ukraine,” *Reuters*, January 19, 2023, <https://www.reuters.com/world/europe/putin-ally-medvedev-warns-nuclear-war-if-russia-defeated-ukraine-2023-01-19/>.

¹⁴⁴ “If Crimea Is Attacked, It Will Be Grounds for the Use of Nuclear Weapons,’ Former Russian President,” *Asahi Shimbun*, March 24, 2023, <https://digital.asahi.com/articles/ASR3S6K7FR3SUHBI02M.html>. (in Japanese)

¹⁴⁵ “War Can Be Ended Quickly Either Through Peace Treaty or Nuclear Weapons: Top Russian Official,” *Anadolu Ajansi*, July 5, 2023, <https://www.aa.com.tr/en/europe/war-can-be-ended-quickly-either-throu-gh-peace-treaty-or-nuclear-weapons-top-russian-official/2937713#>.

¹⁴⁶ Josh Pennington, Alex Stambaugh and Brad Lendon, “Medvedev Says Russia Could Use Nuclear Weapon If Ukraine’s Fightback Succeeds in Latest Threat,” *CNN*, July 31, 2023, <https://edition.cnn.com/2023/07/31/russia-nuclear-weapon/index.html>.

Russia's nuclear intimidation was strongly condemned at the 2023 NPT PrepCom, mainly by Western countries. For instance, the United States stated, "Russia's unprovoked war against Ukraine tragically continues, as do Russia's irresponsible nuclear rhetoric. ... Russia's actions are hardly a side show, unrelated to the Treaty and its political process; instead, they strike at the heart of the NPT's bargains, and at the system of nuclear restraint it helps make possible."¹⁴⁷ Japan also argued: "[T]he very core values of the NPT regime have been seriously threatened and challenged by the words and actions of the Russian Federation in the course of its aggression against Ukraine, which Japan strongly condemns. It is completely unacceptable that a nuclear weapon state imposes its political will upon a non-nuclear weapon state with a thinly veiled threat of use of nuclear weapons."¹⁴⁸

Russia responded by stating the following:

At this stage the continued possession of nuclear weapons is for our country the only possible response to certain external threats. The Ukrainian crisis provoked and fueled by the West has confirmed the validity of our concerns. ... Under these circumstances, further reductions in our country's nuclear weapons would not only dramatically decrease its security, but would actually turn the idea of large-scale

aggression against Russia into a very realistic option for NATO countries, which have a significant advantage in conventional weapons.¹⁴⁹

On October 25, Russia conducted a large-scale retaliatory nuclear strike exercise, launching Yars ICBM, Sineva SLBM, and air-launched cruise missiles. In December, President Putin stated, "Given the changing nature of military threats and the emergence of new military and political risks, the role of the nuclear triad, which ensures the balance of power, the strategic balance of power in the world, has significantly increased."¹⁵⁰

North Korea reiterated in 2023 that it would expand the role of nuclear weapons in its national security, and actively conducted missile tests and drills of various types.

A report of the Enlarged Plenary Meeting of the Workers' Party of the Korea Central Committee held on December 26-31, 2022 was published in the KCNA on January 1, 2023. The report stated that, with regard to nuclear strategy, North Korea's "nuclear force considers it as the first mission to deter war and safeguard peace and stability and, however, if it fails to deter, it will carry out the second mission, which will not be for defense." It also mentioned that "a task was raised to

[cnn.com/2023/07/31/europe/medvedev-russia-nuclear-weapons-intl-hnk/index.html](https://www.cnn.com/2023/07/31/europe/medvedev-russia-nuclear-weapons-intl-hnk/index.html).

¹⁴⁷ "Statement of the United States," General Debate, First PrepCom for the 11th NPT RevCon, July 31, 2023.

¹⁴⁸ "Statement of Japan," Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

¹⁴⁹ "Statement of Russia," Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

¹⁵⁰ "Expanded Meeting of Defence Ministry Board," Kremlin, December 19, 2023, <http://en.kremlin.ru/events/president/news/73035>.

develop another ICBM system whose main mission is quick nuclear counterstrike,” which is likely to mean solid-fuel ICBMs. Furthermore, the report stated, “Now that the south Korean puppet forces who designated the DPRK as their ‘principal army’ and openly trumpet about ‘preparations for war’ have assumed our undoubted enemy, it highlights the importance and necessity of a mass-producing of tactical nuclear weapons and calls for an exponential increase of the country’s nuclear arsenal, the report said, clarifying the epochal strategy of the development of nuclear force and national defence for 2023 with this as a main orientation.”¹⁵¹

The North Korea’s nuclear posture, consisting of the two missions described above, was repeatedly mentioned. On March 9, Chairman Kim Jong Un emphasized: “the [Hwasong artillery unit] should be strictly prepared for the greatest perfection in carrying out the two strategic missions, that is, first to deter war and second to take the initiative in war, by steadily intensifying various simulated drills for real war in a diverse way in different situations.”¹⁵² At the “combined tactical drill simulating a nuclear counterattack by the units for the operation of tactical nukes” on March 18-19, Chairman Kim said that North Korea

“cannot actually deter a war with the mere fact that it is a nuclear weapons state,” and emphasized that “it is possible to fulfill the important strategic mission of war deterrence and reliably defend the sovereignty of the country ... only when the nuclear force is perfected as a means actually capable of mounting an attack on the enemy and its nuclear attack posture for prompt and accurate activation is rounded off to always strike fear into the enemy.”¹⁵³

In June, the U.S. Office of the Director of National Intelligence (ODNI) published a report that was prepared by the National Intelligence Council (NIC) in January 2023. The report, titled “North Korea: Scenarios for Leveraging Nuclear Weapons Through 2030,” detailed various potential uses of North Korea’s nuclear arsenal, categorizing them into coercive, offensive, and defensive objectives. Notably, the report emphasized the likelihood of North Korea employing its nuclear weapons for coercive purposes as the most probable scenario. It also stated, “North Korea most likely will continue to use its nuclear weapons status to support coercive diplomacy, and almost certainly will consider increasingly risky coercive actions as the quality and quantity of its nuclear and ballistic missile arsenal grows.”¹⁵⁴

¹⁵¹ “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>.

¹⁵² “Respected Comrade Kim Jong Un Watches Fire Assault Drill,” *KCNA*, March 10, 2023, <http://www.kcna.co.jp/item/2023/202303/news10/20230310-01ee.html>.

¹⁵³ “Nuclear Counterattack Simulation Drill Conducted in DPRK,” *KCNA*, March 20, 2023, <http://www.kcna.co.jp/item/2023/202303/news20/20230320-01ee.html>.

¹⁵⁴ National Intelligence Council, “North Korea: Scenarios for Leveraging Nuclear Weapons Through

Concerns have been raised regarding China's rapid expansion of its nuclear capabilities and the potential increase in the role of nuclear weapons in its national security strategy. However, China has consistently denied these allegations. It stated:

China has always pursued a nuclear strategy of self-defense, and undertakes not to be the first to use nuclear weapons at any time and under any circumstances, and unconditionally commits itself not to use or threaten to use nuclear weapons against non-nuclear-weapon States or nuclear-weapon-free-zones. No matter how the international situation changes, China will always maintain its nuclear force at the minimum level required for national security, and will not seek nuclear parity or engage in a nuclear arms race with any nuclear-weapon State. China does not provide nuclear umbrella and does not deploy nuclear weapons abroad.¹⁵⁵

B) Commitment to no first use, “sole purpose,” and related doctrines

In 2023, no nuclear-armed state changed or altered its policy regarding no first use (NFU) or the “sole purpose” of nuclear weapons. Among the NWS, China remains the only one to have officially declared an NFU policy, and it reaffirmed this commitment in 2023. The other four NWS have declined to embrace NFU or “sole purpose” policies. China has advocated that all NWS should

unconditionally commit to NFU of nuclear weapons, and negotiate and conclude international legal instruments toward this end. While the United States has argued that there is some ambiguity about conditions where Beijing's NFU policy would no longer apply, China contested these claims.

Regarding the other nuclear-armed states, India maintains an NFU policy despite reserving the option of nuclear retaliation in response to a major biological or chemical attack. Meanwhile, Pakistan, which has developed short-range nuclear weapons to counter the “Cold Start doctrine” developed by the Indian Army, does not exclude the possibility of first use of nuclear weapons against an opponent's conventional attack.

North Korea, in its law on “Policy on Nuclear Forces” enacted in September 2022, indicated that there is a possibility of first use of its nuclear weapons.¹⁵⁶ In recent years, North Korean leaders have repeatedly and strongly mentioned the possibility of nuclear first use.

C) Negative security assurances

No NWS significantly changed its negative security assurance (NSA) policy in 2023. China is the only NWS that has declared an unconditional NSA for NNWS, while the other NWS add some conditions in their NSA policies.

The United Kingdom and the United

2030,” January 2023.

¹⁵⁵ “Statement of China,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

¹⁵⁶ “Law on DPRK's Policy on Nuclear Forces Promulgated.”

States declared they would not use or threaten to use nuclear weapons against NNWS that are parties to the NPT and in compliance with their non-proliferation obligations. The U.K.'s additional condition, as stated in its *Integrated Review of Security, Defence, Development and Foreign Policy* is that: “[W]e reserve the right to review this assurance if the future threat of weapons of mass destruction, such as chemical and biological capabilities, or emerging technologies that could have a comparable impact, makes it necessary.”¹⁵⁷ The United States in its 2022 NPR reaffirmed its above-mentioned declaration.

In 2015, France slightly modified its NSA commitment, which stated that: “France will not use nuclear weapons against states not armed with them that are signatories of the NPT and that respect their international obligations for non-proliferation of weapons of mass destruction.”¹⁵⁸ The condition added in 2015 was that its commitment does not “affect the right to self-defence as enshrined in Article 51 of the United Nations Charter.”¹⁵⁹

Russia upholds a unilateral NSA under which it will not use or threaten to use nuclear weapons against the NNWS parties to the NPT, except in cases where Russia or its allies are invaded or attacked by a NNWS in cooperation with other

NWS. Western countries have condemned Russia, claiming that its invasion of Ukraine, accompanied by nuclear intimidations, contravenes both the NSA and the Budapest Memorandum of Understanding that Russia signed with Ukraine and others in 1994. However, Russia has insisted that it has not threatened Ukraine with the use of nuclear weapons.¹⁶⁰

As written in the previous *Hiroshima Reports*, while one purpose of the NSAs provided by NWS to NNWS is to alleviate the imbalance of rights and obligations between NWS and NNWS under the NPT, India, Pakistan and North Korea have also offered NSAs to NNWS. None of these countries significantly changed their NSA policies in 2023. India declared that it would not use nuclear weapons against NNWS, with the exception 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 declared an unconditional NSA. In addition, North Korea stipulated in its law on Policy on Nuclear Weapons in 2022 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

¹⁵⁷ United Kingdom, *Global Britain in a Competitive Age*.

¹⁵⁸ NPT/CONF.2015/10, March 12, 2015.

¹⁵⁹ Ibid.

¹⁶⁰ For instance, see, “Statement by Russia in Exercise of the Right of Reply,” 10th NPT RevCon, August 2, 2022.

weapons states.”

Apart from the protocols to nuclear-weapon-free zone (NWFZ) treaties, NWS have not provided legally binding NSAs. The NAM countries reiterated their argument at the NPT PrepCom that: “[T]he Group stresses that the urgent negotiations on the provision of effective, unconditional, non-discriminatory, irrevocable, universal and legally binding security assurances by all the nuclear-weapon States to all non-nuclear weapon States parties to the Treaty against the use or threat of use of nuclear weapons under all circumstances should also be pursued as a matter of priority and without further delay.”¹⁶¹ China has stated that it supports the early commencement of substantive work toward concluding an international legal instrument on NSAs.¹⁶² However, the other four NWS have been consistently reluctant to pursue their codification.¹⁶³

At the 2023 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 “[r]eaffirms the urgent need to reach an early agreement on effective international arrangements to assure non-nuclear-weapon States against the use or threat of use of nuclear weapons.”¹⁶⁴ The voting behavior of

countries surveyed in this project on this resolution is as follows:

- 123 in favor (Brazil, China, Egypt, India, Indonesia, Iran, Japan, Kazakhstan, Mexico, Pakistan, Saudi Arabia, Syria and others); 0 against; 62 abstentions (Australia, Austria, Canada, France, Germany, Israel, South Korea, North Korea, the Netherlands, New Zealand, Norway, Poland, Russia, South Africa, Sweden, Switzerland, Turkey, the United Kingdom, the United States and others)

D) Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones

The protocols to the NWFZ treaties include the provision of legally binding NSAs. However, as of the end of 2023, only the Protocol of the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (the Treaty of Tlatelolco) has been ratified by all NWS, as shown in Table 1-5. No new progress regarding additional ratifications by NWS was made in 2023.

Regarding the Protocol to the Southeast Asia NWFZ (SEANWFZ) Treaty (Bangkok Treaty), which has not been signed by any of the five NWS, the Executive Committee of the SEANWFZ Commission stated at the NPT PrepCom, “[I]t is continuing to explore the

¹⁶¹ NPT/CONF.2026/PC.I/WP.14, June 14, 2023.

¹⁶² NPT/CONF.2020/41, November 16, 2021.

¹⁶³ France stated that it “considers [the] commitment [on security assurances in its statement in April 1995] legally binding, and has so stated.” See, for instance, NPT/CONF.2015/PC.III/14, April 25, 2014.

¹⁶⁴ A/RES/78/18, December 4, 2023.

Table 1-5: The status of signature and ratification of protocols to NWFZ treaties on NSAs

	China	France	Russia	U.K.	U.S.
Treaty of Tlatelolco	○	○	○	○	○
Treaty of Rarotonga	○	○	○	○	△
Southeast Asian NWFZ (SEANWFZ) Treaty					
Treaty of Pelindaba	○	○	○	○	△
Central Asia NWFZ (CANWFZ) Treaty					

[○: Ratified △: Signed]

possibility of allowing individual NWS which are willing to sign and ratify the Protocol to the SEANWFZ Treaty without reservations and provide prior formal assurance of this commitment in writing to go ahead with the signing.¹⁶⁵ In July, Indonesian Foreign Minister Retno Marsudi told that the ASEAN will review the points of the treaty's protocol in order to pave an easier way for the NWS to sign and ratify it.¹⁶⁶ The five NWS have expressed their intention to sign the protocol, and it has been reiterated that consultations between the parties to the treaty and the five NWS are continuing. However, it is unclear how far the consultations have progressed.

Some NWS have added interpretations—which are substantially reservations—to the protocols to the NWFZ treaties when signing or ratifying them. The NAM and NAC, as well as states parties to the NWFZ treaties, have called for the withdrawal of any related reservations or

unilateral interpretative declarations that are incompatible with the object and purpose of such treaties. For instance, the NAM countries argued, “[T]he Group strongly calls for the withdrawal of any related reservations or unilateral interpretative declarations that are incompatible with the object and purpose of the treaties to establish nuclear-weapon-free zones.”¹⁶⁷ The Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) also stated, “[It] has been seeking to establish a dialogue mechanism with these States to find mutually agreed solution to this issue. We hope that this PrepCom will serve as a platform for further discussions on this matter.”¹⁶⁸

However, it seems unlikely that any NWS except China will accept such a request. Russia said at the NPT PrepCom, “[Its] reservations in no way affect the interests of States that intend to strictly adhere to their obligations under a relevant treaty

¹⁶⁵ “Statement by the Philippines on behalf of the ASEAN,” First PrepCom for the 11th NPT RevCon, July 31, 2023.

¹⁶⁶ “SEANWFZ: US Committed to Non-Proliferation Regime: Blinken,” *ANTARA News*, July 15, 2023, <https://en.antaranews.com/news/288390/seanwzf-us-committed-to-non-proliferation-regime-blinken>.

¹⁶⁷ NPT/CONF.2026/PC.I/WP.10, June 14, 2023.

¹⁶⁸ “Statement by the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL),” First PrepCom for the 11th NPT RevCon, July 31, 2023.

establishing a NWFZ. They are merely a tool to ensure that NWFZ States comply with the provisions of the agreements they concluded.”¹⁶⁹ The United States also stated, “Concerning U.S. -interpretative statements made in connection with ratification of those zone protocols, we wish to make clear that none are or would be inconsistent with the object and purpose of those treaties and their associated protocols.”¹⁷⁰

E) Relying on extended nuclear deterrence

Russia and Belarus

On March 25, 2023, Russian President Putin announced that Moscow would station its tactical nuclear weapons in Belarus. He stated that Russia would complete construction of storage facilities for these weapons in Belarus on July 1. President Putin emphasized that this deployment would not violate the nuclear nonproliferation regime, as the control over these nuclear weapons would remain with Russia and not be transferred to Belarus. He drew a parallel by mentioning the deployment of U.S. tactical nuclear

weapons in NATO countries for decades.¹⁷¹ President Putin also disclosed that Russia had already transferred the nuclear-capable Iskander SRBMs and helped to upgrade 10 Belarusian aircraft to make them capable of carrying nuclear weapons.¹⁷²

On May 25, Belarusian President Aleksandr Lukashenko announced that the process of transferring tactical nuclear weapons from Russia to Belarus had commenced. This move followed the signing of bilateral documents between two countries, permitting the placement of Russian tactical nuclear weapons on Belarusian territory.¹⁷³ In December, President Lukashenko revealed that Russia had completed its shipments of tactical nuclear weapons to Belarus in October 2023.¹⁷⁴

Throughout this period, President Lukashenko made several assertive statements on this issue. For instance, he suggested in May that countries willing “to join the Union State of Russia and Belarus” would be granted access to nuclear weapons.¹⁷⁵ On June 13, he went

¹⁶⁹ “Statement by Russia,” First PrepCom for the 11th NPT RevCon, August 1, 2023.

¹⁷⁰ “Statement of the United States,” Cluster 2, First PrepCom for the 11th NPT RevCon, August 7, 2023.

¹⁷¹ “Putin says Russia Will Station Tactical Nukes in Belarus,” *Associated Press*, March 26, 2023, <https://www.asahi.com/ajw/articles/14870313>.

¹⁷² “Why Does Russia Want Tactical Nuclear Weapons in Belarus?” *Mainichi Newspapers*, March 28, 2023, <https://mainichi.jp/english/articles/20230328/p2g/00m/0in/016000c>.

¹⁷³ “Moscow, Minsk Sign Documents on Placing Russian Tactical Nuclear Weapons in Belarus,” *Radio Free Europe / Radio Liberty*, May 25, 2023, <https://www.rferl.org/a/russia-belarus-tactical-nuclear-weapons-agreement-signed/32427691.html>.

¹⁷⁴ “Belarus Leader Says Russian Nuclear Weapons Shipments Completed, Raising Concern in Region,” *Associated Press*, December 25, 2023, <https://www.voanews.com/a/belarus-leader-says-russian-nuclear-weapons-shipments-are-completed-raising-concern-in-the-region/7412211.html>.

¹⁷⁵ Mariya Knight, Uliana Pavlova and Helen Regan, “Lukashenko Offers Nuclear Weapons to Nations Willing ‘to Join the Union State of Russia and Belarus,’” *CNN*, May 28, 2023, <https://edition.cnn.com/>

further, warning that he would not hesitate to order their use in the event of an aggressive act against Belarus.¹⁷⁶

However, Russia has consistently clarified that Russia retains the authority for the control and use of its nuclear weapons stationed in Belarus.¹⁷⁷

NATO

Currently, it is estimated that the United States deploys approximately 100 B-61 nuclear gravity bombs in five NATO countries (Belgium, Germany, Italy, the Netherlands and Turkey), and maintains nuclear sharing arrangements with them. NATO's Nuclear Planning Group (NPG) also supports the U.S. extended nuclear deterrence.

In the NATO Strategic Concept adopted in June 2022, there was a heightened emphasis on the role of nuclear deterrence compared to the previous version adopted in 2010, particularly concerning (extended) nuclear deterrence.¹⁷⁸ In 2023, NATO members reaffirmed the significance of extended nuclear deterrence for NATO's security strategy. For example, Germany in its National Security Strategy published in

June stated that “[a]s long as nuclear weapons exist, maintaining credible nuclear deterrence is essential for NATO and for European security.”¹⁷⁹ Polish Prime Minister Mateusz Morawiecki reiterated his country's willingness to participate in the NATO's nuclear sharing arrangements in the form of accepting U.S. nuclear weapons into Poland.¹⁸⁰

There was no indication that the United States was considering this.

In October 2023, the annual NATO nuclear weapons exercise “Steadfast Noon” was held with up to 60 aircraft, including fighters, surveillance aircrafts and U.S. B52 strategic bombers from 13 of the NATO's 31 member states.

Regarding Sweden which has applied to join NATO, its Foreign Minister Tobias Billström said, “Sweden is joining NATO without reservations. However, like the other Nordic countries, we do not foresee having nuclear weapons on our own territory in peacetime.”¹⁸¹

Indo-Pacific Region

While no U.S. nuclear weapon is deployed outside American territory, except in the NATO countries mentioned above, the

2023/05/28/europe/lukashenko-nuclear-weapons-belarus-russia-intl-hnk/index.html.

¹⁷⁶ “Leader of Belarus Says He Wouldn't Hesitate to Use Russian Nuclear Weapons to Repel Aggression,” *Associated Press*, June 13, 2023, <https://apnews.com/article/russia-belarus-lukashenko-nuclear-weapons-6f97b76288f8cb9c0490c5151d588b3e>.

¹⁷⁷ “Belarus Leader Says Nuclear Arms Will Not Be Used,” *Reuters*, June 30, 2023, <https://www.reuters.com/world/europe/belarus-leader-says-nuclear-arms-will-not-be-used-2023-06-30/>.

¹⁷⁸ NATO, *Strategic Concept*, June 29, 2022, p. 8.

¹⁷⁹ Germany, *National Security Strategy*, 2023, p. 32.

¹⁸⁰ Joseph Trevithick, “Poland Wants to Host NATO Nukes to Counter Russia,” *The War Zone*, June 30, 2023, <https://www.thedrive.com/the-war-zone/poland-wants-to-host-nato-nukes-to-counter-russia>.

¹⁸¹ Tobias Billström, “Statement of Foreign Policy 2023,” Government Offices of Sweden, February 15, 2023, <https://www.government.se/speeches/2023/02/statement-of-foreign-policy-2023/>.

United States has established consultative mechanisms on extended deterrence with Japan (the Extended Deterrence Dialogue: EDD) and South Korea (the Extended Deterrence Policy Committee: EDPC).

Regarding the Japan-U.S. EDD in June 2023, Japan's Ministry of Foreign Affairs reported, *inter alia*: Japan and the United States “reviewed conventional and U.S. nuclear capabilities contributing to regional deterrence, and highlighted the importance of optimizing the Alliance's force posture and activities to bolster deterrence effectiveness”; “The United States reiterated its commitment to increase the visibility of U.S. strategic assets in the region”; and “Both sides also pledged to improve coordination and strengthen the Alliance's capabilities and posture to adversary missile threats.”¹⁸²

Japan also reported on the bilateral EDD held in December 2023 that “[t]he two sides shared assessments of the regional security environment, and reviewed Alliance conventional and U.S. nuclear capabilities contributing to regional deterrence and highlighted the importance of optimizing the Alliance's force posture and activities to bolster deterrence effectiveness. The two sides discussed strategic arms control and risk reduction

approaches in response to nuclear risks that are becoming increasingly challenging and complex as diversification and expansion of regional actors' nuclear arsenals are advancing.”¹⁸³

As for South Korea which has been increasing its interest in nuclear sharing with the United States, President Yoon Suk Yeol said, “The nuclear weapons belong to the United States, but planning, information sharing, exercises and training should be jointly conducted by South Korea and the United States.”¹⁸⁴ On the other hand, White House press secretary Karine Jean-Pierre said that “We're not discussing joint nuclear exercises.”¹⁸⁵ Washington has also consistently denied the possibility of deploying nuclear weapons in, or jointly operating them with South Korea. However, the United States acknowledges the necessity of bolstering extended deterrence. Reflecting this stance, in February 2023, the U.S.-South Korea “Deterrence Strategy Committee Table-top Exercise” was conducted, which was based on the hypothetical scenario of North Korea using nuclear weapons.

In the Washington Declaration, adopted by the United States and South Korea at their summit in April 2023, the maintenance and strengthening of

¹⁸² “Japan-U.S. Extended Deterrence Dialogue,” Ministry of Foreign Affairs of Japan, June 28, 2023, https://www.mofa.go.jp/press/release/press1e_000445.html.

¹⁸³ “Japan-U.S. Extended Deterrence Dialogue,” Ministry of Foreign Affairs of Japan, December 7, 2023, https://www.mofa.go.jp/press/release/pressite_000001_00032.html.

¹⁸⁴ Soo-Hyang Choi and Trevor Hunnicutt, “Biden Says U.S. Not Discussing Nuclear Exercises with South Korea,” *Reuters*, January 3, 2023, <https://www.reuters.com/world/asia-pacific/south-korea-us-eye-exercises-using-nuclear-assets-yoon-says-newspaper-2023-01-02/>.

¹⁸⁵ Olivia Olander, “White House: U.S. Coordinating with South Korea on Responses to the North, Including Nuclear Scenarios,” *Politico*, January 3, 2023, <https://www.politico.com/news/2023/01/03/us-south-korea-north-nuclear-00076201>.

extended deterrence was stated, as follows:

The United States commits to make every effort to consult with the ROK on any possible nuclear weapons employment on the Korean Peninsula, consistent with the U.S. Nuclear Posture Review's declaratory policy, and the Alliance will maintain robust communication infrastructure to facilitate these consultations. President Yoon reaffirmed the ROK's longstanding commitment to its obligations under the Nuclear Nonproliferation Treaty as the cornerstone of the global nonproliferation regime as well as to the U.S.-ROK Agreement for Cooperation Concerning Peaceful Uses of Nuclear Energy.

...The two Presidents announced the establishment of a new Nuclear Consultative Group (NCG) to strengthen extended deterrence, discuss nuclear and strategic planning, and manage the threat to the nonproliferation regime posed by the Democratic People's Republic of Korea (DPRK). In addition, the Alliance will work to enable joint execution and planning for ROK conventional support to U.S. nuclear operations in a contingency and improve combined exercises and training activities on the application of nuclear deterrence on the Korean Peninsula.

President Biden reaffirmed that the United States' commitment to the ROK and the Korean people is enduring and

ironclad, and that any nuclear attack by the DPRK against the ROK will be met with a swift, overwhelming and decisive response. ...Going forward, the United States will further enhance the regular visibility of strategic assets to the Korean Peninsula, as evidenced by the upcoming visit of a U.S. nuclear ballistic missile submarine to the ROK, and will expand and deepen coordination between our militaries.¹⁸⁶

The United States and South Korea agreed to convene four NCG meetings annually. Their agenda includes sharing information on nuclear weapons, conducting table-top exercises under various scenarios, and studying plans for South Korean support in U.S. nuclear operations. The inaugural meeting of the NCG was held in Seoul on July 18, and Washington and Seoul agreed to develop a concrete response plan in the event of a nuclear attack, aimed at deterring North Korea from employing nuclear weapons. They also warned: "Any nuclear attack by North Korea against the United States or its allies is unacceptable and will result in the end of that regime."¹⁸⁷ Furthermore, it was also announced that the U.S. SSBN Kentucky made a port call at Busan in line with the regular visits of U.S. strategic assets mentioned in the Washington Declaration.

At the fourth Extended Deterrence Strategy and Consultation Group

¹⁸⁶ "Washington Declaration," White House, April 26, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/26/washington-declaration-2/>.

¹⁸⁷ "Joint Readout of the Inaugural U.S.-ROK Nuclear Consultative Group Meeting," July 18, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/07/18/joint-readout-of-the-inaugural-u-s-rok-nuclear-consultative-group-meeting/>.

(EDSCG) held in Seoul in September, the United States and South Korea “reaffirmed that any nuclear attack by the DPRK against the ROK will be met with a swift, overwhelming, and decisive response. The U.S. side also reiterated that any nuclear attack by the DPRK against the United States or its allies is unacceptable and will result in the end of the Kim regime.”¹⁸⁸

Japan-U.S.-South Korea trilateral security cooperation has also made significant progress. The first trilateral summit meeting between the leaders of these countries was held alone at Camp David in August 2023, and they issued three documents: the Camp David Principles, the Spirit of Camp David, and the Commitment to Consult Between Japan, the United States and South Korea. The “Camp David Principles” enumerates a common vision for the three countries, including: “Our countries are dedicated to honoring our commitments to non-proliferation as parties to the Treaty on the Non-Proliferation of Nuclear Weapons. We reaffirm that achieving a world without nuclear weapons is a common goal for the international community, and we continue to make every effort to ensure that nuclear weapons are never used again.”¹⁸⁹ The “Spirit of Camp David” describes a wide

range of efforts by the three countries to protect their common interests, including to hold multi-domain trilateral exercises on a regular basis, strengthen ballistic missile defense cooperation, establish a trilateral working group on North Korean cyber activities, expand information sharing, and counter external disinformation operations.¹⁹⁰ They also agreed in the “Commitment to Consult among Japan, the United States and the Republic of Korea” that “[the three countries] commit [their] governments to consult trilaterally with each other, in an expeditious manner, to coordinate [their] responses to regional challenges, provocations, and threats affecting [their] collective interests and security.”¹⁹¹

In October 2023, the Japan Air Self-Defense Force and the U.S. and South Korean Air Forces conducted the first joint exercise in the south of the Korean Peninsula, with the participation of U.S. B-52H strategic bombers. In addition, in December, Japanese and South Korean defense officials announced the activation of a system designed for sharing real-time missile detection information between the two countries, facilitated through the United States.

Criticisms and counter-arguments

Various criticisms and objections to

¹⁸⁸ U.S. Department of State, “Extended Deterrence Strategy and Consultation Group,” September 15, 2023, <https://www.state.gov/joint-statement-on-extended-deterrence-and-consultation-group/>.

¹⁸⁹ “Camp David Principles,” Japan-U.S.-ROK Summit, August 18, 2023, <https://www.mofa.go.jp/mofaj/files/100541768.pdf>.

¹⁹⁰ “The Spirit of Camp David: Joint Statement of Japan, the Republic of Korea, and the United States,” Japan-U.S.-ROK Summit, August 18, 2023, <https://www.mofa.go.jp/mofaj/files/100541826.pdf>.

¹⁹¹ “Commitment to Consult among Japan, the Republic of Korea, and the United States,” Japan-U.S.-ROK Summit, August 18, 2023, <https://www.mofa.go.jp/mofaj/files/100541772.pdf>.

extended nuclear deterrence were made at the NPT PrepCom and other forums.

The NAM countries stated, “[A]ny horizontal proliferation of nuclear weapons and nuclear weapon-sharing by States Parties constitutes a clear violation of non-proliferation obligations undertaken by those [NWS] under Article I and by those [NNWS] under Article II of the Treaty. The Group therefore urges these States parties to put an end to nuclear weapon-sharing with other States under any circumstances and any kind of security arrangements in times of peace or in times of war, including in the framework of military alliances.”¹⁹² Brazil, Iran, and other countries also criticized NATO’s nuclear sharing arrangement as a violation of the NPT. South Africa stated, “The deployment of nuclear weapons in the territories of [NNWS] and the training of allied armed forces in their use is incompatible with the spirit and objectives, if not the letter, of the Treaty.”¹⁹³

China has criticized U.S.-allied developments in expanded deterrence. Beijing argued, for instance:

China also calls on the relevant countries to reduce the role of nuclear weapons in national and collective security doctrines, cease the development and deployment of global missile defense system, refrain from deploying land-based intermediate range missiles in the Asia-Pacific and

Europe, stop strengthening the so-called “extended deterrence”, withdraw nuclear weapons deployed overseas, give up the attempt to replicate “nuclear sharing” arrangements in the Asia Pacific, and take practical actions to reduce nuclear risks. In this regard, both nuclear-weapon States and non-nuclear-weapon States should play a positive role.¹⁹⁴

Russia also stated the following in terms of the U.S. extended nuclear deterrence in Europe and Asia:

In the context of the overall growth of threats from the West, the retention of U.S. nuclear weapons in Europe, which are designed to promptly hit a wide range of targets in the Russian territory, is of major concern to us, inciting compensatory countermeasures. These weapons must be completely withdrawn to the U.S. territory and the relevant infrastructure in Europe must be dismantled.

Washington’s steps toward extending such schemes to other parts of the world, where the United States already practices so-called “extended deterrence,” also have pronounced negative implications for regional and global security. In particular, the arrangements between the United States and the Republic of Korea on joint “nuclear planning” lead to heightened tensions in the Asia-Pacific region and spur an arms race. We note with concern the official calls to expand this format to include Japan¹⁹⁵.

¹⁹² “Statement by the NAM countries,” Cluster 2, First NPT PrepCom, August 4, 2023.

¹⁹³ “Statement of South Africa,” General Debate, First PrepCom for the 11th NPT RevCon, July 31, 2023.

¹⁹⁴ “Statement of China,” General Debate, First PrepCom for the 11th NPT RevCon, August 1, 2023.

¹⁹⁵ “Statement of Russia,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

In response to the above criticisms, Germany argued: “Comparisons [of Russia’s deployment of nuclear weapons in Belarus] to NATO’s nuclear sharing agreements are misleading. No nuclear weapons have been stationed in countries of the former Eastern bloc. NATO’s nuclear sharing arrangements have been and continue to be fully consistent with the NPT, and were put into place well before the NPT entered into force in 1970, which allowed NATO’s arrangements to be seamlessly integrated into the non-proliferation architecture. NATO Heads of State and Government have consistently stated that nuclear arrangements have always been fully consistent with the NPT, which remains the only credible path to nuclear disarmament.”¹⁹⁶ The Baltic states have expressed criticism regarding Russia’s deployment of nuclear weapons in Belarus. They argue that while the purpose of NATO’s nuclear forces is to preserve peace, prevent coercion, and deter aggression, Russia’s actions contravene its commitments under the NPT and the Budapest Memorandum of Understanding. According to the Baltic states, this deployment constitutes a provocation and poses an additional threat to global security.¹⁹⁷ Japan exercised its right of reply and explicitly clarified that it does not intend to engage in discussions with the United States regarding nuclear sharing.

F) Risk reduction

In recent years, as nuclear disarmament efforts continue to stall and even regress, coupled with rising concerns over the increased possibility of using nuclear weapon, there has been a heightened interest in nuclear risk reduction. This approach is seen as one of the few viable and concrete measures that could be collectively agreed upon to not only advance nuclear disarmament but also address these growing concerns. NNWS encompass a broad perspective on nuclear risk reduction, which includes not only the prevention of unintended use of nuclear weapons but also the prevention of their intentional use. They propose a wide array of measures for nuclear arms control and disarmament, such as reducing nuclear arsenals and improving transparency. In contrast, NWS have predominantly focused their discussions on nuclear risk reduction with an emphasis relatively more on preventing the unintended use of nuclear weapons. The *Hiroshima Report* conducts an analysis and evaluation of nuclear risk reduction with a primary focus on the prevention of unintended nuclear weapon use, while taking up the arguments and proposals of both sides.

Efforts by NWS

At the NPT PrepCom in 2023, China stated that discussions on nuclear risk reduction should be conducted in accordance with the following principles: upholding the vision of common,

¹⁹⁶ “Statement by Germany,” First PrepCom for the 11th NPT RevCon, July 31, 2023.

¹⁹⁷ “Statement by Estonia, Latvia and Lithuania,” General Debate, First PrepCom for the 11th NPT RevCon, July 31, 2023.

comprehensive, cooperative and sustainable security; maintaining strategic stability and undiminished security for all; taking precedence over crisis management; requiring joint efforts of both NWS and NNWS; and properly handling the relations between nuclear risk reduction and nuclear disarmament. China also argued that dialogue and cooperation on nuclear risk reduction should be promoted, listing the following aspects—many of which were not focused on nuclear risk reduction but were nuclear disarmament measures: no first use of nuclear weapons; de-targeting and de-alerting of nuclear weapons; reduction of the role of nuclear weapons in the collective security policies of certain countries (such as ending nuclear sharing and removing nuclear weapons deployed abroad); legal instruments on negative security assurances; prevention of nuclear war; maintenance of the nuclear nonproliferation regime including no transfer of weapons-grade fissile material or other materials to NNWS); safety and security of nuclear facilities; global strategic stability (such as halting the development and deployment of missile defense systems); security challenges posed by emerging technologies; and nuclear disarmament verification.¹⁹⁸

Russia stated, “As a matter of principle, we believe that nuclear risk reduction should be considered in the broader

context of minimizing strategic risks and on the basis of a comprehensive approach that takes into account the combination of relevant factors in their interrelationship. New steps in this area should be seamlessly integrated into the process of repairing the undermined international security architecture and minimizing the potential for conflict between nuclear-weapon States by addressing the root causes of the contradictions that arise between them through equitable dialogue.”¹⁹⁹

U.S. National Security Advisor Sullivan noted the importance of multilateral forums on strategic risk reduction, especially dialogue among the five NWS, and stated, “The P5 provides an opportunity to manage nuclear risk and arms race pressures through a mix of dialogue, transparency, and agreements.” He also proposed risk reduction measures, such as: maintaining a “human-in-the-loop” for command, control, and employment of nuclear weapons; establishing crisis communications channels among the five NWS capitals; committing to transparency on nuclear policy, doctrine, and budgeting; and setting up guardrails for managing the interplay between non-nuclear strategic capabilities and nuclear deterrence.²⁰⁰

In the meantime, the five NWS have not issued a joint statement on nuclear issues,

¹⁹⁸ NPT/CONF.2026/PC.I/WP.30, August 2, 2023.

¹⁹⁹ “Statement of Russia,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

²⁰⁰ Theresa Hitchens, “White House Pushes P-5 Agreement on Missile Launch Notification, Prods China to Talk,” *Breaking Defense*, June 2, 2023, <https://breakingdefense.com/2023/06/white-house-pushes-p-5-agreement-on-missile-launch-notification-prods-china-to-talk/>.

including nuclear risk reduction, since January 2022. On the other hand, the working-level experts' meeting of the NWS was held in Cairo on June 13-14, following the NWS working group on nonproliferation issues in early February 2023, where strategic risks and risk reduction measures were discussed, although the details were not disclosed.

In addition, on November 6, China and the United States held their first arms control dialogue at the director-general/assistant secretary level since the term of the Obama administration, followed by a U.S.-China summit meeting on November 15, where the two countries agreed to resume the high-level military-to-military communication, as well as the U.S.-China Defense Policy Coordination Talks and the U.S.-China Military Maritime Consultative Agreement meetings.²⁰¹

Proposals by NNWS

At the NPT PrepCom in 2023, NNWS made various proposals on nuclear risk reduction.

The Stockholm Initiative (comprising 14 countries including Canada, Germany, Indonesia, Japan, Kazakhstan, South Korea, the Netherlands, New Zealand, Norway, Sweden, and Switzerland) proposed comprehensive measures and efforts for nuclear risk reductions. Eleven

TPNW-supporting countries, including Austria and Mexico, also submitted working papers on nuclear risk reduction in the broadest sense.²⁰² Australia and the Philippines co-hosted the second ASEAN Regional Forum Nuclear Risk Reduction Workshop in Brisbane in March 2023. In addition, NAM countries emphasized the necessity and importance of nuclear risk reduction, especially in view of the humanitarian aspects of nuclear weapons.²⁰³

The NAC and NAM countries also acknowledged the need for nuclear risk reduction to a certain extent. However, they have concurrently emphasized that risk reduction efforts should not be misconstrued as justifying the possession of nuclear weapons. They have asserted that nuclear risk reduction is not a substitute for nuclear disarmament, but rather an interim measure to be pursued until elimination of nuclear weapons is achieved. In addition, Iran argued, "We view the so-called 'risk reduction measures' as an attempt to maintain the status quo and manage the new nuclear arms race between nuclear-weapon States."²⁰⁴ South Africa further criticized as stating, "[T]he risk reduction efforts being proposed while maintaining the value of deterrence are contradictory and of no value or contribution towards

²⁰¹ "Readout of President Joe Biden's Meeting with President Xi Jinping of the People's Republic of China," November 15, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/11/15/readout-of-president-joe-bidens-meeting-with-president-xi-jinping-of-the-peoples-republic-of-china-2/>.

²⁰² NPT/CONF.2026/PC.I/WP.24, July 25, 2023.

²⁰³ NPT/CONF.2026/PC.I/WP.5, June 13, 2023.

²⁰⁴ "Statement of Iran," Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

nuclear disarmament.”²⁰⁵

(7) De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons

In 2023, there were no significant changes in nuclear-armed states’ official policies on alert and/or operational status of their respective nuclear forces. Russian and U.S. strategic ballistic missiles have been on high alert status. In its 2022 Nuclear Posture Review, the United States indicated that while its ICBMs are not on “hair trigger” alert, it would not adopt the reduction of its alert level, as it could undermine crisis stability.²⁰⁶ As for the United Kingdom and France, their respective nuclear forces are kept on alert under their continuous SSBN patrols, albeit at lower readiness levels than those of the two nuclear superpowers.

China has not been expected to be on high alert in peacetime like the United States and Russia, but it is unclear what exactly China means by “moderate readiness.”²⁰⁷ The United States has recently pointed out a possibility of changes in these policies to a launch on warning (LOW) posture, in view of

China’s introduction of MIRVed ICBMs and new SSBNs/SLBMs, and its construction of an early warning system with Russia’s cooperation.²⁰⁸ In response to these U.S. assertions, China has repeatedly stated that its nuclear posture, including its alert status, has not changed.

Little definitive information has been made available regarding the alert status of other nuclear-armed states’ nuclear forces. It is widely considered that India’s nuclear forces are not on a high alert status. In February 2014, Pakistan stated that it “would not delegate advance authority over nuclear arms to unit commanders, even in the event of a crisis with India, [...and] all weapons are under the central control of the National Command Authority, which is headed by the prime minister.”²⁰⁹ Regarding North Korea, it was reported that an Enlarged Meeting of the Workers’ Party of Korea (WPK) Central Military Commission in May 2020 set out “new policies for further increasing the nuclear war deterrence of the country and putting the strategic armed forces on a high alert operation.”²¹⁰ However, it is unclear what concrete measures have been or will be implemented to that end.

²⁰⁵ “Statement of South Africa,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

²⁰⁶ The U.S. Department of Defense (DOD), *2022 Nuclear Posture Review*, 2022, p. 13.

²⁰⁷ NPT/CONF.2020/41, November 16, 2021.

²⁰⁸ U.S. DOD, *Military and Security Developments Involving the People’s Republic of China 2023*, October 2023, p. 112.

²⁰⁹ Elaine M. Grossman, “Pakistani Leaders to Retain Nuclear-arms Authority in Crises: Senior Official,” *Global Security Newswire*, February 27, 2014, <http://www.nti.org/gsn/article/pakistani-leaders-retain-nuclear-arms-authority-crises-senior-official/>.

²¹⁰ “Supreme Leader Kim Jong Un Guides Enlarged Meeting of WPK Central Military Commission,” *KCNA*, May 24, 2020, <http://www.kcna.co.jp/item/2020/202005/news24/20200524-01ee.html>.

Proponents of de-alerting have often argued that such measures are useful in preventing accidental use of nuclear weapons. The UNGA resolution titled “Reducing nuclear danger,”²¹¹ which “calls for...immediate and urgent steps to reduce the risks of unintentional and accidental use of nuclear weapons,” was adopted by 112 countries. However, 49 countries (including Australia, Austria, Canada, France, Germany, Israel, South Korea, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, Turkey, the United Kingdom and the United States) voted against it, and 13 countries (including China, Japan, North Korea, Pakistan and Russia) abstained.

(8) Comprehensive Nuclear-Test-Ban Treaty (CTBT)

A) Signing and ratifying the CTBT

As of the end of 2023, 177 of the 187 signatories have deposited their instruments of ratification of the Comprehensive Nuclear-Test-Ban Treaty (CTBT). As mentioned below, Russia revoked its ratification of the treaty.

Among the 44 states listed in Annex 2 of the CTBT, ratification of which is a prerequisite for the treaty’s entry into force, six states (China, Egypt, Iran, Israel,

Russia and the United States) have signed but not ratified, and three (India, North Korea and Pakistan) have not signed. Among the countries surveyed, Saudi Arabia and Syria as well have yet to sign the CTBT.

In his address to the Federal Assembly in February 2023, Russian President Putin announced a suspension on implementing the New START and stated, “If the US conducts [nuclear] tests, we will also conduct them,” implying a possible resumption of nuclear explosion tests.²¹² In October, President Putin highlighted that Russia had signed and ratified the CTBT, in contrast to the United States which has not ratified it. He also said that it was theoretically possible for the Russian parliament to revoke its ratification of the treaty.²¹³ In response, Chairman of the State Duma Vyacheslav Volodin said on October 6, “The situation in the world has changed. Washington and Brussels have unleashed a war against our country. Today’s challenges require new solutions.” He also suggested swiftly contemplating the need to de-ratify the CTBT.²¹⁴ In his social media, CTBT Special Envoy Mikhail Ulyanov stated, “[Russia’s de-ratification of the CTBT] aims to be on an equal footing with the US, which signed the treaty but did not

²¹¹ A/RES/78/44, December 4, 2023.

²¹² “Putin Orders Army to Prepare for Nuclear Tests, Saying US Is Creating New Weapons,” *Ukrainska Pravda*, February 21, 2023. <https://www.pravda.com.ua/eng/news/2023/02/21/7390282/>.

²¹³ “Putin Says Russia Has Tested Next-Generation Nuclear Weapon,” *Reuters*, October 6, 2023, <https://www.reuters.com/world/europe/putin-says-russia-has-tested-next-generation-nuclear-weapon-2023-10-05/>.

²¹⁴ “Russian Lawmakers to Consider De-Ratifying Nuclear Test Ban Treaty,” *Moscow Times*, October 6, 2023, <https://www.themoscowtimes.com/2023/10/06/russian-lawmakers-to-consider-de-ratifying-nuclear-test-ban-treaty-a82681>.

ratify it. The revocation doesn't mean the intention to resume nuclear tests."²¹⁵ The Russian Duma (on October 18) and the Federal Assembly (on October 25) unanimously passed the law to revoke its ratification. President Putin signed the law on November 2.

In the meantime, on September 22, the 13th Conference on Facilitating the Entry into Force of the CTBT was convened, which more than 80 countries attended. In the Final Declaration, participants reaffirmed their determination to take concrete and actionable steps towards early entry into force and universalization of the CTBT. They also agreed to conduct active outreach activities.²¹⁶

Prior to this conference, on August 29, a meeting was held at the UN Headquarters to commemorate the International Day Against Nuclear Tests, which was established at the initiative of Kazakhstan. In addition, Japan hosted a regional meeting in Tokyo on July 6 to promote the entry into force of the CTBT, where various issues, such as universalization of the treaty and verification technologies were discussed.²¹⁷

At the 2023 UNGA, a resolution, titled "Comprehensive Nuclear-Test-Ban Treaty,"²¹⁸ in which member states

emphasized the vital importance and urgency of signature and ratification, without delay and without conditions, to achieve the earliest entry into force of the CTBT, was adopted with 181 countries in favor, one against (North Korea) and four abstentions (India, Saudi Arabia, Syria and others).

Regarding outreach activities for promoting the treaty's entry into force, a document, titled "Activities Undertaken by Signatory and Ratifying States Under Measure (K) of the Final Declaration of the 2015 Article XIV Conference in the Period June 2022-May 2023,"²¹⁹ was distributed at the Article XIV Conference on Facilitating the Entry-Into-Force of the CTBT, and summarized activities conducted by ratifying and signatory states. It highlighted:

- Bilateral activities related to Annex 2 states (conducted by Australia, Japan, New Zealand, Russia, Switzerland, the United Kingdom, the United States and others);
- Bilateral activities related to non-Annex 2 states (conducted by Australia, Japan, New Zealand, Russia, the United Kingdom, the United States and others);
- Global-level activities (conducted by Australia, Japan, South Korea, Mexico,

²¹⁵ "Russia Will Revoke Ratification of Nuclear Test Ban Treaty, Envoy Says," *Guardian*, October 7, 2023, <https://www.theguardian.com/world/2023/oct/06/nuclear-watchdog-russia-putin-testing-treaty>.

²¹⁶ "Final Declaration and Measures to Promote the Entry Into Force of the CTBT," September 22, 2023.

²¹⁷ "Convening the Regional Meeting to Promote the Entry into Force of the CTBT," Ministry of Foreign Affairs of Japan, July 7, 2023, https://www.mofa.go.jp/mofaj/press/release/press5_000063.html. (in Japanese)

²¹⁸ A/RES/78/66, December 4, 2023.

²¹⁹ CTBT-Art.XIV/2023/4, August 28, 2023.

New Zealand, Russia, Switzerland, the United Kingdom, the United States and others); and

- Regional-level activities (conducted by Australia, Mexico, New Zealand, Russia, the United States and others).

B) Moratoria on nuclear test explosions pending CTBT's entry into force

The five NWS plus India and Pakistan maintain a moratorium on nuclear test explosions. As noted above, Russia repeatedly stated that as long as the United States does not conduct nuclear explosion tests, it would not do so either. Israel, which has kept its nuclear policy opaque, has not disclosed the possibility of conducting nuclear tests.

North Korea, at the Plenary Meeting of the Central Committee of the Workers' Party of Korea on April 20, 2018, decided to stop nuclear tests and test launches of longer-range ballistic missiles. However, Chairman Kim Jong Un stated in late December 2019 that "the DPRK has found no grounds to be unilaterally bound any longer by the commitment" to stop nuclear and longer-range ballistic missiles tests.²²⁰ In January 2022, Chairman Kim instructed relevant departments to reevaluate the moratorium on longer-range ballistic missiles launch tests and nuclear explosion tests, and to consider

the issue on resuming them promptly.²²¹ Since May 2022, there have been occasional reports suggesting that North Korea had completed preparations for a nuclear explosion test. However, as of the end of 2023, North Korea had not resumed nuclear explosion tests.

C) Cooperation with the CTBTO Preparatory Commission

Regarding the countries surveyed in this study, the status of their contribution payments to the CTBTO, as of December 31, 2023, is as follows.²²²

- Fully paid: Australia, Austria, Brazil, Canada, China, Egypt, France, Germany, Indonesia, Israel, Japan, Kazakhstan, Mexico, the Netherlands, New Zealand, Norway, Poland, Russia, Sweden, Switzerland, Turkey, the United Kingdom, and the United States
- Partially paid: South Korea and South Africa
- Voting right in the Preparatory Commission suspended because arrears are equal to or larger than its contributions due for the last two years: Iran

D) Contribution to the development of the CTBT verification systems

The establishment of the CTBT verification system has progressed steadily. The pace of establishing International

²²⁰ "Report on 5th Plenary Meeting of 7th C.C., WPK," *NCNK*, January 1, 2020, https://www.ncnk.org/resources/publications/kju_2020_new_years_plenum_report.pdf/file_view.

²²¹ 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/>.

²²² CTBTO, "Status of Assessed Contributions," December 31, 2023, https://www.ctbto.org/sites/default/files/2024-01/20231231_Status%20of%20Assessed%20Contribution_0.pdf.

Monitoring System (IMS) stations in Egypt and Iran—in addition to those in India, North Korea, Pakistan and Saudi Arabia, which have yet to sign the CTBT—has been lagging, compared to the pace in the other signatory countries. In addition, nearly half of China’s stations have not yet been certified by the CTBTO Preparatory Committee.²²³

At the CTBT Scientific and Technical Conference in June 2023, the United States introduced its efforts and contributions to the detection and verification of nuclear explosive tests.²²⁴ In an effort primarily aimed at reducing tensions with Russia and China, at the IAEA General Conference in late September, the United States proposed reciprocal visits to nuclear test sites as a means to uphold the moratorium on nuclear test explosions.²²⁵ In addition, the U.S. Nevada National Security Site (NNSS) conducted a subsurface chemical explosion to improve the U.S. ability to detect low-yield nuclear explosions around the world. The National Nuclear Security Administration (NNSA) also reported:

“The experiment will help validate new predictive explosion models and detection algorithms. Measurements were collected using accelerometers, seismometers, infrasound sensors, electromagnetic sensors, chemical and radiotracer samplers, and meteorological sensors.”²²⁶

In the meantime, while Russia revoked its ratification of the CTBT, Russian Ministry of Defense announced in November that Russia’s segment of the international network that monitors under the CTBT would be completed in 2023.²²⁷

E) Nuclear testing

No country conducted a nuclear test explosion in 2023. In its annual report on “Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments” published in April 2023, the U.S. State Department again alleged that China and Russia may have conducted nuclear tests in previous years that created nuclear yield, contrary to the common understanding that the CTBT standard is “zero yield.”²²⁸ Both China and

²²³ CTBTO, “Station Profiles,” <https://www.ctbto.org/verification-regime/station-profiles/>.

²²⁴ “Remarks by NNSA Deputy Administrator for Defense Nuclear Nonproliferation Corey Hinderstein at the CTBT: Science and Technology Conference 2023,” *NNSA*, June 20, 2023, <https://www.energy.gov/nnsa/articles/remarks-nnsa-deputy-administrator-defense-nuclear-nonproliferation-corey-hinderstein>.

²²⁵ Jonathan Tirone, “US Offers Nuclear-Test Inspections to Ease Russia, China Tension,” *Bloomberg*, September 29, 2023, <https://www.bloomberg.com/news/articles/2023-09-28/us-throws-nuclear-arms-control-a-life-preserver-at-iaea-meeting>.

²²⁶ “NNSA Conducts Experiment to Improve U.S. Ability to Detect Foreign Nuclear Explosions,” *NNSA*, October 18, 2023, <https://www.energy.gov/nnsa/articles/nnsa-conducts-experiment-improve-us-ability-detect-foreign-nuclear-explosions-0>.

²²⁷ “Russia Says It’s Completing Its Section of International Nuclear Test Monitoring Network,” *Reuters*, November 17, 2023, <https://www.reuters.com/world/europe/russia-says-its-completing-its-section-international-nuclear-test-monitoring-2023-11-17/>.

²²⁸ The U.S. Department of State, *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, April 2023.

Russia strongly denied the U.S. allegations, stating that they have not conducted any nuclear tests that would violate the CTBT.

Meanwhile, in February 2023, Vyacheslav Solovyov, scientific director of the Russian Federal Nuclear Centre said that Russia was ready to resume testing at the Novaya Zemlya nuclear test site if necessary.²²⁹ In his address to the Federal Assembly in February, President Putin also ordered preparations for the resumption of nuclear testing, and said, “We will not be the first to do this, but if the USA conducts [nuclear] tests, then we will also conduct them.”²³⁰ In September, satellite images reportedly showed that China, Russia and the United States have been expanding their respective underground nuclear test sites.²³¹

Regarding 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), to sustain and evaluate its nuclear weapons stockpile without the use of underground nuclear tests. These include subcritical

tests and experiments using the Z machine, which generates X-rays by fast discharge of capacitors, thus allowing for exploring the properties of plutonium materials under extreme pressures and temperatures. The NNSA reported that it planned to conduct two subcritical experiments in fiscal year 2024 (October 2023–September 2024),²³² but as of the end of 2023, this was not reported to have taken place.

While France and Russia and the United Kingdom have engaged in subcritical experiments and other activities that do not lead to nuclear explosions, there have been no specific instances reported in 2023. The other nuclear armed-states have not released any information regarding whether they have conducted nonexplosive testing activities.

While the CTBT does not prohibit any nuclear test unaccompanied by an explosion, the NAM countries argued:

[T]he Group is of the firm view that all States parties that have not yet done so should close and dismantle, as soon as feasible and in a transparent, irreversible

²²⁹ “‘We Are Ready’: Novaya Zemlya Range Ground Ready to Resume Nuclear Tests,” *Pravda*, February 8, 2023, https://english.pravda.ru/news/russia/155726-russia_novaya_zemlya/.

²³⁰ Tetiana Lozovenko, “Putin Orders Army to Prepare for Nuclear Tests, Saying US Is Creating New Weapons,” *Ukrainska Pravda*, February 21, 2023, <https://www.pravda.com.ua/eng/news/2023/02/21/7390282/>.

²³¹ Eric Cheung, Brad Lendon and Ivan Watson, “Satellite Images Show Increased Activity at Nuclear Test Sites in Russia, China and US,” *CNN*, September 23, 2023, <https://edition.cnn.com/2023/09/22/asia/nuclear-testing-china-russia-us-exclusive-intl-hnk-ml/index.html>. In December, it was also reported that China has been intensifying its activities, including the excavation of new tunnels. William J. Broad, Chris Buckley, and Jonathan Corum, “China Quietly Rebuilds Secretive Base for Nuclear Tests,” *The New York Times*, December 20, 2023, <https://www.nytimes.com/interactive/2023/12/20/science/china-nuclear-tests-lop-nur.html>.

²³² “Remarks by NNSA Deputy Administrator for Defense Nuclear Nonproliferation Corey Hinderstein at the CTBT: Science and Technology Conference 2023,” *NNSA*, June 20, 2023, <https://www.energy.gov/nnsa/articles/remarks-nnsa-deputy-administrator-defense-nuclear-nonproliferation-corey-hinderstein>.

and verifiable manner, any remaining sites and laboratories for nuclear test explosions and their associated infrastructure, and prohibit completely nuclear weapons research and development, and also refrain from conducting nuclear weapon test explosions or any other nuclear explosions, or nuclear weapon test explosions in alternative ways, including simulation and subcritical testing, as well as the use of new technologies for upgrading the existing nuclear weapons system, which would defeat the object and purpose of the Comprehensive Nuclear-Test-Ban Treaty.²³³

Contrasting with the CTBT, which explicitly prohibits any nuclear test “explosions,” the TPNW broadly bans “nuclear tests,” a term that could be interpreted to include even those tests that do not result in an explosion. Meanwhile, the TPNW does not specify measures for verifying compliance with this testing ban.

(9) FMCT

A) Efforts toward commencing 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, the participating countries agreed on the immediate commencement and early conclusion of negotiations on a Fissile Material Cut-off Treaty (FMCT) at the

CD. However, substantive negotiations have not yet commenced. The 2023 session of the CD again ended without adopting a program of work that included the establishment of an Ad Hoc Committee on an FMCT negotiation, due to Pakistan’s strong objection, as was the case in previous years. As in previous years, Pakistan continued to oppose the negotiations of a treaty that would solely prohibit the new production of fissile material for nuclear weapons, stating:

Time to pursue this fundamentally flawed approach has long passed. A treaty which only results in a cut-off in the future production of fissile material would be a non-starter given that it would perpetuate asymmetries and will have no added value for nuclear disarmament. The inefficacy and duplicity of this approach is also laid bare, when states with so-called moratoria modernize and increase their nuclear arsenals. Or when states exercise double standards by engaging in nuclear cooperation with a country in South Asia that has amassed fissile material stockpiles outside safeguards.

Therefore, a realistic approach is required which recognizes the importance of developing consensus on a Fissile Materials Treaty that addresses asymmetries in existing stockpiles and results in equal and undiminished security for all states.²³⁴

The NAM countries also stated at the NPT PrepCom, “The Group of Non-Aligned States Parties to the Treaty

²³³ NPT/CONF.2026/PC.I/WP.9, June 14, 2023.

²³⁴ “Statement of Pakistan,” Thematic Debate on Nuclear Weapons, First Committee, UNGA, October 16, 2023.

strongly supports banning the production of fissile material for nuclear weapons and other nuclear explosive devices and eliminating all the past production and existing stockpiles of such materials, in a transparent, irreversible and verifiable manner and taking into account both nuclear disarmament and non-proliferation objectives.”²³⁵

While the commencement of FMCT negotiations remained unrealized, Japan co-hosted a Commemorative High-Level Event on a FMCT with Australia and the Philippines in September during the UN General Assembly. Japan’s Prime Minister Kishida stated, “Shouldn’t we limit the quantitative improvement of nuclear weapons by banning the production of fissile material for nuclear weapons now to maintain the declining trend of global nuclear arsenals?”²³⁶

At the 2023 UNGA, a resolution, titled “Treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices,”²³⁷ which called for immediate commencement of FMCT negotiations at the CD and declaration of moratorium on production of fissile material for nuclear weapons, was adopted with 160 countries in favor, 5 against (China, Iran, Pakistan, Russia and other)

and 20 abstentions (including Egypt, Israel, North Korea Russia and Syria).

B) Moratoria on production of fissile material for nuclear weapons

As in the previous year, China, India, Israel, Pakistan and North Korea have not declared a moratorium on the production of fissile material for nuclear weapons. Among those countries, at least India, Pakistan and North Korea are seen as highly likely to continue producing fissile material for nuclear weapons.

It is considered that China does not currently produce fissile material for nuclear weapons. However, there are also concerns that the advanced fast-breeder reactors and reprocessing facilities that China is developing for civilian purposes can be diverted for nuclear weapons purposes.²³⁸ In May 2023, Russia confirmed that it was supplying highly enriched uranium for two Chinese fast breeder reactors (CFR-600).²³⁹

North Korea was considered to have produced fissile material for nuclear weapons and conducted related activities in 2023, as in previous years. In its defense white paper published in February 2023, South Korea reported that North Korea had continued the reprocessing of spent

²³⁵ NPT/CONF.2026/PC.I/WP.8, June 14, 2023.

²³⁶ “Opening Statement by H.E. Mr. KISHIDA Fumio, Prime Minister of Japan at the Commemorative High-Level Event on an FMCT,” Prime Minister’s Office of Japan, September 19, 2023, <https://www.mofa.go.jp/mofaj/files/100555656.pdf>.

²³⁷ A/RES/78/28, December 4, 2023.

²³⁸ See, for instance, The U.S. Department of Defense, *Military and Security Developments Involving the People’s Republic of China 2022*, p. 97.

²³⁹ Echo Xie, “Russia Confirms Enriched Uranium Supplies to China,” *South China Morning Post*, May 5, 2023, <https://www.scmp.com/news/china/science/article/3219424/russia-confirms-enriched-uranium-supplies-china>.

fuel. The report also estimated that North Korea possesses around 70 kg of weapons-grade plutonium as a result of these activities.²⁴⁰ In April, the U.S. experts provided analysis that North Korea's 5 MW graphite-moderated reactor was in operation, and that the construction of an experimental light water reactor (LWR) in Yongbyon was nearing completion.²⁴¹ At the end of the same month, it was also analyzed that the 5 MW reactor had likely been shut down, and that spent fuel containing approximately 5-8 kg of weapons-grade plutonium, may have been removed from the reactor.²⁴²

Furthermore, IAEA Director General Rafael Grossi stated in December that the discharge of warm water from the LWR was observed, which was "indicative the reactor has reached criticality."²⁴³

None of the nuclear-armed states have declared the amount of fissile material for nuclear weapons which they possess (except for the United States, which declassifies the amount of its past production of HEU and plutonium). Estimates by research institutes are summarized in Chapter 3 of this Report.

(10) Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine

There was no significant change in the basic policy of the five NWS regarding transparency. In 2021, the United States disclosed the number of nuclear weapons stockpiles in that and previous years in 2021, but has not released such information since then. China, which has been criticized for being less transparent than the other NWS on nuclear issues, emphasizes the importance of transparency in intentions and policies. However, it has not disclosed information on the types and number of its nuclear arsenals, or its concrete plans for modernizing its nuclear forces.

At the 2023 NPT PrepCom, Austria, Japan and the United States submitted their respective national report. Australia, Austria, Brazil, Canada, Egypt, Germany, Japan, Mexico, the Netherlands, New Zealand, Norway, South Korea, Sweden, Switzerland and other countries issued a "Joint Statement on Transparency and Accountability," calling on NWS to improve transparency.²⁴⁴ In its working

²⁴⁰ Hyonhee Shin, "South Korea Defence Paper Calls North 'Enemy,' Estimates Plutonium Stockpile at 70 kg," *Reuters*, February 16, 2023, <https://www.reuters.com/world/asia-pacific/south-korea-defence-paper-calls-north-enemy-estimates-plutonium-stockpile-70-kg-2023-02-16/>.

²⁴¹ Peter Makowsky and Jack Liu, "Growing Activity at North Korea's Experimental Light Water Reactor," *38 North*, April 1, 2023, <https://www.38north.org/2023/04/yongbyon-nuclear-research-center-growing-activity-at-the-experimental-light-water-reactor/>.

²⁴² Olli Heinonen, Peter Makowsky, Jack Liu and 38 North, "Possible Refueling at Yongbyon's 5 MWe Reactor," *38 North*, April 29, 2023, <https://www.38north.org/2023/04/possible-refueling-at-yongbyons-5-mwe-reactor/>.

²⁴³ "IAEA Director General Statement on Recent Developments in the DPRK's Nuclear Programme," IAEA, December 21, 2023, <https://www.iaea.org/newscenter/pressreleases/iaea-director-general-statement-on-recent-developments-in-the-dprks-nuclear-programme>.

²⁴⁴ "Joint Statement on transparency and accountability," Cluster 3 Specific Issues, First PrepCom for the

paper, the Non-Proliferation and Disarmament Initiative (NPDI) included a template, named “Future national reporting templates on implementation of the Treaty on the Non-Proliferation of Nuclear Weapons: suggested coverage of topics for different categories of States parties to the Treaty—indicative matrix.”²⁴⁵ The respective working papers submitted by Austria, Mexico and other countries,²⁴⁶ as well as by New Zealand, Switzerland and other countries,²⁴⁷ also listed specific items that NWS should include in their national reports. In addition, the NAC stated, “The present review cycle should develop clear measures for strengthening accountability through enhanced transparency and measurability of the implementation of nuclear disarmament obligations and commitments. These measures should include, but not be limited to, improved reporting by the nuclear-weapon States, as well as the establishment of a structured dialogue at the Preparatory Committee meetings and at the Review Conference on these reports.”²⁴⁸

At the 2012 NPT PrepCom, the NPDI proposed a draft form for reporting on nuclear warheads, delivery vehicles, fissile material for nuclear weapons and nuclear strategy/policies.²⁴⁹ Using that draft form, the following table summarizes the degree

of transparency taken by the nuclear-weapon/armed states.

11th NPT RevCon, August 9, 2023.

²⁴⁵ NPT/CONF.2026/PC.I/WP.18, June 29, 2023.

²⁴⁶ NPT/CONF.2026/PC.I/WP.24, July 25, 2023.

²⁴⁷ NPT/CONF.2026/PC.1/WP.6, June 13, 2023.

²⁴⁸ NPT/CONF.2026/PC.I/WP.5, June 13, 2023.

²⁴⁹ NPT/CONF.2015/PC.I/WP.12, April 20, 2012.

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 2023			○		○				
Aggregate number of nuclear warheads dismantled in 2022 or 2023									
■ Delivery vehicles									
Number of nuclear warhead delivery systems by type (missiles, aircraft, submannes, artillery, other)		○	△	○	○				
Reduction (in numbers) of delivery systems in 2023									
Aggregate number of delivery systems dismantled in 2022 or 2023									
Nuclear disarmament since 1995									
1995 – 2000		○	○	○	○				
2000 – 2005		○	○	○	○				
2005 – 2010		○	○	○	○				
2010 – 2020		○	○	○	○				
2020 – 2023			○		○				
■ 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 Verifications

Russia and the United States have implemented verification measures, including on-site inspections, under the New START. Since its entry into force, they had conducted on-site inspections as stipulated in the treaty. However, as mentioned above, on-site inspections have been suspended since April 1, 2020. (See Section 5 (A) of this chapter.)

Within the UN framework, the Group of Governmental Experts to further consider nuclear disarmament verification issues, established pursuant to a 2019 UNGA resolution,²⁵⁰ published its final report in June 2023. The report summarized the group's discussions as follows:

The Group made several conclusions on nuclear disarmament verification. The Group, *inter alia*, developed a working definition of nuclear disarmament verification to guide its work; identified the primary purpose and objective of nuclear disarmament verification; highlighted the importance of trust and confidence-building measures, and the value of taking stock of existing experiences; recognized the amount of work done on the concept of a Group of Scientific and Technical Experts; recognized the utility of continuing work on nuclear disarmament verification; and underlined that equal opportunities for

women and men should be provided, and discussed that awareness raising of nuclear disarmament verification, through peace and disarmament education, could be considered part of capacity building.

The Group of Governmental Experts recommended, *inter alia*, that Member States of the United Nations, as well as relevant bodies of the international disarmament machinery, in accordance with their respective mandates, consider this report and continue discussions on nuclear disarmament verification.

The Group also recommended that Member States of the United Nations continue the work on nuclear disarmament verification issues, as well as consider capacity building efforts, including on regional approaches to capacity building, as appropriate, and that Member States of the United Nations take appropriate measures to ensure equal opportunities for women and men to enable their full and meaningful engagement in nuclear disarmament efforts, including nuclear disarmament verification.²⁵¹

One notable activity on verification is the “International Partnership for Nuclear Disarmament Verification (IPNDV),” launched by the United States in December 2014. With 28 participating countries (plus the EU and the Vatican),²⁵² the IPNDV continues to study verification

²⁵⁰ A/RES/74/50, December 19, 2019.

²⁵¹ A/78/120, June 23, 2023.

²⁵² In addition to three NWS (France, the United Kingdom and the United States), participating countries include Australia, Brazil, Canada, Germany, Indonesia, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, Norway, Poland, Sweden, Switzerland, Turkey, and the UAE. China and Russia attended in Phase I (2015-2017) as observers, but did not join in Phase II (2018-2019).

measures and technologies related to dismantling nuclear weapons, as well as fissile material derived from dismantled nuclear warheads. At the IPNDV Plenary Meeting in December 2022, partner countries revised the working group structure to better facilitate cross coordination and information exchange among participants, and decided to establish the following four working groups:²⁵³

- Limitations Working Group, which is exploring verification options for a scenario where a notional country (Ipindovia) is bound by agreement to limit its arsenal of nuclear weapons to a maximum of 500;
- Reductions Working Group, which is exploring verification options for a scenario where Ipindovia reduces its arsenal of nuclear weapons from 500 to zero;
- Concepts Working Group, which is exploring cross-cutting conceptual issues associated with the limitation and reduction scenarios; and
- Technology Track, which explores technologies relevant to the other three working groups.

The above working group meetings were held in Albuquerque in April 2023,²⁵⁴ and in Budapest in September 2023²⁵⁵ to

discuss and review the assigned issues.

In another effort on nuclear disarmament verification, the United Kingdom, the United States, Norway and Sweden launched the “Quad” initiative in 2015, and have continued its work since then. In their working paper submitted to the 10th NPT RevCon, these countries noted that two separate workstreams of verification strategies and verification technologies are being organized for study and analysis, based on the lessons learned from the multilateral exercise conducted in 2017; and “the two workstreams [would] mainly focus on their respective programmes of work in the period up to 2022 ... [and] the partnership will then build on their results and integrate them into a common, substantive deliverable, possibly including an exercise, within the time frame of the 2026 NPT review cycle.”²⁵⁶ In addition, France and Germany conducted the Nuclear Disarmament Verification Exercise (NuDiVe) in September 2019 and April 2022 within the framework of IPNDV.²⁵⁷

In March 2023, the UN Institute for Disarmament Research (UNIDIR), with support from the Netherlands, Norway and Switzerland, in cooperation with the Swiss Army and others, conducted the “Menzingen Verification Experiment,”

²⁵³ “IPNDV April 2023 Working Meeting, Albuquerque, New Mexico,” IPNDV, <https://www.ipndv.org/events/ipndv-april-2023-working-meeting-albuquerque-new-mexico/>.

²⁵⁴ Ibid.

²⁵⁵ “IPNDV September 2023 Working Meeting, Budapest, Hungary,” IPNDV, <https://www.ipndv.org/events/ipndv-september-2023-working-meeting-budapest-hungary/>.

²⁵⁶ NPT/CONF.2020/WP.2, November 4, 2021.

²⁵⁷ NPT/CONF.2020/WP.18/Rev.1, July 7, 2022.

which was designed to test practical procedures for verifying the absence of nuclear weapons at a storage site.²⁵⁸

On the other hand, Russia voiced criticism regarding the ongoing efforts in the realm of nuclear disarmament verification, stating:

The issue of nuclear disarmament verification (NDV) has been gaining popularity in recent years. However, we strongly believe that the potential benefits of its in-depth discussion at the present stage have been greatly overestimated. Discussions in the specialized UN Group of Governmental Experts confirmed the lack of unity in relation to approaches to NDV and its scope. Most importantly, there is no agreement on the advisability of the “early” development of verification procedures in isolation from comprehensive negotiation work that will be required in the future to conclude nuclear disarmament agreements. All of this range of views is presented in the final report of the Group, which also contains a number of important consensus statements on the fundamental principles on which the NDV should be based. It is unlikely that in the foreseeable future the NPT community will have much to add on this topic for the purposes of the Treaty review process.²⁵⁹

At the NPT PrepCom, the NAM

countries requested IAEA’s involvement in developing verification measures, including those applied to fissile material removed from nuclear weapons programs. They also called for the establishment by the NPT RevCon of a standing committee to monitor and verify the nuclear disarmament steps undertaken unilaterally or through bilateral agreements by the NWS.²⁶⁰

(12) Irreversibility

In their joint statement submitted to the NPT PrepCom, Austria, Mexico, Norway and the United Kingdom raised the following issues related to the concept of irreversibility in nuclear disarmament.²⁶¹

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 convinced that the implementation of these obligations and commitments will benefit from work already having been done on these three principles, and ensuring the implementation to be more effective and sustainable.

We reiterate the central importance of

²⁵⁸ Pavel Podvig, “Menzingen Verification Experiment: Verifying the Absence of Nuclear Weapons in the Field,” UNIDIR, July 31, 2023, <https://unidir.org/publication/menzingen-verification-experiment-verifying-the-absence-of-nuclear-weapons-in-the-field/>.

²⁵⁹ “Statement of Russia,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

²⁶⁰ NPT/CONF.2026/PC.I/WP.15, June 14, 2023.

²⁶¹ “Joint Statement of Norway on behalf of Austria, Mexico, Norway and the United Kingdom,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

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.

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. This actions and activities [*sic*] will benefit from work already having been done on the three principles.

Moreover, we also acknowledge that nuclear disarmament efforts become significantly more irreversible when they are underpinned by a legally-binding obligation on the total elimination of nuclear weapons.

Nuclear disarmament should be irreversible as all states parties of the NPT are concerned about the catastrophic consequences that would arise from the use of such weapons.

In addition, several projects were

undertaken at the initiative of the United Kingdom to promote dialogues among international experts and practitioners on irreversibility.²⁶²

A) Implementing or planning dismantlement of nuclear warheads and their delivery vehicles

As with their previous nuclear arms control agreements, the New START obliges Russia and the United States to dismantle or convert strategic (nuclear) delivery vehicles beyond the limits set in the treaty, and to do so in a verifiable way. The New START does not require the dismantlement of retired nuclear warheads, but the two states have partially dismantled retired nuclear warheads as unilateral measures. As mentioned above, in 2021, the Biden administration declassified the number of dismantled U.S. nuclear warheads. According to a State Department fact sheet, the United States dismantled 184 nuclear warheads in 2020, and 11,638 warheads from 1994 through 2020.²⁶³ On the other hand, it is also pointed out that the pace of nuclear warhead dismantlement by the United States has slowed significantly.²⁶⁴

The other NWS did not release any information regarding nuclear weapons dismantlement in 2021. However, France and the United Kingdom have dismantled

²⁶² See, for instance, “Irreversibility of Nuclear Disarmament,” Verification Research, Training and Information Centre (VERTIC), <https://www.vertic.org/programmes/vm/irreversibility-of-nuclear-disarmament/>.

²⁶³ NNSA, “Transparency in the U.S. Nuclear Weapons Stockpile.”

²⁶⁴ Hans M. Kristensen and Matt Korda, “Nuclear Notebook: United States Nuclear Weapons, 2023,” *Bulletin of the Atomic Scientists*, January 16, 2023, <https://thebulletin.org/premium/2023-01/nuclear-notebook-united-states-nuclear-weapons-2023/>.

Table 1-7: U.S. nuclear weapons stockpile and warhead dismantlement

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of nuclear weapons stockpile*	5,113	5,066	4,897	4,881	4,804	4,717	4,571	4,018	3,822	3,785	3,805	3,750
Number of warheads dismantled	356	352	305	308	239	299	146	533	196	243	284	184

*Does not include weapons retired and awaiting dismantlement.

Sources: NNSA, “Transparency in the U.S. Nuclear Weapons Stockpile.”

their retired nuclear warheads and delivery vehicles. France also mentioned, in its national report submitted to the NPT RevCon in 2022, that it had begun dismantling its M4 SSBN.²⁶⁵

B) Decommissioning/conversion of nuclear weapons-related facilities

No remarkable activity or progress was reported in 2023 in terms of decommissioning or converting nuclear weapons-related facilities. In its working paper submitted to the NPT PrepCom, the EU “[called] on all States that have not done so to ‘initiate a process towards the dismantling or conversion for peaceful uses of facilities for the production of fissile material for use in nuclear weapons or other nuclear explosive devices.’”²⁶⁶

In 1996, France became the only country to decide to completely and irreversibly dismantle its nuclear test sites, which were fully decommissioned in 1998.²⁶⁷ In its national report submitted to the NPT

RevCon, France reported that it has engaged in decommissioning operations for the former fissile material production facilities for nuclear weapons, including its uranium enrichment facility, reprocessing facility and plutonium production reactor.²⁶⁸ The United States also reported the following: “In 1980, the nuclear complex was made up of 14 sites. Today, it consists of eight, and its workforce has been reduced by two-thirds since the end of the Cold War.”²⁶⁹

C) Measures for fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes

In October 2016, Russian President Putin issued a Presidential Decree on suspending implementation of the Russian-U.S. Plutonium Management and Disposition Agreement (PMDA), which entered into force in July 2011.²⁷⁰ This situation has not been resolved.

²⁶⁵ NPT/CONF.2020/42/Rev.1, August 1, 2022.

²⁶⁶ NPT/CONF.2026/PC.I/WP.4, June 6, 2023.

²⁶⁷ NPT/CONF.2015/10.

²⁶⁸ NPT/CONF.2020/42/Rev.1, August 1, 2022.

²⁶⁹ NPT/CONF.2020/47, December 27, 2021.

²⁷⁰ This decree stipulates, inter alia, that 34 tons each of surplus U.S. and Russian plutonium extracted from dismantled nuclear warheads shall be converted into mixed oxide (MOX) fuel for use in civilian nuclear reactors.

In the meantime, as mentioned in the *Hiroshima Report 2021*, the United States formally terminated construction of the Mixed Oxide Fuel Fabrication Facility (MFFF) at the Savannah River Site in South Carolina in 2018. The NNSA has proposed to repurpose the MFFF to produce plutonium pits.

Meanwhile, South Africa criticized the NWS's activities, stating:

Even if all civilian materials were safeguarded and fully secured to the highest standards, this would only cover an estimated 15% of the weapons-usable material around the world, leaving a critical gap in the nuclear non-proliferation architecture. Hence, we should not lose sight of the remaining 85%, which is categorized as military materials and are not subject to any international security standards or oversight mechanisms.

It is regrettable that little progress has been made to implement the actions agreed to at the 2010 NPT RevCon in the development of appropriate legally-binding 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 2022 reflects that some [NWS] have withdrawn

such material.²⁷¹

The NAC also said, “[It] calls for the implementation by the nuclear-weapon States of the agreed commitment to declare to the International Atomic Energy Agency all fissile material designated as no longer required for military purposes and to place such material, as soon as practicable, under safeguards.”²⁷²

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

Increased emphasis has been placed on disarmament and non-proliferation education, as well as on the importance of diversity and inclusion, and cooperation with civil society in disarmament and non-proliferation.

In its working paper submitted to the NPT PrepCom, Japan introduced its various efforts to date regarding disarmament and non-proliferation education.²⁷³ Japan stated, “Conveying the reality of the atomic bombings to the world is the starting point of all efforts toward nuclear disarmament. With the Hibakusha, we will continue to convey the realities of nuclear weapons use beyond generations, including through our ‘Youth Leader Fund for a World without Nuclear Weapons.’”²⁷⁴ In addition, Japan established the “Youth Leader Fund for a

²⁷¹ “Statement of South Africa,” Cluster 2, First PrepCom for the 11th NPT RevCon, August 7, 2023.

²⁷² NPT/CONF.2026/PC.I/WP.5, June 13, 2023.

²⁷³ NPT/CONF.2026/PC.I/WP.3, June 5, 2023.

²⁷⁴ “Statement by Japan,” First PrepCom for the 11th NPT RevCon, July 31, 2023.

World without Nuclear Weapons” in March 2023, as “a contribution by Japan to invite future leaders from both NWS and NNWS to Japan to experience the reality of the atomic bombings in Hiroshima and Nagasaki, and to create a global network of young people, including Japan, for elimination of nuclear weapons.” It contributed \$10 million to the United Nations Office for Disarmament Affairs (UNODA).²⁷⁵ Application for the program started in May 2023,²⁷⁶ and the first phase of the program began in mid-December.

At the NPT PrepCom, the NPDI, South Korea, Sweden, and other countries also emphasized the importance of nuclear disarmament and nonproliferation education. In addition, Australia, Canada, Mexico, Norway, Sweden and other countries submitted a working paper, titled “Taking Forward Gender Mainstreaming Efforts in the Nuclear Non-Proliferation Treaty.”²⁷⁷ Other countries, mainly the Western countries, also pointed out the importance of gender issues at the NPT PrepCom.

In the Declaration, adopted at the 2MSP of the TPNW, states parties to the treaty stated, “We reaffirm the gender provisions of the Treaty and that the equal, full and effective participation of both women and

men is essential in nuclear disarmament.” It was also agreed to establish a Gender Focal Point to support the implementation of the gender provisions of the Treaty during the intersessional period, following the previous meeting.

At the 2023 UNGA, the resolution “United Nations study on disarmament and non-proliferation education,” in which further promotion of disarmament and non-proliferation education as well as engagement of youth was encouraged, was adopted by consensus.²⁷⁸ The UNGA resolution on nuclear disarmament led by Japan stated the following on disarmament and nonproliferation education:

Calls 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

²⁷⁵ “Funding to the United Nations Office for Disarmament Affairs (UNODA) to Establish a Youth Leader Fund for a World without Nuclear Weapons,” Ministry of Foreign Affairs of Japan, March 14, 2023. https://www.mofa.go.jp/mofaj/press/release/press3_001101.html.

²⁷⁶ “A New Programme for the ‘Youth Leader Fund for a World Without Nuclear Weapons’ Is Now Open for Application,” Ministry of Foreign Affairs of Japan, May 18, 2023, https://www.mofa.go.jp/mofaj/press/release/press4_009715.html.

²⁷⁷ NPT/CONF.2026/PC.I/WP.25, July 27, 2023.

²⁷⁸ A/RES/78/31, December 4, 2023.

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, who pass on their experiences to the future generations, 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.”

During the NPT PrepCom,²⁷⁹ the 2MSP,²⁸⁰ and the UNGA First Committee²⁸¹ in 2023, side events involving non-governmental organizations (NGOs) and others were held in person, some of which were hosted by participating countries. At the 2MSP of the TPNW, the participants from NGOs spoke at the sessions along with government delegations, giving a greater impression of civil society participation. (This is unlike the NPT RevCon, where NGOs are only allowed to address one specific session throughout the conference).

Regarding cooperation with civil society, one of the important efforts required from governments is to provide more information on nuclear disarmament and non-proliferation issues. Among those surveyed in this report, the following countries have set up a section or sections

on disarmament and non-proliferation on their official English-language homepages and posted educational information: Australia, Austria, Canada, China, France, Germany, Japan, New Zealand, Sweden, Switzerland, the United Kingdom and the United States. In addition, the UNGA resolutions on nuclear disarmament proposed by Japan and the NAC, respectively, emphasized the importance of disarmament and non-proliferation education.

Finally, a few countries started to legislate for “divestment” from organizations or companies involved in producing nuclear weapons. On the other hand, according to the International Campaign to Abolish Nuclear Weapons (ICAN) annual report published in June 2023:

Nine countries spent \$82.9 billion in 2022 on nuclear weapons, of which the private sector earned at least \$29 billion. The United States spent more than all of the other nuclear-armed states combined, at \$43.7 billion. ... There are at least \$278.6 billion in outstanding nuclear weapons contracts, some of which don't expire for decades. In 2022, at least \$15.9 billion in new nuclear weapon contracts were awarded. The companies that received them turned around and invested in lobbying governments, spending \$113 million on those efforts in the US and France. Together, nuclear weapon producing companies, nuclear-

²⁷⁹ Australia, Austria, France, Germany, Japan, Kazakhstan, South Korea, the Netherlands, Norway, South Africa, Switzerland, the United Kingdom, the United States, and other countries hosted the side events.

²⁸⁰ Austria, Kazakhstan and others hosted the side events.

²⁸¹ Austria, Egypt, France, Germany, Kazakhstan, South Korea, the Netherlands, Norway, Pakistan, the United Kingdom, the United States and other countries hosted the side events.

armed governments and those in nuclear alliances spent \$21-36 million funding the ten of the most prominent think tanks researching and writing about nuclear weapons in nuclear-armed states.²⁸²

(14) Hiroshima and Nagasaki Peace Memorial Ceremonies

On August 6, 2023, the Hiroshima Peace Memorial Ceremony was held in Hiroshima. Representatives from 111 countries and the EU, along with Japan, participated, including:

- Ambassadorial-level—Australia, Brazil, France, India, Israel, Kazakhstan, Norway, Poland, South Africa, Sweden, Switzerland, Syria, the United Kingdom and the United States
- Non-ambassadorial-level—Egypt, Germany, Indonesia, South Korea, Mexico, Netherlands, New Zealand and Turkey
- Not attending—Austria, Canada, China, Iran, North Korea, Pakistan and Saudi Arabia (Note: underlines denote countries whose representatives have attended the ceremony at least once in the past three years)

Relatedly, the Nagasaki Peace Memorial Ceremony, scheduled for August 9, was held on a reduced scale due to inclement weather. As in 2022, the cities of Hiroshima and Nagasaki decided not to invite Russia and Belarus to the 2023 ceremonies due to Russia's invasion of Ukraine and the support given to this by Belarus.

At various fora, Japan has proposed that the world's political leaders visit Hiroshima and Nagasaki to witness the humanitarian consequences of using nuclear weapons.

At the G7 Hiroshima Summit in May 2023, the leaders of the G7 countries, the leaders of the invited countries (Australia, Brazil, Comoros [African Union Chair], Cook Islands [Pacific Islands Forum Chair], India [G20 Presidency], Indonesia [ASEAN Chair], South Korea and Vietnam), representatives of international organizations (UN, IMF, World Bank, WTO, OECD, IEA), and the Ukrainian President who participated as a guest at the Ukrainian session in the latter half of the summit, visited the Peace Memorial Museum, held a dialogue with hibakusha, and offered flowers at the Cenotaph for the Atomic Bomb Victims. Prime Minister Kishida and South Korean President Yoon also offered flowers to the Cenotaph for the Victims of the Korean Atomic Bombing.

Meanwhile, South Africa made the following statements at the NPT PrepCom in connection with this issue:

South Africa would like to pay tribute to the important role played by civil society in the coming into being of the TPNW, in particular the Hibakusha some of whom who made it clear when they spoke at the opening that if any of the nuclear-weapon States and States under extended nuclear security guarantees have learned anything at all from the tragedy of Hiroshima and Nagasaki the only

²⁸² ICAN, *Wasted: 2022 Global Nuclear Weapons Spending*, June 2023, p. 4.

lesson is that they sign up to the TPNW and ratify it. Anything less than that will be for show and insincere. South Africa notes the recent visit of some States to the Hiroshima museum. We trust that visit will serve as a reminder to NWS of the destructive nature and disastrous humanitarian impact of the use of these inhumane weapons. Furthermore, just merely going to visit the museum in Hiroshima does not absolve any state of its obligations. We therefore urge the NWS to take concrete steps towards disarmament.²⁸³

²⁸³ “Statement of South Africa,” Cluster 1, First PrepCom for the 11th NPT RevCon, August 3, 2023.

Chapter 2

Nuclear Non-Proliferation¹

(1) Acceptance and Compliance with Nuclear Non-Proliferation Obligations

A) Accession to the NPT

The Nuclear Non-Proliferation Treaty (NPT) has 191 states parties (including North Korea, the Holy See and Palestine). Among the current 193 United Nations (UN) Member States, those remaining outside the NPT are: India and Pakistan, both of which tested and declared they had nuclear weapons in 1998; Israel, which is widely believed to possess them despite its opaque nuclear policy²; and South Sudan, which declared its independence and joined the UN in July 2011, and does not possess any nuclear weapons.

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 with regard to 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. There is no agreement among the states parties on North Korea's official NPT status.

B) Compliance with Articles I and II 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.³ However, if North Korea's withdrawal is interpreted as not being legally valid, or if it acquired nuclear weapons before announcing its withdrawal from the NPT, such acquisition of nuclear weapons would constitute non-compliance with Article II. The U.S. Department of State in its annual reports titled "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," declared that North Korea was in violation of its obligations under Articles II and III of the NPT and in non-compliance with its International Atomic Energy Agency (IAEA) Safeguards Agreement at the time it announced its withdrawal from the NPT in 2003.⁴

¹ This chapter is authored by Hirofumi Tosaki.

² In an interview, Israeli far-right cabinet minister Amichai Eliyahu, Minister of Heritage, said that "that is one way," regarding the possibility of a nuclear attack on the Gaza Strip. In response, Prime Minister Benjamin Netanyahu issued a statement saying, "Eliyahu's words are detached from reality." "Netanyahu Rushes for Damage Control, Suspends Minister for Gaza Nuclear Bombing Remark," *Wion*, November 5, 2023, <https://www.wionews.com/world/netanyahu-rushes-for-damage-control-bans-minister-over-nuclear-bombing-remark-on-gaza-655362>.

³ No international body is explicitly mandated with a responsibility for assessing compliance with these articles, apart from the IAEA's safeguards verification mandate.

⁴ The U.S. Department of State, "Adherence to and Compliance with Arms Control, Nonproliferation,

UNSCR 1718, adopted in October 2006, stipulates that: “[T]he DPRK 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, equipments 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.”⁵

On several occasions in 2023, North Korea conveyed unwillingness to relinquish its nuclear arsenal. For instance, Kim Yo Jong, vice department director of the Central Committee of the Workers’ Party of Korea, stated, “Even if the DPRK-U.S. dialogue is supposed to start, it is as clear as noonday that the present U.S. administration will put nothing but only ‘COVID’ on the negotiation table.

Today ‘denuclearization’ is an outdated word to be found only in a dictionary of dead words.” She also predicted that the United States would use the reduction of military exercises and the suspension of the deployment of strategic weapons as a bargaining card, and made clear the North’s intention not to accept dialogue, saying, “Such a slender trick for earning time can never work on us.”⁶ At the end of September, Chairman Kim Jong Un stated at the Supreme People’s Assembly, “[W]e must neither change nor concede the present position of our country as a nuclear weapons state, but, on the contrary, continue to further strengthen the nuclear force.”⁷ Subsequently, North Korea has amended its constitution to bolster and expand its nuclear force.

At the 2023 NPT PrepCom, 74 countries—including Australia, Austria, Canada, France, Germany, Japan, Mexico, the Netherlands, New Zealand, Norway, Poland, South Korea, Sweden, Switzerland, Turkey, the United Kingdom and the United States—issued a joint statement, stating, “We urge the DPRK to take concrete steps towards abandoning all nuclear weapons, ballistic missiles, and related programmes in a complete, verifiable and irreversible manner and to immediately cease all related activities in

and Disarmament Agreements and Commitments,” April 2023, p. 13.

⁵ 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 forces cannot be taken on the basis of this resolution.

⁶ “Press Statement of Kim Yo Jong, Vice Department Director of C.C., WPK,” *KCNA*, July 17, 2023, <http://www.kcna.co.jp/item/2023/202307/news17/20230717-12ee.html>.

⁷ “Respected Comrade Kim Jong Un Makes Speech at 9th Session of 14th SPA,” *KCNA*, September 28, 2023, <http://www.kcna.co.jp/item/2023/202309/news28/20230928-01ee.html>.

accordance with all relevant UNSC resolutions. ... We reiterate our steadfast commitment to the objective of the return by the DPRK at an early date to, and fully comply, with the NPT and International Atomic Energy Agency (IAEA) safeguards.”⁸

On the other hand, China and Russia repeatedly responded as if they were defending or tacitly endorsing North Korea’s nuclear and missile activities. They also opposed the Security Council’s efforts to issue a presidential statement condemning North Korea’s missile and rocket launches. Russia made the following statements at the NPT PrepCom:

For many years, it has been common to blame the DPRK for violating the NPT and the lack of progress in denuclearization of the Korean Peninsula. In fact, it is the United States that is taking steps incompatible with the objectives of nuclear non-proliferation by drawing the Republic of Korea, a non-nuclear-weapon State within the meaning of the NPT, into the orbit of its nuclear strategy. The President of the Republic of Korea has openly declared that the alliance with the U.S. has “upgraded to a nuclear one.” On 18 July, a U.S. nuclear-armed intercontinental ballistic missile submarine visited the port of Busan. Such actions nullify the prospects for resolving the situation on the Korean Peninsula, undermining the goal of its denuclearization, which is backed by

relevant UN Security Council resolutions. The responsibility for this falls on Washington.⁹

On December 19, the UN Security Council convened an emergency public meeting in response to North Korea’s launch of an intercontinental ballistic missile (ICBM). Countries, including Japan, the United States and European countries, condemned North Korea. However, China and Russia criticized U.S. military activities around the Korean Peninsula, citing them as a cause for escalating tensions. Consequently, the Security Council was unable to reach a unanimous response.

Iran

Nuclear activities

The E3/EU+3 (France, Germany and the United Kingdom/European Union plus China, Russia and the United States) and Iran agreed on the Joint Comprehensive Plan of Action (JCPOA) in July 2015, which stipulates that Iran accepts restrictions on its nuclear activities, including uranium enrichment, and that other parties would ease or lift sanctions against Iran. However, the United States under then-President Donald Trump in May 2018 decided to withdraw from the JCPOA, and to reimpose sanctions against Iran. In response, from May 2019, Iran gradually suspended implementation of its obligations set out in the JCPOA, including limitations on the storage and

⁸ “Joint Statement addressing the North Korean nuclear challenge,” First PrepCom for the 11th NPT RevCon, August 9, 2023.

⁹ “Statement of Russia,” Cluster 2, First PrepCom for the 11th NPT RevCon, August 7, 2023.

enrichment level of enriched uranium as well as of the number of centrifuges for enriching uranium. (See Section 2 of this chapter regarding suspension of implementation of monitoring and verification measures, including IAEA safeguards.)¹⁰

Centrifuges—The JCPOA limited Iran to enriching uranium using only 5,020 first generation (IR-1) centrifuges and only at the Natanz main fuel enrichment plant (FEP). Since September 2019 it has steadily breached these limits.

The IAEA periodical report in November 2023 reported on the centrifuge installation as follows:¹¹

- FEP: In addition to the 30 cascades of IR-1 centrifuges provided for under the JCPOA, Iran has informed the Agency that it has installed another 36 cascades (IR-1, IR-2m, IR-4 and IR-6).
- Pilot Fuel Enrichment Plant (PFEP): Iran installed one cascade each of IR-4 and IR-6, and one interconnected cascade comprising IR-4 and IR-6.
- FFEP: Iran installed six cascades of IR-1, and two cascade of IR-6 centrifuges.

Enriched uranium—The JCPOA limited

Iran's stockpile of enriched uranium to no more than 300 kilograms of uranium hexafluoride (UF₆), with a maximum enrichment level of 3.67%. The IAEA estimated Iran's total enriched uranium stockpile as of October 28, 2023 to be 4,486.8 kg, of which the total enriched uranium stockpile in the form of UF₆ was 4,130.7 kg (1,217.2 kg of uranium enriched up to 2% U-235; 2,218.1 kg of uranium enriched up to 5% U-235; 567.1 kg of uranium enriched up to 20% U-235; and 128.3 kg of uranium enriched up to 60% U-235).¹² Iran has steadily increased its enriched uranium up to 20% and up to 60%. The level of 20% and above is considered to be highly enriched uranium (HEU), which could theoretically be used in a nuclear weapon. As a practical matter, however, 60% HEU is considered to be weapons usable while more than 90% is considered weapons grade.

The IAEA reported in February 2023 that “[d]uring the monthly interim verification (IIV) on 22 January 2023, the Agency took environmental samples from the product sampling point at FFEP, the analytical results of which showed the presence of [HEU] particles containing up to 83.7% U-235.”¹³ In this regard, Iran

¹⁰ 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>.

¹¹ GOV/2023/57, November 15, 2023.

¹² 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.

¹³ GOV/2023/8, February 28, 2023.

explained that it occurred during the “transition period at the time of commissioning the process of [60% U-235] product (November 2022) or while replacing the feed cylinder.”¹⁴ In May 2023, the IAEA reported:

In a letter dated 30 March 2023, the Agency indicated that on the basis of its evaluation, the Agency assessed that the information provided was not inconsistent with Iran’s explanation for the origin of these particles and that the Agency had no further questions on the matter at that stage. The Agency also found no indication of the accumulation and collection of nuclear material enriched above 60% U-235 at FFEP and it will be able to confirm that no diversion of nuclear material took place at the facility only on the basis of the outcome of the next physical inventory verification (PIV).¹⁵

At the end of December, IAEA Director General Rafael Grossi reported that Iran, which had been reducing its production of 60% enriched uranium to 3 kg per month since June 2023, reversed this reduction and increased production to 9 kg per month since November 2023.¹⁶ This was likely related to the unravelling of a deal to allow Iran access to \$6 billion

in frozen oil revenues, discussed below.

Other activities—According to an IAEA report in November, Iran neither pursued the construction of the Arak heavy water research reactor (IR-40 Reactor) nor carried out activities related to reprocessing at the facilities which it has declared to the IAEA. Meanwhile, Iran has not informed the IAEA about the inventory of heavy water in Iran or the production of heavy water at the Heavy Water Production Plant (HWPP), nor allowed the Agency to monitor the quantities of Iran’s heavy water stocks and the amount of heavy water produced at the HWPP—which are ruled in the verification procedures agreed to by Iran and the IAEA based on the JCPOA although not required under the Comprehensive Safeguards Agreement.¹⁷

In July 2023, Head of the Atomic Energy Organization of Iran (AEOI) Mohammad Eslami said, “We are currently operating eight [uranium] mines, and six more mines are planned to come on stream by the end of the [Iranian calendar] year [that is, March 20, 2024].”¹⁸

Breakout time—The uranium enrichment limits in the JCPOA were formulated to ensure that Iran’s breakout time (the time

¹⁴ Patrick Wintour, “Pressure on West to Act Grows After Report on Iranian Uranium Enrichment,” *The Guardian*, February 28, 2023, <https://www.theguardian.com/world/2023/feb/28/pressure-on-west-to-act-grows-after-report-on-iranian-uranium-enrichment>.

¹⁵ GOV/2023/24, May 31, 2023.

¹⁶ Francois Murphy, “Iran Undoes Slowdown in Enrichment of Uranium to Near Weapons-grade: IAEA,” *Reuters* December 26, 2023, <https://www.reuters.com/world/middle-east/iran-undoes-slowdown-enrichment-uranium-near-weapons-grade-iaea-2023-12-26/>.

¹⁷ GOV/2023/57.

¹⁸ “AEOI Chief: Iran to Run 6 More Uranium Mines,” *Fars News Agency*, July 24, 2023, <https://www.farsnews.ir/en/news/14020502000632/AEOI-Chief-Iran-Rn-6-Mre-Uranim-Mines>.

required to produce weapons-grade fissile material for one nuclear weapon) would be no less than 12 months. Iran's increase in its stockpile of enriched uranium, including HEU, has dramatically reduced the breakout period to less than one week, according to some analysts.¹⁹ Based on the IAEA November 2023 report, other U.S. experts contend (with no official confirmation) that Iran could also quickly produce additional weapons, assessing that:

Iran can use a fraction of its 60 percent enriched uranium to rush to its first quantity of 25 kg of WGU in as little as seven days. Its enriched uranium stocks are sufficient to make enough weapon-grade uranium for six nuclear weapons in one month, eight nuclear weapons in two months, ten in three months, eleven in four months, and twelve in five months.²⁰

Efforts to restore the nuclear deal

Indirect negotiations aimed at restoring a nuclear deal with Iran have failed to reach an agreement. Although progress was reported from time to time, each time new difficulties emerged.

In February 2023, indirect discussions

were reportedly held between the United States and Iran regarding a possible prisoner exchange to secure the release of U.S. citizens imprisoned in Iran.²¹ In April, it was also reported that the United States consulted with European countries and Israel on a proposal for an interim agreement with Iran that would include some sanctions relief in exchange for Tehran freezing parts of its nuclear program.²² While there was no official confirmation of such discussions, off the record officials from various nations sketched the outlines of an impending halt to the escalation with Iran.²³

An agreement on the U.S.-Iranian prisoner exchange was reportedly reached in August. Following this, in September, Iran released five detained U.S. nationals and the U.S. government dismissed charges against five Iranians accused of violating U.S. sanctions and lifted a freeze on \$6 billion in Iranian oil revenues in South Korea. It was agreed that the funds would be managed by Qatar and their use limited to humanitarian assistance purposes and subject to close monitoring by the United States.

¹⁹ Kelsey Davenport, "Iran in 2022: Cusp of Nuclear Threshold," *The Iran Primer*, US Institute of Peace, December 21, 2022, <https://iranprimer.usip.org/blog/2022/dec/21/iran-2022-cusp-nuclear-threshold>.

²⁰ David Albright, Sarah Burkhard, Spencer Faragasso and Andrea Stricker, "Analysis of IAEA Iran Verification and Monitoring Report — November 2023," Institute for Science and International Security, November 20, 2023, p. 17.

²¹ Dan De Luce and Abigail Williams, "The U.S. and Iran Are Holding Indirect Talks on a Possible Prisoner Exchange, With the Help of the U.K. and Qatar, Sources Say," *NBC News*, February 15, 2023, <https://www.nbcnews.com/politics/national-security/us-iran-indirect-talks-prisoner-exchange-uk-qatar-rcna70645>.

²² Barak David, "Scoop: U.S. Discussing Freeze-for-Freeze Approach to Iran Nuclear Program," *Axios*, April 3, 2023, <https://www.axios.com/2023/04/03/iran-biden-proposal-freeze-nuclear-activity-deal>.

²³ Mark Fitzpatrick, "Iran-US Diplomacy Trudges on As Hopes of New Nuclear Understandings Grow," *Al-Monitor*, June 25, 2023, <https://www.al-monitor.com/originals/2023/06/iran-us-diplomacy-trudges-hopes-new-nuclear-understandings-grow>.

There was no official mention of Iran accepting limits on its enrichment program but since June, Iran had reduced its production of 60% enriched uranium. As noted above, this reduction was reversed in December, after the U.S. government re-imposed the freeze on Iranian access to \$6 billion assets now under Qatari control following an October 7 murderous attack on Israeli citizens by the Iran-related Hamas organization.

In addition to the countries directly involved in the JCPOA, other countries also made attempts to facilitate the restoration of a nuclear agreement with Iran. In September 2023, Iranian Foreign Minister Hossein Amir-Abdollahian revealed in an interview that Japan had presented a proposal for mediation and that “it could satisfy Iran’s interest. It deserves attention and can be positively considered.”²⁴ In the same month, Qatar reportedly proposed a tentative proposal, suggesting that the United States would allow Iran to export up to 2 million barrels per day of Iranian crude oil in exchange for Iran reducing its uranium enrichment level to 20%.²⁵ Despite these initiatives, by the end of 2023, such efforts did not succeed in restoring the nuclear agreement.

In the meantime, Iran continued to criticize the United States, and stated at the NPT PrepCom:

The U.S. is responsible for the dire situation of the JCPOA. While Iran was fully implementing its nuclear commitments under the JCPOA, the U.S. unilaterally withdrew from the agreement without any justification relevant to the JCPOA, then unlawfully re-imposed all U.S. sanctions against Iran, in material breach of UNSC Resolution 2231 and tried to force others to join it in violating the JCPOA. The Islamic Republic of Iran acted responsibly and with strategic patience and maximum resistance preserved the agreement. But the European JCPOA participants failed to abide by their commitment to compensate for the losses Iran incurred as a result of re-imposed U.S. sanctions. Therefore, Iran in exercise of its rights under Paragraphs 26 and 36 of the JCPOA is applying remedial action and is no longer bound to JCPOA nuclear-related measures.

Between April 2021 and March 2022, Iran negotiated in good-will with other participants on the resumption of the full implementation of the JCPOA and the return of the U.S. to full compliance. However, achieving this objective has been delayed due to the fact that the United States has not yet decided to return to compliance with the JCPOA. When the U.S. makes the right decision to resume the full implementation of its sanction-lifting commitments under the JCPOA, then Iran, in turn, will cease its remedial actions and resume the full implementation of its nuclear-related

²⁴ “Japan to Mediate Proposal to Rebuild Iran Nuclear Agreement in August, Foreign Minister ‘Positive Consideration,’” *Kyodo News*, September 25, 2023, <https://www.47news.jp/9905862.html>. (in Japanese)

²⁵ “Tentative Plan to Rebuild Iran Nuclear Agreement, Reduce Enrichment to Export Crude Oil,” *Kyodo News*, September 24, 2023, <https://www.47news.jp/9901875.html>. (in Japanese)

measures in accordance with the 2015 agreement.²⁶

Iranian President Seyyed Ebrahim Raisi also stated at the UN General Assembly in September, “America’s withdrawal from the JCPOA was a violation of the Muslim principle of faithfulness to the covenant. ... America needs to prove by building trust that it has good intentions and has a real will to fulfil its commitments and finalise the path.”²⁷

Withdrawal from the NPT

While Article X-1 of the NPT provides some guidelines on how a state party can legitimately withdraw from the treaty, there remains a lack of clarity over certain aspects of this process. In light of North Korea’s declaration to withdraw from the NPT, Japan, South Korea and several other Western countries have proposed stricter requirements for withdrawal from the treaty. At the 10th NPT Review Conference (RevCon) in 2022, the Non-proliferation and Disarmament Initiative (NPDI) argued for the need to, “[r]eaffirm 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.²⁸ At the NPT PrepCom in 2023, the Vienna Group of Ten also made a proposal similar to the NPDI.²⁹

On the other hand, the Chinese and Russian positions on this issue seem more cautious than the above-mentioned countries. Furthermore, Non-Aligned Movement (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. At the NPT PrepCom, Iran stated, “The wording Article X of the NPT on the right to withdrawal is very explicit. Article X is crystal clear and void of any ambiguity. It recognizes the existence of an unconditional right for its States parties to withdraw from the Treaty in exercising their national sovereignty. [Iran] would never agree to any proposal that would challenge, constrain or condition the sovereign right of States parties to withdraw from the Treaty.” Iran also blamed the United States regarding North Korea’s declaration of withdrawal from the NPT, saying, “So far, the right of withdrawal has been exercised only once and, as a result of the United States’ policy of intimidation, pressure and hostility against the North Korea. Pressure and threats by a nuclear-weapon State drove a non-nuclear-weapon State out of the Treaty.”³⁰

²⁶ “Statement of Iran,” Cluster 2, First PrepCom for the 11th NPT RevCon, August 7, 2023.

²⁷ “Statement by Iranian President Seyyed Ebrahim Raisi,” UN General Assembly, September 19, 2023.

²⁸ NPT/CONF.2020/WP.58, June 3, 2022.

²⁹ NPT/CONF.2026/PC.I/WP.17, June 15, 2023.

³⁰ “Statement of Iran,” Cluster 3 Specific Issues, First PrepCom for the 11th NPT RevCon, August 9, 2023.

Alleged interest in acquiring nuclear weapons

In the wake of rapid advancements in North Korea's nuclear and missile programs, accompanied by increasingly aggressive nuclear posturing, South Korea has at times shown indications of interest in acquiring nuclear weapons in order to counter the escalating threats from its northern neighbor. On January 11, 2023, South Korean President Yoon Suk Yeol, at a policy briefing with the Ministry of Foreign Affairs and the Ministry of National Defense, said that South Korea could deploy tactical nuclear weapons or possess its own nuclear weapons should the North Korean nuclear situation worsen. He further added that South Korea's advanced science and technology could facilitate the rapid development of nuclear weapons.³¹ However, soon after his remarks, the office of president clarified that South Korea had no plan to acquire nuclear weapons.³²

Meanwhile, South Korea has implied interest in a nuclear sharing arrangement with the United States, which would involve deploying U.S. nuclear weapons in South Korea and using them by South Korea's delivery systems. However, the

United States has denied any plans or intentions for such an arrangement. The Washington Declaration, issued during the U.S.-South Korea summit in April 2023, emphasized the need to strengthen extended (nuclear) deterrence, but noted, at the same time, that "President Yoon reaffirmed the ROK's longstanding commitment to its obligations under the [NPT] as the cornerstone of the global nonproliferation regime as well as to the U.S.-ROK Agreement for Cooperation Concerning Peaceful Uses of Nuclear Energy."³³

Since the mid-2010s, there have been repeated statements from Saudi Arabia suggesting an interest in acquiring nuclear weapons. Again in September 2023, Crown Prince Muhammad bin Salman said in an interview, "If [Iranian] get one, we have to get one ... for security reasons, and for balancing power in the Middle East, but we don't want to see that."³⁴ In the meantime, in 2023, it was reported that Saudi Arabia, in the context of constructing nuclear power plants, was considering proposals from China, which does not impose restrictions on enrichment and reprocessing activities. Moreover, Saudi Arabia was reportedly exploring the possibility of acquiring

³¹ Chae Sang-Hun, "In a First, South Korea Declares Nuclear Weapons a Policy Option," *New York Times*, January 12, 2023, <https://www.nytimes.com/2023/01/12/world/asia/south-korea-nuclear-weapons.html>.

³² Jon Herskovitz, "South Korea's Flirtation With Nuclear Arms Piles Pressure on US," *Bloomberg*, January 18, 2023, <https://www.bloomberg.com/news/articles/2023-01-17/south-korea-s-flirtation-with-nuclear-arms-piles-pressure-on-us>.

³³ "Washington Declaration," April 26, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/26/washington-declaration-2/>.

³⁴ 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/>.

uranium enrichment technology from China.³⁵

Negotiations between the United States and Saudi Arabia over a nuclear cooperation agreement that would allow access to U.S. nuclear energy technology have been stalled for several years over U.S. insistence on conditions that would prohibit acquisition of uranium enrichment and plutonium reprocessing capabilities. In 2023, it was reported that the two sides were considering a broader agreement under which Saudi Arabia would recognize Israel and the United States would supply security assurances and a uranium-enrichment facility under U.S. control. Perturbations over the October 7 Hamas attack and Israel's response reportedly interrupted these discussions.³⁶

Regarding Iran, Supreme Leader Ayatollah Ali Khamenei said on June 11, “Accusations about Tehran seeking nuclear weapons is a lie and they know it. We do not want nuclear arms because of our religious beliefs. Otherwise they (the West) would not have been able to stop it.”³⁷ President Ebrahim Raisi also stated at the UNGA, “Nuclear weapons have no place in the defence doctrine of the

Islamic Republic of Iran. Official reports of relevant international authorities and even Western intelligence communities have repeatedly emphasised the truth of this claim.”³⁸

C) Nuclear-Weapon-Free Zones

Treaties establishing nuclear-weapon-free zones (NWFZs) have entered into force in Latin America (Tlatelolco Treaty), the South Pacific (Rarotonga Treaty), Southeast Asia (Bangkok Treaty), Africa (Pelindaba Treaty) and Central Asia (Central Asian NWFZ Treaty). In addition, Mongolia declared its territory a nuclear-weapon-free zone at the UNGA in 1992, and the UNGA has been adopting a resolution entitled “Mongolia's International Security and Nuclear-Weapon Free-Status” every two years since 1998, in support of Mongolia's declaration.³⁹

In August 2022, the South-East Asia Nuclear-Weapon-Free Zone (SEANWFZ) Commission adopted a “Plan of Action to Strengthen the Implementation of the Treaty on the South -East Asia Nuclear-Weapon-Free Zone (2023–2027).” Its adoption and implementation was noted in the UNGA resolution on the

³⁵ Summer Said, Sha Hua and Dion Nissenbaum, “Saudi Arabia Eyes Chinese Bid for Nuclear Plant,” *Wall Street Journal*, August 25, 2023, <https://www.wsj.com/world/middle-east/saudi-arabia-eyes-chinese-bid-for-nuclear-plant-e4a56f>.

³⁶ Sharon Squassoni, “Nuclear Mirage: U.S. Nuclear Cooperation with Saudi Arabia,” *Arms Control Today*, December 2023, <https://www.armscontrol.org/act/2023-12/features/nuclear-mirage-us-nuclear-cooperation-saudi-arabia>.

³⁷ Parisa Hafezi, “Iran's Khamenei Says ‘Nothing Wrong’ with a Nuclear Deal with West,” *Reuters*, June 12, 2023, <https://www.reuters.com/world/middle-east/irans-khamenei-says-nothing-wrong-with-nuclear-deal-with-west-2023-06-11/>.

³⁸ “Statement by President Raisi.”

³⁹ A/RES/53/77D, December 4, 1998.

SEANWFZ in 2023.⁴⁰

At the 2023 NPT PrepCom, Arab states and Iran called for Israel to join the NPT as a NNWS and accept IAEA comprehensive safeguards. They also criticized Israel and the United States for not participating in the Conference on the Establishment of a Middle East Region Free of Nuclear Weapons and Other Weapons of Mass Destruction (hereafter the “Middle East Conference”), and urged them to attend the fourth Middle East Conference held in November 2023. Egypt stated, “We reiterate that this UN Conference, which aims at elaborating a legally-binding treaty on the establishment of the Zone, takes the 1995 Resolution as its terms of reference and is fully based on consensus and arrangements freely arrived at. The unilateral refusal to engage with this Conference on the part of Israel should therefore not be utilized as a means to put into question the inclusivity of this process. Any argument that is predicated on this logic is in our view untenable.”⁴¹ Iran argued that “[s]ome States party to the NPT, including France, Germany, Norway, the U.S. and UK which assisted Israel to build its nuclear weapons have a special responsibility in this regard,” and specifically “call[ed] on Germany to end its assistance to Israel’s nuclear proliferation activities,” including the provision of submarines capable of

carrying nuclear weapons.⁴²

Russia criticized the United States, stating: “We regret to note that the United States, by its non-participation in the Conference, continues to refrain from its responsibilities as one of the co-sponsors of the 1995 Resolution on the Middle East. We see no real reason for Washington, which, moreover, is constantly trying to claim in words to be a leader in nonproliferation, to further sabotage the meetings aimed at establishing the Middle East WMD-free zone.”⁴³

The United States responded to such criticism by stating:

The United States remains committed to the goal of a Middle East zone free of weapons of mass destruction and delivery systems, based on arrangements freely arrived at by all regional states. We are convinced that the only path to progress is through direct, inclusive dialogue aimed at building confidence and addressing the legitimate security concerns of all parties. We are prepared to engage on initiatives to advance implementation of the 1995 Resolution that have consensus regional support. The United States took note of developments during the first three sessions of the UN Conference on the establishment of such a zone, but we continue to question whether that UN

⁴⁰ A/RES/78/39, December 4, 2023.

⁴¹ “Statement of Brazil,” Cluster 2 Specific Issue, First PrepCom for the 11th NPT RevCon, August 7, 2023.

⁴² “Statement of Iran,” Cluster 2 Specific Issues, First PrepCom for the 11th NPT RevCon, August 7, 2023.

⁴³ “Statement of the United States,” Cluster 2 Specific Issues, First PrepCom for the 11th NPT RevCon, August 7, 2023.

Conference can serve as an effective forum for dialogue among all the regional states. We note that no other regional zone required a UN umbrella or architecture for negotiation, and we reject claims that the United States' decision not to participate as an observer in this Conference in any way constitutes hindering the implementation of the 1995 Resolution or backtracking on past U.S. commitments. I note that it was not the United States that ended regional consultations to prepare for the Middle East Zone conference called for in the 2010 Action Plan, consultations in which the Israel participated in at a senior level.⁴⁴

Israel stated the following at the UNGA First Committee:

The 1999 Disarmament Commission Report on Guidelines and Principles for the establishment of Nuclear Weapon Free Zones clearly states that Nuclear Weapon Free Zones should be established on the basis of arrangements “freely arrived at among the States of the region concerned” and “pursued by ALL the states of that region.”

Ill motivated initiatives, such as the UN Conference on the Middle East go against the guidelines and established principles of any Nuclear Weapons Free Zones and are unhelpful.⁴⁵

The fourth Middle East Conference was held on November 13-17, 2023, in which

23 regional countries and four observers (China, France, Russia and the United Kingdom) participated. According to its conference report, the general discussion covered diverse issues, including the importance of implementing the Middle East Resolution issued by the 1995 NPT Review and Extension Conference, general principles and core obligations, the inalienable right of States parties to receive and use nuclear, chemical and biological technology and materials solely for peaceful purposes, commitment to achieving a WMD free world, Peaceful uses and technical cooperation. The participating countries also urged Israel to promptly join the NPT and implement IAEA comprehensive safeguards, and emphasized the necessity for Israel to participate in the Middle East Conference. Thematic debates covered peaceful uses and technical cooperation, nuclear verification, and topics identified at the previous conference that require further discussion. In addition, the conference also received reports on the intersessional working committee, which addressed glossary of terminologies, and general principles and obligations for a Middle East zone free of nuclear weapons and other WMD.⁴⁶

At past UNGAs from 1980 through 2017, a resolution titled “Establishment of a nuclear-weapon-free zone in the region of the Middle East” was adopted without a

⁴⁴ “Statement of Russia,” Cluster 2 Specific Issues, First PrepCom for the 11th NPT RevCon, August 7, 2023.

⁴⁵ “Statement of Israel,” Nuclear Weapons Cluster, First Committee, UN General Assembly, October 16, 2023.

⁴⁶ A/CONF.236/2023/2, November 17, 2023.

vote. However, the resolution in 2023, as in the previous years, was taken to a vote: 1795 countries were in favor, Israel was against it, and the United State and other two countries abstained.⁴⁷

Concerning Northeast Asia and South Asia, while initiatives for establishing NWFZs have been proposed by non-governmental groups in the respective regions, there are few signs that states parties in these regions are taking any serious initiative toward this goal. One exception is Mongolia, which in its report submitted to the NPT RevCon expressed a willingness to “[p]lay an active role in promoting the idea of establishing a nuclear weapon-free zone in north-east Asia.”⁴⁸

(2) IAEA Safeguards Applied to the NPT NNWS

A) Conclusion of IAEA Safeguards Agreements

To prevent and detect the diversion of nuclear materials from peaceful purposes to nuclear weapons and other nuclear explosive devices, Article III-1 of the NPT obliges NNWS to conclude and implement a comprehensive safeguards agreement with the IAEA and to accept its safeguards. As of May 2023, four NPT non-nuclear-weapon states (NNWS) have

yet to conclude CSAs with the IAEA.⁴⁹

In accordance with the strengthened safeguards system in place since 1997, an NPT NNWS or any other state may also conclude with the IAEA an Additional Protocol to its safeguards agreement, based on a model document known as INFCIRC/540. As of May 2023, 135 NPT NNWS have ratified Additional Protocols. Iran started provisional implementation of the Additional Protocol in January 2016, but terminated its application in February 2021 in response to U.S. withdrawal from the JCPOA.

A state’s faithful implementation of the Additional Protocol, along with the CSA, allows the 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 2022, such a conclusion was drawn for 74 countries.) Subsequently, the IAEA implements so-called “integrated safeguards,” a term defined as the “optimized combination of all safeguards

⁴⁷ A/RES/78/17, December 4, 2023.

⁴⁸ NPT/CONF.2020/18, March 20, 2020.

⁴⁹ IAEA, “Status List: Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols,” May 3, 2023, <https://www.iaea.org/sites/default/files/20/01/sg-agreements-comprehensive-status.pdf>. All of these four countries possess a small amount of nuclear material or do not conduct activities for peaceful use of nuclear energy.

Table 2-1: The status of the conclusion and implementation of the IAEA safeguards agreement by the NNWS party to the NPT

(As of December 2021)

	CSA (Year)*	Additional Protocol (Year) *	Broader conclusion drawn	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	○	○
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			
Turkey	1981	2001	○	
North Korea***	1992			

* (Year) shows when the CSA or Additional Protocol entered into force.

**Iran has accepted provisional application of the Additional Protocol. Iran signed the Additional Protocol in 2003 and accepted its provisional application under the JCPOA adopted in 2015. However, it terminated the application in February 2021.

*** North Korea has refused to accept monitoring and verification by the IAEA, including comprehensive safeguards, since announcing its withdrawal from the NPT in 1993.

Source: IAEA, "Safeguards Statement for 2022."

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 2022," published in 2023 and describing the situation in 2022, as of the end of 2022, 69 NNWS have applied integrated safeguards.⁵⁰

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).⁵¹

In the resolution, titled "Strengthening the

⁵⁰ IAEA, "Safeguards Statement for 2022," 2023.

⁵¹ The ABACC stated at the NPT PrepCom, "Throughout these 32 years, ABACC has carried out more than 3,500 inspections at nuclear facilities in both countries, including more than 300 unannounced inspections. I would like to emphasize that despite all restrictions caused by the pandemic of COVID-19, ABACC was able to comply with its Annual Verification Plan, and performed 134 inspections in 2020 and 122 inspections in 2021." "Statement of the Brazilian-Argentine Agency for Accounting and Control of

Effectiveness and Improving the Efficiency of Agency Safeguards” adopted in September 2023, the IAEA General Conference called on all States with unmodified Small Quantity Protocols (SQPs) to either rescind or amend them, and stated that the amended SQPs for 78 countries have entered into force as of September 2023.⁵² Meanwhile, among countries that have expressed their intentions to introduce nuclear energy, Saudi Arabia has not yet accepted an amended SQP.⁵³ At the IAEA General Conference in September 2023, Saudi Arabia’s Minister of Energy Abdulaziz Bin Salman stated, “[T]he Kingdom has decided recently to rescind the Small Quantities Protocol and implement the full Comprehensive Safeguards Agreement. The Kingdom is working, within the framework of its national ecosystem, to establish the necessary mechanisms for this full implementation, following best international practices and experiences.”⁵⁴ In November, IAEA Director General Grossi said that a nuclear research reactor being built for Saudi Arabia by an Argentine company

was almost complete, and that the IAEA and Saudi Arabia had been discussing the necessary inspections.⁵⁵

B) Compliance with IAEA Safeguards Agreements

According to the “Safeguards Statement for 2022” published in 2023, as of the end of 2022, of the 134 countries to which both CSAs and the Additional Protocols are applied (not including Iran suspending provisional application of the Additional Protocol in 2021), the IAEA concluded that all nuclear materials remained in peaceful activities for 74 countries. For the remaining 60 countries, evaluations regarding the absence of undeclared nuclear material and activities for each of these states remained ongoing, and the IAEA concluded only that declared nuclear material remained in peaceful activities. For 46 countries with a CSA but with no Additional Protocol in force, the Agency concluded only that declared nuclear material remained in peaceful activities.⁵⁶

Nuclear Materials (ABACC),” First PrepCom for the 11th NPT RevCon, July 31, 2023.

⁵² GC(66)/RES/11, September 2023.

⁵³ Saudi Arabia is on the verge of completing its first research reactor. Prior to importing nuclear fuel, the country needs to renegotiate its safeguards agreement. This involves transitioning from the safeguards activities stipulated under the SQP to those required by a comprehensive safeguards agreement. Additionally, it is essential for Saudi Arabia to enter into a subsidiary arrangement with the IAEA to ensure all nuclear materials and activities are adequately safeguarded. The current SQP in Saudi Arabia does not permit verification during the reactor design and construction stage, known as Design Information Verification (DIV). Such verification is mandatory for new research reactors, like the one Saudi Arabia is currently developing.

⁵⁴ “Statement of the Saudi Arabia,” IAEA General Conference, September 25, 2023.

⁵⁵ Pasha Magid, “IAEA Chief Says Saudi Research Reactor Almost Complete,” *Reuters*, December 13, 2023, <https://www.reuters.com/business/energy/iaea-chief-says-saudi-research-reactor-almost-complete-2023-12-13/>.

⁵⁶ IAEA, “Safeguards Statement for 2022.”

North Korea

In an annual report titled the “Application of Safeguards in the Democratic People’s Republic of Korea” in September 2022, the IAEA Director-General reported: “From the end of 2002 until July 2007, the Agency was not able, and since April 2009 has not been able, to implement any safeguards measures in the DPRK.”⁵⁷ The IAEA also reported on the state of play of North Korea’s nuclear-related facilities during August 2022 through August 2023 via an analysis of public information and satellite images, for instance:

- 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.
- Uranium enrichment facility in Yongbyon: the Agency observed indications that the reported centrifuge enrichment facility at Yongbyon continued to operate. As previously reported, between September 2021 and May 2022, a new annex to this facility was constructed, thereby increasing the overall floor area by approximately one third. There were indications during the reporting period that activities related to uranium enrichment had commenced within the new annex.
- Kangson complex: there were indications of ongoing activities at this complex.
- 5MW graphite reactor: indications of the operation of the 5MW(e) Experimental Nuclear Power Plant, including the discharge of cooling water, continued to be observed. However there were short periods in late-September 2022, mid-November 2022, late-March 2023 and mid-April 2023, when there was no cooling water discharge. Intermittent shutdowns are consistent with observations of past reactor operating cycles.
- Other graphite reactors: construction of the 50MW(e) Nuclear Power Plant at Yongbyon and the 200MW(e) Nuclear Power Plant at Taechon was halted during the 1994 Agreed Framework and has since not been restarted.
- Light Water Reactor (LWR) under construction: an increase in the level of activity around the Light Water Reactor (LWR) was observed throughout the reporting period. A new channel for the southern cooling water outlet was excavated in October 2022 and indications of possible tests of the LWR’s cooling water systems were observed more frequently, and for longer duration, than in previous reporting periods. The Agency did not observe indications of the operation of the LWR and, based on the information currently available, it is not possible for the Agency to estimate when the reactor could become operational. During the reporting period, three new buildings were constructed in the immediate vicinity of the LWR. In addition, as previously reported, construction started on a new group of buildings south of the

⁵⁷ GOV/2023/41-GC(67)/20, August 25, 2023.

LWR compound in August 2021, possibly to support the fabrication or maintenance of reactor components. The construction of this group of buildings was externally complete by December 2022. Further south of the LWR compound, construction of another industrial-type building commenced in March 2023. The purpose of this building has not been determined by the Agency.

- Radiochemical Laboratory (reprocessing): the steam plant that serves the Radiochemical Laboratory was observed by the Agency to have operated from late-April to late-September 2022, although only intermittently. From late-June 2023 to the end of the reporting period the steam plant was again observed to be operating intermittently. The observed operation of the steam plant is consistent with waste treatment or maintenance activity at the Radiochemical Laboratory. In March 2023, the Agency observed that the soil and vegetation covering a radioactive waste storage location situated north of the Radiochemical Laboratory had been removed, exposing the liquid waste storage tanks and solid waste storage compartments. Near a second waste storage location, a building located east of the Radiochemical Laboratory, small-scale excavation was observed in late June 2023.

The IAEA stated, “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. ... During the reporting period, the Agency has continued to maintain its enhanced readiness to return to the DPRK and has undertaken, inter alia, the following activities:”⁵⁸

- Continued its collection and analysis of safeguards relevant open source information on the North Korea’s nuclear program;
- Increased its collection and analysis of a wide range of high-resolution commercial satellite imagery, both optical and radar, to monitor the North Korea’s nuclear program;
- Maintained the equipment and supplies necessary to ensure that the Agency is prepared to promptly initiate verification and monitoring activities in North Korea;
- Conducted training of inspectors to maintain enhanced readiness to return to North Korea; and
- Continued to review and document the Agency’s knowledge of the North Korea’s nuclear program, including through 3D modelling of facilities, information integration using a geospatial information system (GIS), and knowledge management activities, to ensure the Agency’s experience from past activities in North Korea is preserved.

Iran

Verification and monitoring

In accordance with a domestic law enacted in December 2020, Iran in February 2021 stopped implementing the

⁵⁸ Ibid.

verification measures in the JCPOA that went beyond the requirements of Iran's full-scope safeguards agreement with the IAEA. The IAEA Director-General's report in November 2023 reported that the following verification and monitoring activities have not been implemented since February 23, 2021:⁵⁹

- Monitoring or verifying Iranian production and stocks of heavy water;
- Verifying that use of shielded cells at two locations, referred to in the decision of the Joint Commission of January 14, 2016 (INFCIRC/907), are being operated as approved by the Joint Commission;
- Implementing continuous monitoring to verify that all centrifuges and associated infrastructure in storage remain in storage or have been used to replace failed or damaged centrifuges;
- Performing daily access upon request to the enrichment facilities at Natanz and Fordow, including to monitor Iran's production of stable isotopes;
- Verifying in-process low enriched nuclear material at enrichment facilities as part of the total enriched uranium stockpile;
- Verifying whether or not Iran has conducted mechanical testing of centrifuges as specified in the JCPOA;
- Monitoring or verifying Iranian production and inventory of centrifuge rotor tubes, bellows or assembled rotors; verifying whether produced rotor tubes and bellows are consistent with the centrifuge designs described

in the JCPOA; verify whether produced rotor tubes and bellows have been used to manufacture centrifuges for the activities specified in the JCPOA; verifying whether rotor tubes and bellows have been manufactured using carbon fiber which meets the specifications agreed under the JCPOA;

- Monitoring or verifying the uranium ore concentrate (UOC) produced in Iran or obtained from any other source; and whether such UOC has been transferred to UCF; and
- Verifying Iran's other JCPOA nuclear-related commitments, including those set out in Sections D, E, S and T of Annex I of the JCPOA.

Iran has also continued to refuse, inter alia: implementation of the modified Code 3.1 of the Subsidiary Arrangements to Iran's Safeguards Agreement; provisional application of the Additional Protocol; and access to the data from its on-line enrichment monitors and electronic seals, or access to the measurement recordings registered by its installed measurement devices. The IAEA report in November also pointed out that "[t]he situation was exacerbated in June 2022 by Iran's decision to remove all of the Agency's JCPOA-related surveillance and monitoring equipment."

In the meantime, Iran and the IAEA agreed in March 2023 to reinstall surveillance cameras at Iran's nuclear facilities, and the IAEA reported in May that they had been installed at workshops

⁵⁹ GOV/2023/57, November 15, 2023.

in Esfahan where centrifuge rotor tubes and bellows are manufactured.⁶⁰

On September 16, IAEA Director-General Grossi criticized Iran, stating:

Today, [Iran] informed me of its decision to withdraw the designation of several experienced Agency inspectors assigned to conduct verification activities in Iran under the NPT Safeguards Agreement. This follows a previous recent withdrawal of the designation of another experienced Agency inspector for Iran. ... With today's decision, Iran has effectively removed about one third of the core group of the Agency's most experienced inspectors designated for Iran.⁶¹

Iranian Foreign Ministry argued that the measure mentioned above was a countermeasure to abuse of the IAEA for political purposes by the United States, France, Germany and the United Kingdom.⁶² President Raisi also said, "We have no problem with the inspections but the problem is with some inspectors ... those inspectors that are trustworthy can continue their work in Iran."⁶³

Iran also asserted that it had properly accepted IAEA safeguards, stating the following at the NPT PrepCom:

According to the latest Safeguards Implementation Report, the IAEA inspectors performed 448 inspections in Iran in 2022, which is more than the inspections conducted in Japan and Canada combined. Without Iran's good-faith cooperation, it is not possible for the IAEA to perform this unprecedented level of verification activities in Iran. Iran deserves to be commended for providing this level of cooperation with the IAEA. It is essential that the IAEA conducts its verification activities in an indiscriminate, impartial and independent manner in order to uphold the credibility of the Agency as its biggest asset. The Agency must resist external pressures to manipulate its agenda. The focus of the IAEA on investigating the so-called outstanding safeguards issues, which are in fact 20-year-old allegations with no proliferation risk, will certainly not serve the Agency and the safeguards system. It has so far contributed only to the stated objective of those who are seeking to kill the JCPOA.⁶⁴

Alleged undeclared activities

Iran continues to implement its comprehensive safeguards measures. However, the issue regarding the existence of past undeclared activities remains unresolved.

⁶⁰ GOV/2023/24, May 31, 2023.

⁶¹ "IAEA Director General's Statement on Verification in Iran," September 16, 2023, <https://www.iaea.org/newscenter/pressreleases/iaea-director-generals-statement-on-verification-in-iran-0>.

⁶² "EU Urges Iran to Reconsider Barring of UN Nuclear Watchdog Inspectors," *France 24*, February 17, 2023, <https://www.france24.com/en/middle-east/20230917-eu-urges-iran-to-reconsider-barring-un-nuclear-watchdog-inspectors>.

⁶³ Parisa Hafezi and Michelle Nichols, "President Raisi Says Iran Has 'No Problem' with IAEA Inspections," *Reuters*, September 21, 2023, <https://www.reuters.com/world/middle-east/president-raisi-says-iran-has-no-problem-with-iaea-inspections-2023-09-21/>.

⁶⁴ "Statement by Iran," First PrepCom for the 11th NPT RevCon, August 1, 2023.

In a report to the IAEA Board dated February 23, 2021, the IAEA Director-General summarized the Agency's assessment of the presence of undeclared nuclear material and activities at four sites that may have been associated with Iran's 1989-2003 clandestine and systematic nuclear program (AMAD Plan). At one of the sites (reported elsewhere to be a warehouse at Turqzabad), environmental sampling revealed artificially-produced natural uranium particles, indicating that uranium conversion may have taken place, as well as low-enriched uranium (LEU) containing U-236 and depleted uranium with a slightly lower proportion of U-235 than natural uranium. At other two sites (Varamin and Marivan), analysis of environmental sampling indicated the presence of artificially produced uranium particles. The IAEA assessed that the remaining site (Lavisian-Shian) was not worth complementary access because it had been extensively cleared and traces had been removed.⁶⁵

In its "Safeguards Statement in 2022," the IAEA reported, "During 2022, despite the Agency's continued efforts to engage [Iran] in order to resolve outstanding safeguards issues related to the presence

of uranium particles of anthropogenic origin at locations in Iran not declared to the Agency, limited progress was made. Unless and until Iran clarifies these issues, the Agency will not be able to provide assurance about the exclusively peaceful nature of Iran's nuclear programme."⁶⁶

Iran announced at the end of July 2023 that it had submitted new details to the IAEA regarding two sites near Tehran, where inspectors had traces of manmade uranium.⁶⁷ Despite this development, little progress was made towards resolving the issue. Consequently, on September 14, a joint statement by 63 countries⁶⁸ was issued, which stated, "We call upon Iran to act immediately to fulfill its legal obligations to address the following issues identified by the Director General":⁶⁹

- The outstanding safeguards issues in relation to nuclear material detected at undeclared locations in Iran, including informing the Agency of the current location(s) of nuclear material and/or contaminated equipment;
- The discrepancy in the amount of nuclear material verified by the Agency at the Esfahan Uranium Conversion Facility (originating from the Jabr Ibn Hayan Laboratories), compared to the

⁶⁵ GOV/2021/15, February 23, 2021.

⁶⁶ IAEA, "Safeguards Statement for 2022."

⁶⁷ Jon Gambrell, "Iran Gives 'Detailed Answers' to UN Inspectors Over 2 Sites Where Manmade Uranium Particles Found," *AP News*, July 26, 2023, <https://apnews.com/article/iran-nuclear-program-iaea-answers-uranium-49d750f406b9321b266f9641b00fed75>.

⁶⁸ Participating countries include Australia, Austria, Canada, Chile, France, Germany, Japan, Korea, the Netherlands, New Zealand, Norway, Poland, Saudi Arabia, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

⁶⁹ "International Joint Statement at IAEA Board of Governors on NPT Safeguards Agreement with Iran," September 14, 2023, <https://www.gov.uk/government/news/international-joint-statement-at-iaea-board-of-governors-on-npt-safeguards-agreement-with-iran>.

- amount declared by Iran; and
- Iran's implementation of modified Code 3.1 of the Subsidiary Arrangements to its Safeguards Agreement, including the provision of the required early design information.

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 clandestinely constructed, undeclared nuclear reactor. Although the IAEA has repeatedly called on Syria to cooperate fully with the Agency so as to resolve the outstanding issues, Syria has not responded to that request.⁷⁰

In the meantime, the IAEA reported that inspections were carried out at the Miniature Neutron Source Reactor facility near Damascus and a location outside facilities (LOF) in Homs in 2022; and that it found no indication of diversion of declared nuclear material from peaceful activities.⁷¹

Acquiring naval nuclear propulsion by NNWS

Regarding acquisition of naval nuclear propulsion (specifically, for nuclear submarines) by NNWS, at the AUKUS (Australia-UK-U.S. Security Cooperation Partnership) summit meeting on March 13, 2023, detailed plans were disclosed in

terms of the provision of nuclear submarines to Australia. This includes the delivery of three U.S. nuclear submarines to Australia in the early 2030s, and the United Kingdom will deliver its first nuclear-powered attack submarine SSN-AUKUS to the Royal Navy in the late 2030s.⁷² In May, the IAEA Director-General's report outlined developments in the AUKUS initiative and ongoing discussions between the three countries and the IAEA.⁷³

China repeatedly criticized the AUKUS on various occasions. In its working paper submitted at the NPT PrepCom in 2023, China claimed that:

The naval nuclear propulsion reactors and their associated nuclear material to be transferred by the US and the UK to Australia cannot be effectively safeguarded under the current IAEA safeguards system. Therefore there is no guarantee that the nuclear material thus transferred will not be diverted to the production of nuclear weapons or other nuclear explosive devices.

... The three countries and the IAEA have no authority to interpret Article 14 of CSA and its application. There's a huge international divergence on the application of Article 14, which has never been applied before. The international community is still far from reaching consensus on the definition of "non-peaceful activities" and "non-proscribed military activity" as well as on

⁷⁰ IAEA, "Safeguards Statement for 2022."

⁷¹ Ibid.

⁷² "Joint Leaders Statement on AUKUS," March 13, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/03/13/joint-leaders-statement-on-aucus-2/>.

⁷³ GOV/INF/2023/10, May 31, 2023.

the scope and procedure for non-application of safeguards. In history, the formation, modification, explanation and execution of all kinds of safeguards agreements, whether CSAs, APs or SQPs, are all negotiated and decided by all the IAEA member states, and approved by the Board of Governors. Thus the explanation of Article 14 of CSA can be no exception. In 1978, the then-Director General made it clear in his exchange of letters with the Australian side (GOV/INF/347) that the Board of Governors had taken no opportunities to explain Article 14 and relevant procedures because no parties of NPT seek for the application of it. This fully proves that it shall be the Board of Governors to interpret Article 14 and its application rather than the Secretariat of the IAEA.

It will set a bad precedent if Australia invokes Article 14 for non-application of safeguards. The trilateral cooperation on nuclear-powered submarines involves large quantities of weapon-grade HEU. If Australia seeks non-application of safeguards, new arrangements for non-nuclear-weapon State fulfilling safeguards obligation will be created. That means part of its nuclear activities will be under IAEA safeguards of the IAEA while large quantities of HEU will be out of safeguards. Such cooperation will open the “Pandora’s box” and other countries may follow suit, severely undermining the international nuclear non-proliferation regime, and negatively impact the solution of regional nuclear hotspot issues.

... The trilateral cooperation on nuclear-powered submarines safeguard involves

complex political, legal and technical questions, and has a direct bearing on the authority, integrity and effectiveness of the NPT, and thus is closely related to the interests of all IAEA member States. All the IAEA member states shall be allowed to discuss the issue through a transparent, open and inclusive intergovernmental process, and make decisions by consensus according to the historical practices of strengthening the safeguards system. The three countries shall not start nuclear-powered submarine cooperation before all parties reach consensus. The Secretariat of the IAEA shall not negotiate and conclude safeguards arrangements with the three countries arbitrarily.⁷⁴

Russia also opposed the acquisition of nuclear submarines by Australia under AUKUS, stating:

We disapprove of the AUKUS trilateral partnership. It creates a fundamentally new geopolitical situation in the Asia-Pacific region. Within the partnership, an infrastructure of nuclear-weapon States, which can later be used to deploy nuclear weapons, is being established in a non-nuclear-weapon State that is also a NWFZ country. This produces an additional factor of instability that undermines nuclear disarmament efforts. In addition, this partnership involving the transfer of material that is not likely to be under comprehensive IAEA safeguards, while not violating the Safeguards Agreement, sets a precedent that could be used by other States in the future. This leads to weakening the NPT regime.⁷⁵

Among the NNWS, Indonesia argued, “It must be recognized that challenges may

⁷⁴ NPT/CONF.2026/PC.I/WP.31, August 2, 2023.

⁷⁵ “Statement by Russia,” First PrepCom for the 11th NPT RevCon, August 1, 2023.

arise from the potential dual-use nature of this technology, where the same advancements can be applied to the development of nuclear weapons and weakening the safeguards regime.”⁷⁶ Egypt also expressed its concerns, stating: “Nuclear partnerships that involve the transfer of large quantities of unsafeguarded weapon-grade fissile material from [NWS] to any NNWS pose an unprecedented threat to the credibility and effectiveness of the nuclear non-proliferation regime and set precedents that will have far-reaching ramifications on the IAEA Safeguards System. The impact of these new types of nuclear partnerships, such as the AUKUS agreements, needs to be closely examined by the Conference.”⁷⁷

On the other hand, Australia, which has reiterated that it has no intention of acquiring nuclear weapons,⁷⁸ responded by saying, “In regard to Australia’s acquisition of conventionally armed, nuclear-powered submarines, we will continue to engage openly and transparently with the IAEA on the development of a non-proliferation approach that meets the highest non-proliferation standard and allows the IAEA to continue to meet its technical safeguards objectives.”⁷⁹ The AUKUS also submitted a working paper to the 10th NPT RevCon in 2022, and

argued that it is neither in violation of its nonproliferation obligations nor any possibilities for nuclear proliferation.⁸⁰ In the meantime, Australia has not specified what is meant by the “highest nonproliferation standard” to which it refers, or whether this standard entails additional measures beyond those stipulated in the Comprehensive Safeguards Agreement and Additional Protocol.

Brazil, which had launched construction of the first NNWS’s nuclear submarine, stated at the NPT PrepCom, “Nothing in the NPT precludes the development of naval nuclear propulsion. Furthermore, such activities are explicitly characterized as non-proscribed by all comprehensive safeguards agreements. Naval nuclear propulsion is, therefore, a peaceful use of nuclear energy. Consequently, no preconditions for the exercise of this right by non-nuclear-weapon States should be countenanced, beyond the obligations established by the IAEA safeguards regime.” It also argued: “In pursuing the legitimate goal of naval nuclear propulsion, Brazil is committed to transparency and open engagement with the IAEA, ensuring the Agency’s ability to fulfil its statutory non-proliferation mandate, as well as to keeping IAEA Member States informed about relevant

⁷⁶ “Statement by Indonesia,” First PrepCom for the 11th NPT RevCon, August 1, 2023.

⁷⁷ “Statement of Egypt,” Cluster 2, First PrepCom for the 11th NPT RevCon, August 4, 2023.

⁷⁸ See, for instance, Richard Marles, Deputy Prime Minister, Minister for Defence, “AUKUS Nuclear-Powered Submarine Pathway,” March 14, 2023, <https://www.minister.defence.gov.au/media-releases/2023-03-14/aucus-nuclear-powered-submarine-pathway>.

⁷⁹ “Statement by Australia,” First PrepCom for the 11th NPT RevCon, August 1, 2023.

⁸⁰ NPT/CONF.2020/WP.66, July 22, 2022.

developments.”⁸¹

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* stated that the 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.⁸²

In 2022, the IAEA’s safeguards implementation was repeatedly challenged by Russia’s aggression against Ukraine and its armed attack and occupation of the Chernobyl and Zaporizhzhia nuclear power plants. However, the IAEA reported in its Safeguards Statement 2022 as following: “The armed conflict in Ukraine, which 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 2022.”⁸³

In the resolution adopted at the IAEA General Conference in September 2023, titled “The safety, security and safeguards in Ukraine,” the IAEA Board of Governors “[called] for the urgent withdrawal of all unauthorized military and other unauthorized personnel from Ukraine’s [Zaporizhzhia nuclear power plant (ZNPP)] and for the plant to be immediately returned to the full control of the competent Ukrainian authorities consistent with the existing license issued by the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU) to ensure its safe and secure operation and in order for the Agency to conduct safe, efficient, and effective safeguards implementation, in accordance with Ukraine’s comprehensive safeguards agreement and additional protocol.”⁸⁴

(3) IAEA Safeguards Applied to NWS and Non-Parties to the NPT

Under the NPT, nuclear-weapon states (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 to some of

⁸¹ “Statement by Brazil,” First PrepCom for the 11th NPT RevCon, August 1, 2023.

⁸² “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.

⁸³ IAEA, “Safeguards Statement for 2022.”

⁸⁴ GC(67)/RES/16, September 30, 2023.

their nuclear facilities and fissile material that are not involved in military activities. All NWS have also concluded tailored Additional Protocols with the IAEA.

The *IAEA Annual Report 2022* (Annex), published in 2023, lists facilities in NWS under Agency safeguards or containing safeguarded nuclear material during 2022.⁸⁵ The IAEA does not publish the number of inspections conducted in NWS. The safeguarded facilities include the following.

- China: A power reactor, and an enrichment plant
- France: A fuel fabrication plant, a reprocessing plant, and an enrichment plant
- Russia: A separate storage facility
- The United Kingdom: An enrichment plant and two separate storage facilities
- The United States: A separate storage facility

In its Safeguards Statement, “the [IAEA] Secretariat concluded for [five NWS] that nuclear material to which safeguards had been applied in selected facilities remained in peaceful activities or had been withdrawn as provided for in the agreements. There were no such withdrawals from the selected facilities in France, the Russian Federation and the United Kingdom.”⁸⁶

Each NWS has already concluded an IAEA Additional Protocol. Among them, the Additional Protocol concluded by the

United States includes provisions for complementary access similar to those in Additional Protocols concluded by NNWS. The United States was the first NWS that has hosted a complementary access visit by the IAEA. The respective Additional Protocols concluded by France and the United Kingdom also include provisions for complementary access, though these are somewhat limited. Compared to the three NWS mentioned above, application of IAEA safeguards to nuclear facilities by China and Russia have been more limited. Their Additional Protocols do not stipulate any provision for complementary access visits.

France stated in its national report submitted to the NPT RevCon, “all French facilities holding civil nuclear materials are subject to Euratom inspection.” It also reported that certain nuclear fuel cycle facilities in France (including uranium enrichment plant, reprocessing plant and MOX fuel fabrication plant) are subject to IAEA safeguards verification, in addition to those by the EURATOM.⁸⁷ The United Kingdom also reported in its national report submitted to the NPT RevCon that all enrichment and reprocessing in the United Kingdom has been conducted under international safeguards, and that its safeguards agreement with the IAEA “allows for the application of safeguards on all source or special fissionable material in facilities within the United Kingdom,

⁸⁵ *IAEA Annual Report 2022*, GC(67)/2/Annex, Table A43(a).

⁸⁶ IAEA, “Safeguards Statement for 2022.”

⁸⁷ NPT/CONF.2020/42/Rev.1, August 1, 2022.

subject to exclusions for national security reasons only.”⁸⁸ The United States, like the United Kingdom, also designates all of its civilian nuclear facilities as eligible facilities.

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. 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 2022*, the facilities placed under IAEA safeguards or containing safeguarded nuclear material in non-NPT states as of December 31, 2022 are as listed below.⁸⁹ (The IAEA does not publish the number of inspections conducted in those countries.)

- India: Eleven power reactors, three fuel fabrication plants, two separate storage facilities
- Israel: One research reactor
- Pakistan: Seven power reactors (an increase from six in the previous year) and two research reactors

Regarding these countries’ activities in 2022, the IAEA “concluded that nuclear

material, facilities or other items to which safeguards had been applied remained in peaceful activities.”⁹⁰

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 ones that 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 call on the NWS for further application of the IAEA safeguards to their nuclear facilities in order to alleviate a discriminative nature that NNWS are obliged to accept full-scope safeguards whereas NWS are not. At the NPT PrepCom in 2023, the NAM countries, in particular, continue to demand that the NWS undertake to accept IAEA full-scope safeguards.⁹¹

(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

⁸⁸ NPT/CONF.2020/33, November 5, 2021. EURATOM safeguards are no longer in place in the United Kingdom due to the U.K.’s withdrawal from the EU.

⁸⁹ *IAEA Annual Report 2022*, GC(67)/2/Annex, Table A43(a).

⁹⁰ IAEA, “Safeguards Statement for 2022.”

⁹¹ NPT/CONF.2026/PC.I/WP.13, June 14, 2023.

in this project, Australia, Austria, Canada, France, Germany, Indonesia, Japan, South Korea, Mexico, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, Turkey, the UAE, the United Kingdom and the United States consider the Additional Protocol “an integral part” of the current IAEA safeguards system. The Vienna group of ten also stated at the NPT PrepCom, “[They underline] the importance of international cooperation in assessing and addressing, in a timely manner, any legal and regulatory challenges in connection with the deployment of new technologies, including, but not limited to, small modular reactors, advanced reactor technologies and transportable nuclear power plants.”⁹²

Indonesia acknowledged the importance of the Additional Protocol, although it did not take the position described above, and argued: “Indonesia believes that a strengthened IAEA safeguards system, including the implementation of the Additional Protocol, is a critical component of our collaborative efforts to address the non-proliferation risk associated with all peaceful nuclear activity.” Indonesia also stated, “A comprehensive safeguards agreement, in conjunction with an Additional Protocol, contains the verification requirements that can provide assurance that an NPT state party is adhering to its obligations under

the Treaty.”⁹³

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. For instance, Brazil said, “Proposals geared towards aggravating the already profound imbalance between disarmament and non-proliferation obligations are the wrong medicine for the ailments of the regime. Altering the voluntary nature of the Additional Protocol or elevating it to the level of standard for the verification of non-proliferation obligations provided for in Article III of the NPT is not the way forward.”⁹⁴ Egypt also stated, “[It] strongly rejects any attempts to impose any additional nonproliferation obligations that go beyond Article III of the Treaty. Proposals that strive to link instruments such as the voluntary Additional Protocol (AP) to the Treaty’s obligations represent an unacceptable breach of the delicate balance that the grand bargain of the Treaty aims to achieve.”⁹⁵ In addition, Iran argued: “The comprehensive safeguards agreement constitute the verification standard under Article III of the NPT. While nuclear-weapon States are not complying with their nuclear disarmament obligations, any call on non-nuclear-weapon States with

⁹² NPT/CONF.2026/PC.I/WP.17, June 15, 2023.

⁹³ “Statement of Indonesia,” Cluster 2, First PrepCom for the 11th NPT RevCon, August 7, 2023.

⁹⁴ “Statement by Brazil,” First PrepCom for the 11th NPT RevCon, August 1, 2023.

⁹⁵ “Statement of Egypt,” Cluster 2, First PrepCom for the 11th NPT RevCon, August 4, 2023.

comprehensive safeguards agreement in force to accept additional commitments beyond their obligations under comprehensive safeguards agreements is not acceptable.”⁹⁶

Russia continues to “[support] the universalization of the Additional Protocol, but stresses the voluntary nature and inadmissibility of imposing it as a mandatory measure.”⁹⁷

In a resolution titled “Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards,” adopted at the 2023 IAEA General Conference, the following points were stated regarding the Additional Protocols:⁹⁸

- “[I]t 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.”
- “[I]n 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, so as to make IAEA safeguards more effective and efficient.

According to the IAEA, as of June 2023, SLAs were developed and approved for implementation for 71 States with a CSA and an Additional Protocol in force, and a broader conclusion; 37 States with a CSA and an Additional Protocol in force but without a broader conclusion; 26 States with a CSA but no Additional Protocol in force; and one State with a Voluntary Offer Agreement and an AP in force.⁹⁹ The report also states that the SLA was developed for two countries (France and the United Kingdom) that have VOAs and an Additional Protocol in force.¹⁰⁰

Regarding research and development of safeguards technologies, as part of its long-term plan,¹⁰¹ the IAEA conducted the “Development and Implementation Support Programme for Nuclear Verification 2022-2023,”¹⁰² in which 22

⁹⁶ “Statement of Iran,” Cluster 2, First PrepCom for the 11th NPT RevCon, August 7, 2023.

⁹⁷ “Statement by Russia,” First PrepCom for the 11th NPT RevCon, August 1, 2023.

⁹⁸ GC(67)/RES/11, September 29, 2023.

⁹⁹ GC(67)/16, August 2, 2023.

¹⁰⁰ Ibid.

¹⁰¹ IAEA, “IAEA Department of Safeguards Long-Term R&D Plan, 2012-2023,” January 2013.

¹⁰² IAEA, “Development and Implementation Support Programme for Nuclear Verification 2022-2023,” January 2022.

countries (including Australia, Brazil, Canada, China, France, Germany, Japan, South Korea, the Netherlands, Russia, South Africa, Sweden, Switzerland, the United Kingdom and the United States) and the European Commission (EC) participated.

The countries surveyed that had outstanding obligations to the IAEA regular budget in 2022 (as of September 2023) were Iran and Syria.¹⁰³ It was also observed that payment of the 2023 dues by China has been delayed. As of late September, the full amount had not been paid, and by early November, only half of the dues had been contributed.

(5) Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies

A) Establishment and implementation of the national control systems

There were few remarkable developments in 2022 regarding establishing and implementing national control systems regarding export controls on nuclear-related items and technologies. The following countries surveyed in this report belong to the four international export control regimes,¹⁰⁴ including the Nuclear Suppliers Group (NSG), have national

implementation systems in place, and have implemented effective export controls regarding nuclear- (and other WMD-) related items and technologies through list and catch-all controls: Australia, Austria, Belgium, Canada, France, Germany, Japan, South Korea, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, the United Kingdom and the United States.¹⁰⁵

These countries have also made proactive efforts to strengthen export controls. For example, Japan has held an annual Asian Export Control Seminar, inviting Asian countries and other major countries from outside the region, to promote Asian and international non-proliferation efforts, although it could not be convened in 2021 due to the COVID-19 pandemic. At the 29th Asian Export Control Seminar in February 2023, approximately 150 persons in charge of export control from 30 Asian and other regional major countries/regions, as well as eight international and other organizations, attended. At the seminar, the following issues were discussed, inter alia: outreach to industry and academia in consideration of increasing importance of advanced technology; strengthening export controls in Asia; and activities under international frameworks.¹⁰⁶

¹⁰³ GC(67)/INF/7, September 22, 2023.

¹⁰⁴ Aside from the NSG, Australia Group (AG), Missile Technology Control Regime (MTCR), and Wassenaar Arrangement (WA).

¹⁰⁵ In July 2019, Japan pointed out the inadequacy of South Korea's domestic export control system, and reviewed its operation of export controls with respect to South Korea. However, Japan announced that South Korea was re-designated as a Group A (formerly "White Countries") in April 2023.

¹⁰⁶ Ministry of Foreign Affairs, "The 29th Asian Export Control Seminar," March 1, 2023, https://www.mofa.go.jp/dns/n_s_ne/page4e_001370.html.

In addition, the Vienna Group of Ten proposed as following in its working paper submitted to the NPT PrepCom: “Before supplying nuclear material, sensitive equipment or technology, States parties have the responsibility to seek assurance that the recipient State has in place Non-Proliferation Treaty-related IAEA safeguards, an adequate nuclear security regime, a minimum set of measures to combat illicit trafficking and rules and regulations for appropriate export controls in cases of retransfer.”¹⁰⁷

Among other countries surveyed in this project, Brazil, China, Kazakhstan, Mexico, Russia, South Africa and Turkey are NSG members. These countries have all set up export control systems, including catch-all controls. China published a white paper titled “China’s Export Controls” in the end of 2021. It stated that “China safeguards the authority of international treaties and mechanisms that uphold true multilateralism, and actively promotes the implementation of fair, reasonable and non-discriminatory international export controls.” It also explained China’s basic positions—maintaining a holistic approach to national security, honoring international obligations and commitments, promoting international cooperation and coordination, and opposing the abuse of export control measures—and outlined its

efforts.¹⁰⁸

As for non-NSG members, Egypt, Indonesia and Saudi Arabia have yet to establish sufficient export control legislations and systems. In the meantime, the NAM countries, including Egypt and Indonesia, underscored that many of the export control regimes were developed outside of the UN framework in selective, non-inclusive ways and without proper involvement of developing countries, as stating: “The Group of Non-Aligned States Parties to the Treaty emphasizes that proliferation concerns are best addressed through multilaterally negotiated, universal, comprehensive and non-discriminatory agreements. The Group further emphasizes that non-proliferation control arrangements should be transparent and open to the participation of all States and should not impose restrictions on access to material, equipment and technology for peaceful purposes required by developing countries for their continued development.”¹⁰⁹

India, Israel and Pakistan have also set up national export control systems, including catch-all controls. In 2023, the NSG was again unable to achieve a consensus on India’s membership application. China, the main opponent to this application, has argued that applicant countries must be parties to the NPT.¹¹⁰ It has also been

¹⁰⁷ NPT/CONF.2026/PC.I/WP.17, June 15, 2023.

¹⁰⁸ State Council Information Office of the People’s Republic of China, “China’s Export Controls,” December 29, 2021, https://english.www.gov.cn/archive/whitepaper/202112/29/content_WS61cc01b8c6d09c94e48a2df0.html.

¹⁰⁹ NPT/CONF.2026/PC.I/WP.11, June 14, 2023.

¹¹⁰ “Foreign Ministry Spokesperson Geng Shuang’s Regular Press Conference,” Ministry of Foreign Affairs of China, January 31, 2019, https://www.fmprc.gov.cn/mfa_eng/xwfw_665399/s2510_665401/t16345

reported that China will not accept India's participation in the NSG unless Pakistan is also accepted as a member.¹¹¹ Pakistan has argued that, as a state behaving responsibly regarding nuclear safety and security, it qualifies for acceptance as an NSG member.

As of the end of 2023, the status of export control implementation by North Korea, Iran and Syria remains unclear. Cooperation among these countries in ballistic missile development continues to be a concern, as mentioned below. In addition, North Korea was involved in the past in constructing a graphite-moderated reactor in Syria to produce plutonium.

B) Requiring the conclusion of the Additional Protocol for nuclear exports

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 2013:

[S]uppliers 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.¹¹²

The Non-Proliferation and Disarmament Initiative (NPDI) and the Vienna Group of Ten have argued that conclusion and implementation of the CSA and the Additional Protocol should be a condition for new supply arrangements with NNWS.¹¹³ Some of the bilateral nuclear cooperation agreements that Japan and the United States concluded recently with other countries make conclusion of the Additional Protocol a prerequisite for their cooperation with the respective partner states.

On the other hand, the NAM continues to argue that supplier countries should refrain from imposing or maintaining any restrictions or limitations on transfers of nuclear equipment, material and technology to other states parties to the NPT and their respective comprehensive safeguards agreements, stating: "The Group of Non-Aligned States Parties to the Treaty emphasizes that strict observance of and adherence to IAEA comprehensive safeguards and to the [NPT] are a condition for any cooperation in the nuclear area with States not parties to the Treaty, or for any supply

07.shtml.

¹¹¹ "China and Pakistan Join Hands to Block India's Entry into Nuclear Suppliers Group," *Times of India*, May 12, 2016, <http://timesofindia.indiatimes.com/india/China-and-Pakistan-join-hands-to-block-Indias-entry-into-Nuclear-Suppliers-Group/articleshow/52243719.cms>.

¹¹² INFCIRC/254/Rev.12/Part 1, July 26, 2011.

¹¹³ NPT/CONF.2026/PC.I/WP.17, June 15, 2023; "Statement of New Zealand," Cluster 2, First PrepCom for the 11th NPT RevCon, August 4, 2023.

arrangement with such States for the transfer of source or special fissionable material, or equipment or material specially designed or prepared for the processing, use or production of special fissionable material.”¹¹⁴

China and Russia also oppose the imposition of additional conditions and obligations. For instance, Russia said, “Another destructive trend is the use of the NPT as a pretext for restricting States’ access to nuclear technology. Those who do so forget about Article IV of the NPT, which guarantees the right to peaceful uses of nuclear energy. This approach is also dangerous because it creates the false impression that the Treaty is unfair, when in fact it only concerns the abuse of the NPT provisions by some NPT parties who thus try to deal with their short-term political challenges.”¹¹⁵

While the NPT does not prohibit NNWS from enriching uranium or reprocessing spent fuel, provided these activities are for peaceful purposes and under IAEA safeguards, such activities remain highly sensitive due to proliferation concerns. The spread of enrichment and reprocessing technologies implies that more countries could gain the capability to produce nuclear weapons. As previously noted, the Nuclear Suppliers Group (NSG) guidelines stipulate that the recipient state must implement the Additional Protocol as a condition for

receiving transfers of enrichment or reprocessing facilities, equipment or technology.

The U.S.-UAE Nuclear Cooperation Agreement concluded in 2009 stipulates a so-called “gold standard”—i.e. that the recipients are obliged to forgo enrichment and reprocessing activities. However, other bilateral agreements concluded and updated by the United States (except that with Taiwan) do not stipulate similar obligations.¹¹⁶ In the meantime, the nuclear cooperation agreements that Japan has signed with the UAE and Jordan, respectively, prohibit the enrichment and reprocessing of nuclear materials transferred, recovered or produced under the agreements.

The question of whether the nuclear cooperation agreement currently under negotiation between Saudi Arabia and the United States will adhere to the “gold standard” has garnered significant public attention. The United States has requested that Saudi Arabia renounce enrichment and reprocessing on the latter’s territory as part of the agreement. However, Saudi Arabia has yet to agree to this stipulation. Meanwhile, as previously mentioned, while Saudi Arabia has not yet concluded an amended SQP, a CSA or an Additional Protocol, it clarified in 2023 that it was working toward concluding a comprehensive safeguards agreement.

¹¹⁴ NPT/CONF.2026/PC.I/WP.13, June 14, 2023.

¹¹⁵ “Statement by Russia,” First PrepCom for the 11th NPT RevCon, August 1, 2023.

¹¹⁶ 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.”

C) Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues

North Korea

With regard to the North Korean nuclear issue, UN Member States are obliged to implement measures set out in the UN Security Council resolutions, including embargoes on nuclear-, other WMD-, and ballistic missile-related items, material, and technologies.

The Panel of Experts, established pursuant to UNSCR 1874 (2009), has published biannual reports on its findings and recommendations about implementing the resolutions. According to the report published in March 2023, the Panel pointed out North Korea's activities in defiance of the UNSCRs, including the following matters:¹¹⁷

- The Panel of Experts has continued to investigate the intangible transfer of technology involving North Korea.
- Refined petroleum products continued to be provided illicitly by “direct delivery” tankers delivering to North Korea's tankers in its exclusive economic zone. The maritime section of the present report focuses on the significant acceleration in the country's acquisition of vessels (mainly cargo ships) in 2022, and the methodology employed by those facilitating that acquisition. Illicit ship-to-ship imports of cargo in North Korean territorial waters remained ongoing. Prohibited

ship-to-ship exports of North Korean coal continued.

- Cyberactivities attributed to Reconnaissance General Bureau actors continued; a higher value of cryptocurrency assets was stolen by North Korean actors in 2022 than in any previous year. The country used increasingly sophisticated cyber techniques both to gain access to digital networks involved in cyberfinance and to steal information of potential value, including to its weapons programs.
- The Panel investigated the apparent export of North Korea's military communications equipment and has begun an investigation into reports of ammunition export.
- South Korea authorities estimated that State-sponsored North Korea cyberthreat actors had stolen virtual assets worth around \$1.2 billion globally since 2017, including about \$630 million in 2022 alone. A cybersecurity firm assessed that, in 2022, North Korea cybercrime had yielded cybercurrencies worth over \$1 billion (at the time of theft), which is more than double the total proceeds in 2021.

In the Panel's Midterm Report published in September 2022, the following issues, *inter alia*, were pointed out:¹¹⁸

- The Panel describes a rich variety of sanctions evasion measures deployed by vessels delivering refined petroleum

¹¹⁷ S/2023/171, March 7, 2023.

¹¹⁸ S/2022/656, September 12, 2023.

- products to North Korea. These included more sophisticated means to avoid detection, changing trading locations in affected waters, and additional ships involved in multi-stage trans-shipments. The Panel received information that the country continues to import refined petroleum products in violation of Security Council resolutions. Vessel acquisition in violation of Security Council sanctions continued: the country acquired 14 new vessels in the period under review. Prohibited ship-to-ship exports of coal from North Korea continued.
- Although the country's borders remained largely closed, trade volumes increased mainly because of the resumption of rail traffic. A large variety of foreign goods has quickly reappeared. The Panel continued to investigate reports of imports of luxury goods.
 - After a record-breaking level of cyberthefts in 2022, estimated at \$1.7 billion, North Korean hackers reportedly continued to successfully target cryptocurrency and other financial exchanges globally. Actors working for the Reconnaissance General Bureau continued to use increasingly sophisticated cybertechniques to steal funds and information. Companies in the cryptocurrency, defense, energy and health sectors were targeted in particular.
 - North Korea continued to access the international financial system and engaged in illicit financial operations. The Panel investigated financial institutions and representatives of the country operating abroad that support such activity. Border reopening may increase cases of North Korea nationals couriering cash and high-value items. The Panel investigated reports of nationals working overseas earning income in violation of sanctions, including in the information technology, restaurant, medical and construction sectors.
 - The Panel continued investigations into alleged exports of North Korea military communications equipment and ammunition, and initiated a number of investigations into possible cases of sales by the country of arms or other types of military support to Member States.
 - The Panel continued to investigate allegations of the export by North Korea of armaments to the Russian Federation. In addition to a claim that in November 2022 ammunition (artillery shells, infantry rockets and missiles) was delivered by rail, the United States reported that KOMID and the Wagner Group were behind the deal. The Russian Federation replied: "The photographs provided 'by one Member State' are not comprehensive evidence and do not show a violation of the international restrictive measures imposed against Pyongyang. The movement of goods to/from the [DPRK] is carried out taking into account the requirements of the Security Council resolutions concerning this country. The Council's sanctions prohibitions and restrictions are being complied with. The

competent Russian authorities found no violations.” The Panel has not obtained further evidence and still cannot confirm that the train in the imagery provided was used to transport ammunition.

Regarding the implementation of sanctions against North Korea, there has been particular concern in recent years about the actions of China and Russia. They have consistently defended North Korea, especially during incidents involving missile tests and reconnaissance satellite launches, and opposed the UN Security Council’s issuance of condemnatory statements or the adoption of resolutions against North Korea. In July 2023, the UN ambassadors of the G7 countries, along with Australia, South Korea and New Zealand, addressed a letter to the Chinese UN ambassador urgently appealing for China’s support in halting maritime activities designed to circumvent sanctions imposed on North Korea. However, the Chinese UN Mission maintained that China was fulfilling its international obligations.

A more pressing concern than the China-North Korea relationship is the swiftly intensifying relationship between Russia and North Korea. Notably, Pyongyang has publicly declared its support for Russia’s invasion of Ukraine. On September 13, 2023, a Russia-North

Korea summit meeting was held at the Vostochny Cosmodrome in Russia’s Far East. Prior to the meeting, when asked by reporters whether he would support North Korea’s development of satellites, President Putin said, “That’s why we came here. The leader of the DPRK shows great interest in rocket engineering; they are also trying to develop space.”¹¹⁹ It is considered that during the summit, the two leaders also discussed the provision of weapons and ammunition from North Korea to Russia. Additionally, the transfer of military technology from Russia to North Korea was also likely a topic of conversation. Although UN Security Council resolutions completely prohibit dealings in weapons and related materials with North Korea, Russian Foreign Minister Sergey Lavrov, said after the summit, “Sanctions against North Korea were adopted in a completely different geopolitical situation when there were problems establishing dialogue (with Pyongyang), when there were quite serious debates in the Security Council.”¹²⁰

On October 26, following the Russia-North Korea summit meeting, the U.K. Ministry of Defence disclosed its analysis that over the past few weeks, more than 1,000 containers considered to be loaded with ammunition and other supplies had been transported from North Korea to Russia.¹²¹ In addition, on November 1,

¹¹⁹ “Putin Meets Kim, Says Russia Will Help North Korea Build Satellites,” *Reuters*, September 13, 2023, <https://www.reuters.com/world/putin-says-russia-help-north-korea-build-satellites-2023-09-13/>.

¹²⁰ “Russia’s Lavrov Says Situation Has Changed Since North Korea Was Hit by U.N. Sanctions,” *Reuters*, September 13, 2023, <https://jp.reuters.com/article/idUSKBN30J0T4/>.

¹²¹ Twitter of the U.K. Ministry of Defence, October 28, 2023, <https://twitter.com/DefenceHQ/status/1717442824927363583>. Regarding arms and ammunition transfers from North Korea to Russia, see also

South Korea's National Intelligence Service reportedly analyzed that North Korea had shipped more than a million artillery shells to Russia through ships and other transport means since early August.¹²² Subsequently, on November 21, North Korea carried out a launch of a reconnaissance satellite. An analysis suggested that following the Russia-North Korea summit, Russian technicians entered North Korea to provide technical assistance, particularly in relation to engine technologies.¹²³ On December 30, U.S. Coordinator for Strategic Communications John Kirby said Russian forces had launched at least one North Korean short-range ballistic missile into Ukraine.¹²⁴

Iran

The UN Iran Sanctions Committee and Panel of Experts was wound up after the conclusion of the JCPOA, at Iran's insistence, and the UN Security Council is now responsible for overseeing the remaining limitations.

In accordance with the JCPOA, approval

of the Procurement Working Group, established under the agreement, is required for Iranian procurement of nuclear-related items and material. The number of cases has been reported to the Security Council every six months. According to the reports published in June and December 2023, in the six months leading up to that month, respectively, no proposal was under review by the Procurement Working Group.¹²⁵

Although it is not clear whether Iran is engaged in illegal nuclear-related procurement activities, some European intelligence agencies have reported that Iran has been engaged in such activities. In 2023, the German, Dutch, and Swedish intelligence agencies stated in their respective reports that Iran was engaged in procurement activities in those countries for technology and equipment that could be used to develop nuclear weapons.¹²⁶

The JCPOA set October 18, 2023, eight years after the entry into force of the agreement (or "the IAEA reaches the

James Byrne, Joseph Byrne and Gary Somerville, "The Orient Express: North Korea's Clandestine Supply Route to Russia," RUSI, October 16, 2023, <https://rusi.org/explore-our-research/publications/commentary/report-orient-express-north-koreas-clandestine-supply-route-russia>.

¹²² Jack Kim and Ju-min Park, "Russian Help to Boost North Korea Bid to Launch Spy Satellite, South Korea Says," *Reuters*, November 1, 2023, <https://www.reuters.com/world/asia-pacific/north-koreas-chances-succeeding-spy-satellite-launch-high-skorea-2023-11-01/>.

¹²³ "Notification of a North Korea's Satellite Launch—Direct Assistance from Russian Engineers to Improve Capability? South Korean Defense Minister: 'Engine Problem Almost Resolved,'" *Yomiuri Shimbun*, November 21, 2023, <https://www.yomiuri.co.jp/world/20231121-OYT1T50147/>. (in Japanese)

¹²⁴ Jeff Mason and Josh Smith, "White House says Russia used missiles from North Korea to strike Ukraine," *Reuters*, January 5, 2024, <https://www.reuters.com/world/white-house-north-korea-recently-provided-russia-with-ballistic-missiles-2024-01-04/>.

¹²⁵ S/2023/448, June 30, 2023; S/2023/963, December 6, 2023.

¹²⁶ "Iran's Illicit Procurement Related to Weapons of Mass Destruction in the Netherlands, Sweden, and Germany During 2022," Memeri, June 21, 2023, <https://www.memri.org/reports/irans-illicit-procurement-related-weapons-mass-destruction-netherlands-sweden-and-germany>.

Broader Conclusion that all nuclear material in Iran remains in peaceful activities,” whichever is earlier) as the “Transition Date.” On the specified date, the EU was expected to implement additional sanctions relief measures, including lifting the embargo on nuclear materials and ballistic missiles. Concurrently, the United States would consider terminating or modifying laws pertaining to suspended sanctions. Meanwhile, Iran would endeavor, in accordance with the constitutional roles of its President and Parliament, to ratify the Additional Protocol.

On October 18, the Secretariat of the UN Security Council, by sending a note to the UN member states, officially ended the provisions of clauses 3, 4 and 6 of Annex B of the UN Security Council Resolution 2231, including restrictions on the export and import of missile items to Iran, as well as sanctions related to confiscation of property and providing financial services to Iranian individuals and institutions under the sanctions of the Security Council has informed the countries.¹²⁷ Iran’s Ministry of Foreign Affairs and Ministry of Defense, respectively, issued statements announcing the end of UN prohibitions aimed at constraining Iran’s missile and unmanned aerial vehicle (UAV) activities under UNSCR 2231.¹²⁸

On the other hand, France, Germany and the United Kingdom issued a joint statement on September 14, 2023, announcing, “In direct response to Iran’s consistent and severe non-compliance with its JCPOA commitments since 2019, the governments of France, Germany, and the United Kingdom intend to maintain nuclear proliferation-related measures on Iran, as well as arms and missile embargoes, after JCPOA Transition Day on 18 October 2023.” At the same time, they also stated, “Our commitment to finding a diplomatic solution remains. This decision does not amount to imposing additional sanctions nor to triggering the snapback mechanism. We stand ready to reverse our decision, should Iran fully implement its JCPOA commitments.”¹²⁹

On the day before the Transition Day, the EU also stated, “The Council adopted legal acts to maintain the designations, that had initially been imposed by the United Nations for individuals and entities involved in nuclear or ballistic missiles activities or affiliated to the Islamic Revolutionary Guard Corps (IRGC).” At the same time, its statement also said, “The Council also agreed to maintain sectoral and individual measures, existing under the EU’s sanctions regime, notably those related to Iran nuclear proliferation,

¹²⁷ “Official Announcement of End of UN Security Council Sanctions against Iran,” *Islamic Republic News Agency*, October 19, 2023, <https://en.irna.ir/news/85264338/Official-announcement-of-end-of-UN-Security-Council-sanctions>.

¹²⁸ “UN Bans on Iran’s Missile Program Expire, No Snapback in Sight,” *Iran International*, October 18, 2023, <https://www.iranintl.com/en/202310189792>.

¹²⁹ “E3 statement on the JCPOA - September 2023,” September 14, 2023, <https://www.gov.uk/government/news/e3-statement-on-the-jcpoa-september-2023>.

as well as arms and missile embargoes.”¹³⁰

On October 18, the United States announced sanctions against 11 individuals, eight entities, and one vessel based in Iran, Hong Kong, China and Venezuela, which are enabling Iran’s destabilizing ballistic missile and UAV programs. In a separate move, the U.S. Department of State imposed sanctions on two Iranian officials for engaging in activities that have materially contributed to Iran’s missile program, and also imposed sanctions on two Iran-based entities and four Russia-based entities.¹³¹ The United States also released an “Iran Ballistic Missile Procurement Advisory” directed at the industry. This advisory detailed the alleged deceptive practices employed by Iran to acquire components for its ballistic missile program from various international sources.¹³²

Meanwhile, no JCPOA member activated the snapback mechanism provided for in the agreement.

On the day before the Transition Day, Russian Foreign Ministry stated, “Supplies to and from Iran of products falling under the Missile Technology Control

Regime no longer require prior approval by the UN Security Council.”¹³³ Foreign Ministry Spokesperson also said that “China supports lifting relevant restrictions and unilateral sanctions on Iran as slated in the Security Council Resolution and the JCPOA.”¹³⁴

Nuclear-related cooperation between concerned states

There have been repeated allegations over the years that North Korea and Iran have engaged in nuclear and missile development cooperation. The report by the Panel of Experts on North Korea in March 2021 mentioned that North Korea and Iran had resumed cooperation on long-range missile development projects.¹³⁵ However, subsequent reports published by the Panel in 2022 and 2023 did not contain any references regarding cooperation between North Korea and Iran in this area. Meanwhile, no concrete evidence has been revealed to support allegations of nuclear-related cooperation between North Korea and Iran.

D) Participation in the PSI

A total of 106 countries—including 21 member states of the Operational Expert

¹³⁰ “EU Maintains Restrictive Measures Against Iran under the Non-Proliferation Sanctions Regime after Oct. 18,” *Reuters*, October 18, 2023, <https://www.reuters.com/world/eu-maintains-restrictive-measures-against-iran-under-non-proliferation-sanctions-2023-10-17/>.

¹³¹ Elad Benari, “US Sanctions Iran’s Ballistic Missile and Drone Programs,” *Israel National News*, October 19, 2023, <https://www.israelnationalnews.com/news/378771>.

¹³² “UN Bans on Iran’s Missile Program Expire, No Snapback in Sight,” *Iran International*, October 18, 2023, <https://www.iranintl.com/en/202310189792>.

¹³³ *Ibid.*

¹³⁴ “Foreign Ministry Spokesperson Mao Ning’s Regular Press Conference,” Ministry of Foreign Affairs of China, October 20, 2023, https://www.fmprc.gov.cn/mfa_eng/xwfw_665399/s2510_665401/2511_665403/202310/t20231020_11165059.html.

¹³⁵ S/2021/211.

Group (Australia, Canada, France, Germany, Japan, South Korea, the Netherlands, New Zealand, Norway, Poland, Russia,¹³⁶ Turkey, 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.

The interdiction activities actually 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.

From May 30 to June 2, 2023, the PSI ministerial meeting and the Asia-Pacific regional interdiction exercise, named “Eastern Endeavor 23” were held in South Korea. Seventy countries, including Australia, Japan and the United States, participated in the ministerial meeting. (China, a non-member country that was invited, did not participate.) The interdiction exercise was conducted off Jeju Island by six countries (Australia, Canada, Japan, South Korea, Singapore and the United States). Academic

conferences and tabletop exercises by experts from each country, as well as a PSI Operation Experts Meeting, were also convened.

In August, a Southeast Asia PSI Workshop was held in Bangkok, which was co-hosted by the United States and Thailand. In addition to the host countries, participants included Cambodia, Brunei, Laos, Malaysia, the Philippines, Singapore, Vietnam and Australia. The purpose of this workshop was to “examine modern [WMD] proliferation pathways, improve understanding of WMD interdiction obligations, explore legal frameworks and the best practices of partners, and enhance the connections of the ‘Countering WMD’ community in Southeast Asia.” The workshop included an expert brief on global and regional proliferation threats from the United Nations Office for Disarmament Affairs (UNODA), panel discussions, and a scenario-based tabletop discussion focused on intra-governmental information sharing and decision-making about potential WMD-related proliferation activities in the region.¹³⁷

In October, the United States led a joint statement on Iran-related issues, along with approximately 50 countries that endorse the Statement of Interdiction Principles, which stated the following:

Specifically, with regard to Iran and

¹³⁶ Russia has suspended its participation since 2022.

¹³⁷ “U.S. and Thailand Co-host Proliferation Security Initiative (PSI) Workshop in Bangkok to Strengthen Regional Nonproliferation Coordination,” U.S. Embassy & Consulate in Thailand, August 18, 2023, <https://th.usembassy.gov/u-s-and-thailand-co-host-proliferation-security-initiative-psi-workshop-in-bangkok-to-strengthen-regional-nonproliferation-coordination/>.

consistent with the PSI principles, we affirm our commitment to take all necessary measures to prevent the supply, sale, or transfer of ballistic missile-related items, materials, equipment, goods, and technology, to protect peace and stability in the region and beyond including: (1) undertake effective measures to interdict the transfer to and from Iran of missile-related materials, including those related to UAVs; (2) adopt streamlined procedures for rapid exchange of relevant information concerning Iran's proliferation activities; (3) review and work to strengthen our relevant national legal authorities to address Iranian missile- and UAV-related issues; and (4) take specific actions in support of interdiction efforts related to Iran's missile and UAV programs.¹³⁸

In January 2018, several PSI-participating countries released a joint statement reiterating their commitment to impede and stop North Korea's illicit activities, including smuggling, by taking measures such as: inspecting proliferation-related shipments on vessels with the consent of the flag State, on the high seas, if they have information that provides reasonable grounds to believe that the cargo of such vessels contains items prohibited under UNSCRs; and prohibiting their nationals,

persons subject to their jurisdiction, entities incorporated in their territory or subject to their jurisdiction, and vessels flying their flag, from facilitating or engaging in ship-to-ship transfers to or from North Korean-flagged vessels of any goods or items that are being supplied, sold, or transferred to or from North Korea.¹³⁹

Regarding illicit maritime activities, including ship-to-ship transfers with North Korean-flagged vessels prohibited by UNSCRs, the Japan Maritime Self-Defense Force has carried out monitoring and surveillance activities in the Sea of Japan and the Yellow Sea since December 2017. Japan's Foreign Ministry published a post regarding North Korea's illicit activities on its official website.¹⁴⁰

Monitoring and surveillance activities regarding this matter were conducted by Japan and the United States, together with Australia, Canada, France, Germany, New Zealand and the United Kingdom in 2023 as in previous years.

E) Civil nuclear cooperation with non-parties to the NPT

In September 2008, the NSG agreed to grant India a waiver allowing nuclear trade

¹³⁸ "Joint Statement on UN Security Council Resolution 2231 Transition Day," October 18, 2023, <https://www.state.gov/joint-statement-on-un-security-council-resolution-2231-transition-day/>. Australia, Austria, Canada, France, Germany, Israel, Japan, the Netherlands, New Zealand, Norway, Poland, South Korea, Sweden, the United Kingdom, and the United States joined the joint statement.

¹³⁹ "Joint Statement from Proliferation Security Initiative (PSI) Partners in Support of United Nations Security Council Resolutions 2375 and 2397 Enforcement," January 12, 2018, <https://www.psi-online.info/psi-info-en/aktuelles/-/2075616>. Originally, 17 countries signed the joint statement. By the end of 2018, 42 countries had become signatories, including Australia, Austria, Belgium, Canada, France, Germany, Japan, South Korea, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom and the United States.

¹⁴⁰ Ministry of Foreign Affairs of Japan, "Suspicion of Illegal Ship-to-Ship Transfers of Goods by North Korea-Related Vessels," November 15, 2023, https://www.mofa.go.jp/fp/nsp/page4e_000757.html.

with the member states under the condition that India made commitments, including conclusion of the IAEA Additional Protocol and continuation of the 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.

Actual nuclear cooperation with India under these agreements has been sparse,¹⁴¹ with the exception of India importing uranium from Australia, Canada, France, Kazakhstan and Russia, and the conclusion of its agreements to import uranium from Argentina, Mongolia, Namibia and Uzbekistan.¹⁴² In addition, despite the United States' ongoing support for India's membership in the NSG,¹⁴³ India has yet to be admitted to it.

Meanwhile, China has been criticized for its April 2010 agreement to export two

nuclear power reactors to Pakistan, an act which may violate the NSG guidelines. China has claimed an exemption for this transaction under the "grandfather clause" of the NSG guidelines (i.e. it was not applicable at the time China became an NSG participant after the start of negotiations on the supply of the reactors). China will also supply enriched uranium to Pakistan for operating these reactors.¹⁴⁴ 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.¹⁴⁵

The NAM has criticized civil nuclear cooperation with non-NPT states, and argued as following:

The Group of Non-Aligned States Parties to the Treaty emphasizes that non-proliferation must be pursued and

¹⁴¹ "No New Power Projects from Indo-US Nuclear Deal," *The Pioneer*, March 9, 2020, <https://www.dailypioneer.com/2020/india/no-new-power-projects-from-indo-us-nuclear-deal.html>.

¹⁴² Adrian Levy, "India Is Building a Top-Secret Nuclear City to Produce Thermonuclear Weapons, Experts Say," *Foreign Policy*, December 16, 2015, http://foreignpolicy.com/2015/12/16/india_nuclear_city_top_secret_china_pakistan_baroc/; James Bennett, "Australia Quietly Makes First Uranium Shipment to India Three Years after Supply Agreement," *ABC*, July 19, 2017, <https://www.abc.net.au/news/2017-07-19/australia-quietly-makes-first-uranium-shipment-to-india/8722108>; Dipanjan Roy Chaudhury, "India Inks Deal to Get Uranium Supply from Uzbekistan," *Economic Times*, January 19, 2019, <https://economictimes.indiatimes.com/news/defence/india-inks-deal-to-get-uranium-supply-from-uzbekistan/article-show/67596635.cms>.

¹⁴³ Srinivas Laxman, "US Reiterates Support for India's Inclusion in Nuclear Suppliers Groups," *The Times of India*, June 24, 2023, <https://timesofindia.indiatimes.com/india/us-reiterates-support-for-indias-inclusion-in-nuclear-suppliers-group/articleshow/101225911.cms>.

¹⁴⁴ "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/>.

¹⁴⁵ 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>.

implemented, without exception, through the strict observance of, and adherence to, IAEA comprehensive safeguards and the Treaty as a condition for any cooperation in the nuclear area with States that are not parties to the Treaty. In the 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.¹⁴⁶

(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 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.¹⁴⁷ 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 2023, however, China has not submitted a report since 2018. France and Germany reported their holdings not only of civil plutonium but also of HEU.¹⁴⁸

¹⁴⁶ NPT/CONF.2026/PC.I/WP.11, June 14, 2023. Meanwhile, examining the individual statements from the NAM countries, it is noticeable that some of these countries highlight and express criticism towards nuclear cooperation, particularly involving Israel, while they appear to be an absence of criticism regarding the nuclear cooperation between China and Pakistan.

¹⁴⁷ The World Nuclear Association's website (<http://world-nuclear.org/>) provides summaries of the current and future plans of civil nuclear programs around the world.

¹⁴⁸ IAEA, "Communication Received from Certain Member States Concerning Their Policies Regarding

Japan's report submitted to the IAEA was based on the annual report, titled "The Current Situation of Plutonium Management in Japan," released on July 18, 2023, by the Japan Atomic Energy Commission (JAEC).¹⁴⁹

China has not disclosed details about the 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. At the NPT PrepCom, Japan—while seemingly keeping China in mind—stated, "Transparency of the management of civil plutonium must also be maintained and we underscore the importance of the implementation of the Guidelines for the Management of Plutonium, INFCIRC/549."¹⁵⁰

Other NNWS surveyed in this *Hiroshima 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 with regard to their civil nuclear activities.

B) Multilateral approaches to the 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 2017.¹⁵¹ The IAEA LEU Bank was funded mainly by the Nuclear Threat Initiative (NTI), Kuwait, Norway, the UAE, the United States and the EU.¹⁵²

the Management of Plutonium," <https://www.iaea.org/publications/documents/infcircs/communicati-on-received-certain-member-states-concerning-their-policies-regarding-management-plutonium>.

¹⁴⁹ Office of Atomic Energy Policy, Cabinet Office of Japan, "The Status Report of Plutonium Management in Japan — 2022," July 18, 2023, http://www.aec.go.jp/jicst/NC/sitemap/pdf/kanri230718_e.pdf.

¹⁵⁰ "Statement by Japan," First PrepCom for the 11th NPT RevCon, July 31, 2023.

¹⁵¹ In NPT's original proposal for a nuclear fuel bank, one of the conditions for providing fuel was that the country must have renounce the possession of facilities related to nuclear fuel cycle. However, such a condition was not included for neither the Russian center nor the Kazakhstan fuel bank.

¹⁵² Approximately \$150 million in funds were allocated for establishment and operation for the next 20 years.

Chapter 3

Nuclear Security¹

(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 scopes 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 information, 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 estimated amount of HEU and separated plutonium possessed by each country is highly uncertain as it is mostly based on estimates, in 2023, the total quantity of these materials worldwide seems to have increased from the previous year’s 1,803 tons to 1,806 tons. While the stockpile of HEU has decreased, that of separated plutonium has increased, which led to an increase of the total volume of weapon-usable nuclear materials in the world.

For more information on each material, first, with respect to HEU, in particular for military use, Pakistan’s holdings increased by 0.9 tons compared to last year. India’s holdings decreased by 0.7 tons but India is believed to continue to be producing HEU for naval propulsion (fuel for nuclear submarines).⁴

As for civilian use, inventories in the United Kingdom fell by 0.05 tons and in Japan fell to 0.6 tons.⁵ On the other hand,

¹ This chapter is authored by 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 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 %.

⁴ Stockholm International Peace Research Institute, *SIPRI Yearbook 2023: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2023), p. 330.

⁵ International Panel on Fissile Material (IPFM), “Fissile Materials Stocks,” April 29, 2023, <https://fissilematerials.org/>. Data as of 2019 indicated that Japan held 1.75 tons, which means that HEU inventories fell by 1.15 tons in Japan. Nuclear Threat Initiative (NTI), “Civilian HEU: Who Has What?” October 2019,

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	5.318	30.3
Russia	672.0	8.0	680.0
United Kingdom	21.9	0.69	22.6
United States	453.2**	33.9**	487.1
India	4.5	0.0***	4.5
Israel	0.3	0.02	0.32
Pakistan	4.9	0.02	4.92
North Korea	0.7		0.7
Others* (Non-nuclear weapon states)		4.0	4.0
Total amount	1,197	52	1,248

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 2023,” (data as of the end of 2021) and INFCIRC documents.

* Others: 12 countries, including 10 under this survey (Australia, Belgium, Canada, Germany, Iran, Japan, Kazakhstan, the Netherlands, Norway and South Africa).

** Military use increased significantly from 361.0 tons last year to 453.2 tons, but this increase is due to a change in the treatment of HEU held by the Navy in the “Global Nuclear Material Data 2023,” and is not an actual increase.

*** Inventory is less than 100 kilograms, but details are unknown.

in Russia, where production continues, they increased by 2 tons. Iran also continues to produce HEU. According to an IAEA report in November 2023, as of October 28 that year, Iran possessed 128.3 kilograms of uranium hexafluoride with an enrichment level of approximately 60%.⁶

It should be noted that although 34 countries and Taiwan once had HEUs for civilian use, they have completely eliminated their civilian HEU 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 90% 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.

With respect to separated plutonium, for military use, India’s stockpile increased by 0.4 tons compared to last year. For civilian use, while Japan’s stockpile decreased by 0.7 tons (see (3) A) of this Chapter for more information), France’s increased significantly to approximately 7 tons. Global inventory of this material as a whole has been on an increasing trend in recent years.

https://nonproliferation.org/wp-content/uploads/2021/10/heu_who_has_what.pdf.

⁶ IAEA, “Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015) Report by the Director General,” GOV/2023/57, November 15, 2023, p. 8.

Table 3-2 Separated Plutonium Holdings

Country	Military (tons)	Non-military (tons)	Total amount
China	2.9	0.04	2.94
France	6.0	91.87**	97.87
Russia	88.0	103.5	191.5
United Kingdom	3.2	116.7**	119.9
United States	38.4	49.2**	87.6
India	9.2	0.4	9.6
Israel	0.8		0.8
Pakistan	0.5		0.5
Japan		45.1** (35.9 tons of which are held overseas)	45.1
North Korea	0.04		0.04
Others*		2.5***	2.5
Total Amount	149	409	558

This table was created by the author based on the data from RECNA “Global Nuclear Material Data 2023,” (data as of the end of 2021) and INFCIRC documents.

* Holdings of Belgium, Germany, Switzerland, and Spain in foreign countries.

**Data from INFCIRC/549.

****Hiroshima Report 2023* did not include the amount of plutonium stored outside of the country, but included it in accordance with the Global Nuclear Material Data 2023.

(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: Nagasaki University Research Center for Nuclear Weapons Abolition, “Global Nuclear Material Data 2023”; INFCIRC/549/Add.3.22, November 6, 202(Belgium); INFCIRC/549/Add.5/27, September 7, 2023 (France); INFCIRC/549/Add.1/26, August 14, 2023 (Japan); INFCIRC/549/Add.9/26, August 3, 2023 (Russia); INFCIRC/549/Add.4/27, January 25, 2023 (Switzerland) ; INFCIRC/549/Add.8/26, November 16, 2023 (U.K.); INFCIRC/549/Add.6/25, September 15, 2023 (U.S.); “Materials: Plutonium,” *IPFM Blog*, April 29, 2023, <https://fissilematerials.org/materials/plutonium.html>.

B) Radioactive materials

Since the September 11, 2001 terrorist attacks in the United States, the threat of radioactive dispersal devices (so-called “dirty bombs”) also became 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

security 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 material.

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

⁷ The main objectives of this Code of Conduct are to achieve a high level of safety and security of

While this is not a legally binding document, as of June 2023, 147 countries, including all of the countries under this survey except North Korea, have made a political commitment to implement it.⁸ Also, 131 out of 147 countries had notified the IAEA Director General of their intention to act in a harmonized manner in accordance with the Code's supplementary Guidance documents on the Import and Export of Radioactive Sources and 58 countries did the same on the Management of Disused Radioactive Sources. In this regard, the G7 encouraged further political commitment to and implementation of the Code and its supplementary Guidance documents in a statement issued by the Non-Proliferation Directors Group (NPDG) meeting in April.⁹

On the nuclear security of radioactive materials, Canada published the "Report on the Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources" in May. The Report provided information on its efforts related to the implementation of the Code and its

Supplementary Guidance on the Import and Export of Radioactive Sources during the period from January 2019 to December 2022.¹⁰

As for the United States, President Joe Biden signed the "National Security Memorandum to Counter Weapons of Mass Destruction Terrorism and Advancing Nuclear and Radiological Material Security" in March. It states that the United States has prioritized the reduction of the threat of radiological terrorism as one of its policy objectives and will take policy measures, such as "maintaining robust security for all high-activity radioactive sources¹¹ during their lifecycle for all sources that cannot be replaced" and "the replacement of source-based devices with non-radioisotopic alternative technologies, where technically and economically feasible."¹²

The Nuclear Threat Initiative (NTI), a U.S. nonprofit organization, pointed out in its sixth *Nuclear Security Index* published in July 2023 that there has been minimal

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 2023*, GOV/2023/37-GC(67)/14, September 2023, p. 14.

⁹ "Statement of the G7 Non-Proliferation Directors Group," April 17, 2023, <https://www.mofa.go.jp/files/100492352.pdf>.

¹⁰ "National paper of Canada on the implementation of the Code of Conduct on the Safety and Security of Radioactive Sources 2023," Canadian Nuclear Safety Commission, May 30, 2023, <https://nuclear.safety.gc.ca/eng/resources/international-cooperation/code-of-conduct/canada-report-2023.cfm>.

¹¹ Among radiation sources, high-activity radioactive sources should be replaced because of the high risk of nuclear terrorism.

¹² "FACT SHEET: President Biden Signs National Security Memorandum to Counter Weapons of Mass Destruction Terrorism and Advance Nuclear and Radioactive Material Security," The White House, March 2, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/03/02/fact-sheet-president-biden-signs-national-security-memorandum-to-counter-weapons-of-mass-destruction-terrorism-and-advance-nuclear-and-radioactive-material-security/>.

progress in efforts to enhance the security of radioactive sources in various countries.¹³ NTI suggested placing high priority on this issue by establishing regulatory measures to track and manage the movement of radioactive sources, enforcing basic laws to protect against theft, substituting high-activity radioactive sources with alternatives, and implementing guidance from the IAEA.

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. Of these, 436 (-1) power reactors worldwide were operational as of December 2023, 62 (+2) were under construction, 111 (+7) were in the planning stage, and 318 (-20) were proposed for construction (changes from the previous year in parentheses).¹⁴ However, the data is updated from time to time so the figures are subject to change.

As for nuclear power generation, Russia and China have come to account for a significant share of the international

market for nuclear power plant (NPP) exports: as of January 2023, there were 110 “third generation” NPPs under construction or planning, with China and Russia accounting for 69% of the total.¹⁵ Of these, 33 projects are being undertaken outside their own countries, 19 of which are by Russia. Meanwhile, there has been a notable push once again for its promotion as a result of energy policy reviews in some countries in 2022 to address climate change and energy security. Against this backdrop, during the 28th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP28) held in Dubai in December 2023, 22 countries, including 10 surveyed in the *Hiroshima Report*, namely Canada, Finland, France, Japan, South Korea, the Netherlands, Sweden, UAE, the United Kingdom, and the United States, issued a joint declaration, which includes a commitment to triple the nuclear energy capacity by 2050.¹⁶ It also includes their commitment to “take domestic actions to ensure nuclear power plants are operated responsibly and in line with the highest standards of safety, sustainability, security, and non-proliferation, and that fuel waste is responsibly managed for the long

¹³ *The 2023 NTI Nuclear Security Index*, NTI, July 2023, p. 36.

¹⁴ “World Nuclear Power Reactors & Uranium Requirements,” World Nuclear Association, November 2022, <https://world-nuclear.org/information-library/facts-and-figures/world-nuclear-power-reactors-and-uranium-requireme.aspx>.

¹⁵ “70% of New NNPs Made in China and Russia, and Technology Exports Are a Diplomatic Tool,” *Nikkei*, June 9, 2023, <https://www.nikkei.com/article/DGXZQOUC2643R0W3A120C2000000/>.

¹⁶ “At COP28, Countries Launch Declaration to Triple Nuclear Energy Capacity by 2050, Recognizing the Key Role of Nuclear Energy in Reaching Net Zero,” U.S. Department of Energy, December 1, 2023, <https://www.energy.gov/articles/cop28-countries-launch-declaration-triple-nuclear-energy-capacity-2050-recognizing-key>.

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	○	○	○	
Iran	○	○	○	
Japan	○	○	○	△(e)(d)
Kazakhstan	△(d)	○		
South Korea	○	○		
Mexico	○	○		
Netherlands	○	○	○	
Norway		△(d)		
South Africa	○	○		
Sweden	○	△(d)		
Switzerland	○	○		
Turkey	△(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, May 2, 2022; “Facilities: Reprocessing Plants,” International Panel on Fissile Materials, May 2, 2022; “Yongbyon Nuclear Scientific Research Center: An Overview of Changes at the Uranium Enrichment and Conversion Facilities,” 38 North, November 2, 2023, <https://www.38north.org/2023/11/yongbyon-nuclear-scientific-research-center-an-overview-of-changes-at-the-uranium-enrichment-and-conversion-facilities/>.

term.”

As for research reactors, as of November 2023, there were 840(-1) worldwide, broken down as follows:¹⁷

- Operational: 225 units (+3)
- Temporary shutdown: 9 units (-1)
- Under construction: 7 units (-4)
- Planned: 13 units (±0)

- Extended shut-down: 12 units (-1)
- Permanent shut-down: 55 units (-1)
- Decommissioned: 450 units (+1)
- Currently being dismantled: 69 units (+2)

(Figures in parentheses represent changes from the previous year)

Looking at HEU spent fuel assemblies for research reactors, there are 20,640

¹⁷ IAEA, “Research Reactor Database,” <https://nucleus.iaea.org/rrdb/#/home>.

assemblies worldwide with an enrichment of more than 20%.¹⁸ Of these, 9,384 have an enrichment of 90% or more, a decrease of 95 since last year. By region, there are 10,992 in Eastern Europe, 4,211 in Western Europe, 1,600 in the Far East, 1,623 in North America, 433 in Africa, 223 in the Middle East and South Asia, 1,450 in Southeast Asia and the Pacific, and 108 in Latin America.¹⁹ 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.

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*.

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 nuclear facilities are robustly protected buildings and direct drone strikes are unlikely to cause serious radiological consequences, some of the characteristics of drones such as the rapid pace of technological improvement and evolution as well as low cost and availability require careful monitoring of their risk trends.

In light of this situation, the IAEA held a technical meeting on “Nuclear Security Countermeasures for UAVs” in Richland in the United States at the end of October 2023, in cooperation with the U.S. National Nuclear Security Administration (NNSA).²⁰ The meeting was convened with the recognition that “high endurance, high payload capability, autonomous, single or swarms of UAV(s) will become increasingly difficult to protect against and will require advanced counter-uncrewed aerial vehicle (CUAV) technology and policies” and that “security may need to shift their focus from solely ground based threats to both ground and airborne threats, which requires new physical security methods and technologies to

¹⁸ IAEA, “Worldwide HEU and LEU Assemblies by Enrichment,” <https://nucleus.iaea.org/rrdb/#/reports/summary-report/WorldwideHEUandLEUassembliesbyEnrichment>.

¹⁹ IAEA, “Regionwise Distribution of HEU and LEU,” <https://nucleus.iaea.org/rrdb/#/reports/summary-report/RegionwisedistributionofHEUandLEU>.

²⁰ “Technical Meeting on Nuclear Security Countermeasures for Uncrewed Aerial Vehicles Information Sheet,” https://www.iaea.org/sites/default/files/23/07/evt2005113_information_sheet.pdf.

ensure the protection of nuclear facilities or material in transit.”²¹ The meeting addressed the current situation surrounding UAV platforms, payloads, and capabilities, and discussed how a CUAV capability, both in terms of technology and policy, can be developed and deployed to address current and future nuclear security threats. In this regard, the IAEA also has launched a new Coordinated Research Project (CRP) to determine the nuclear security implications of not only UAVs but also all unmanned systems (airborne, ground-based, and maritime) for addressing the threats and risks that they pose to nuclear security.²²

As for the efforts by countries under this survey, it was reported that in the United Kingdom, drone detectors would be deployed around sensitive infrastructure facilities, including NPPs.²³ This system is designed to enable the police and security services to track any small or medium-sized drone, using scanning technology to detect potential threats even when the drones are not emitting a signal.²⁴

Cyberattacks

In addition to these threats of UAVs to nuclear facilities, cyber threats are 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.²⁵

In such a context, the IAEA held the “International Conference on Computer Security in the Nuclear World - Security for Safety” in Vienna in June 2023, with approximately 500 participants from 94 countries and seven international organizations.²⁶ The main objective of the conference was to discuss effective security measures to protect facilities handling nuclear and radioactive materials from cyberattacks in an increasingly digital world. At the opening the conference,

²¹ Ibid.

²² IAEA, *Nuclear Security Report 2023*, p. 3.

²³ Charles Hymas and Tony Diver, “Home Office to Install Anti-Drone Detectors to Protect UK from Aerial Terror Attacks,” *Telegraph*, January 25, 2023, <https://www.telegraph.co.uk/news/2023/01/25/home-office-install-anti-drone-detectors-protect-uk-aerial-terror/>; Charles Harrison, “UK Deploys Anti-Drone Tech in Nuclear Plants to Fight Growing Risk of ‘Devastating’ Attack,” *Express*, January 25, 2023, <https://www.express.co.uk/news/uk/1726358/drone-terrorist-attack-nuclear-plants-uk-government>.

²⁴ Charles Harrison, “UK Deploys Anti-Drone Tech in Nuclear Plants to Fight Growing Risk of ‘Devastating’ Attack,” *Express*, January 25, 2023, <https://www.express.co.uk/news/uk/1726358/drone-terrorist-attack-nuclear-plants-uk-government>.

²⁵ “Outpacing Cyber Threats Priorities for Cybersecurity at Nuclear Facilities,” NTI, 2016, p. 10.

²⁶ “Addressing Cyber Threats to Ensure Nuclear Security and Safety: IAEA Conference on Computer Security Begins,” June 19, 2023, <https://www.iaea.org/newscenter/news/addressing-cyber-threats-to-ensure-nuclear-security-and-safety-iaea-conference-on-computer-security-begins>.

IAEA Director General Rafael Grossi said, “Nuclear activities are growing everywhere in the world and the challenges posed by the malicious use of digital tools is real and is growing.”²⁷

At the conference, eight topics on computer security including supply chain management, sustainability, human resources, and international cooperation were discussed. Regarding the funding for the conference, the Netherlands, South Korea, the United Kingdom, and the United States and the EU made financial contributions.

In conjunction with the conference, the IAEA featured computer security in its official journal *IAEA Bulletin*, addressing the latest developments and various issues. In this, the IAEA Director General referred to artificial intelligence (AI) and machine learning (ML) technologies and gave a warning stating, “Digital innovations have been making game-changing advances at an alarming rate even in the past few months. While these advances offer potential benefits such as increased operating efficiencies at nuclear facilities, reduced labor costs, and improved nuclear safety and security, digital innovations could also pose threats.”²⁸ Similar concerns have been raised elsewhere about the possibility for

malicious actors to exploit AI to conduct more sophisticated and targeted attacks, or to exploit it to compromise the integrity of networks, systems, or even sensitive information at nuclear and radiological facilities.²⁹

D) Armed attacks against nuclear facilities by countries

As reported in the *Hiroshima Report 2023*, the attack and military occupation of Ukrainian nuclear facilities since the Russian invasion in Ukraine in February 2022 raised difficult questions about how to deal with nuclear security threats posed by states. This is beyond the conventional concept of nuclear security, which assumes non-state actors as threats. In 2023, as the conflict did not end and the fighting intensified, ensuring nuclear safety and nuclear security at nuclear facilities in Ukraine faced multiple difficulties. The situation at the Zaporizhzhya NPP (ZNPP) remained most serious since 2022, but other NPPs in Ukraine also remained at risk and experienced loss of off-site power supply.³⁰

The following section provides an overview of events in 2023, mainly related to nuclear security at five NPPs in Ukraine, and the responses by the IAEA

²⁷ Ibid.

²⁸ Rafael Mariano Grossi, “The Essential Role of Computer Security in Nuclear Security and Safety,” *IAEA Bulletin*, Vol. 64-2, June 2023, p. 1.

²⁹ Mitchell Hewes, “How Artificial Intelligence Will Change Information and Computer Security in the Nuclear World,” *IAEA Bulletin*, Vol. 64-2, June 2023, pp. 14-15.

³⁰ IAEA, “IAEA Director General Statement to United Nations Security Council,” May 30, 2023, <https://www.iaea.org/newscenter/statements/iaea-director-general-statement-to-united-nations-security-council>.

and others to these events.

Zaporizhzhya Nuclear Power Plant (ZNPP)

At the ZNPP, which is located on the frontline of an area of intense military conflict, the Russian military continued occupation and fortification of the facility. The management of the facility was also continued by Rostom, Russia's state-owned nuclear operator, and the Ukrainian employees at the facility were forced to perform their duties under difficult conditions.

At the ZNPP, although four main off-site power lines available before the conflict, only one off-site power line is available and this last remaining one became unavailable resulting in a complete loss of the main off-site power and emergency diesel generators were used to secure the power. This occurred eight times through December.³¹

In May, the number of Russian soldiers at the ZNPP exceeded 2,500, more than the

number of plant staff, as Ukraine moved toward launching a counteroffensive operation to retake the territory.³² The Russian military also began attempting to improve their defenses in and around the site, reportedly laying more trenches and mines around the city.³³

Against this backdrop, on June 6, the Kakhovka Dam, located in a Russian controlled area, from which the ZNPP receives water supplies to cool its reactors and spent fuel, was severely damaged, and the water level in the ZNPP reservoir began to drop.³⁴ Both Russia and Ukraine blamed the other for the destruction of the dam, saying that the other party had destroyed it.

In July, Ukraine claimed that an explosive device had been placed on the roofs of the ZNPP's Unit 2, Unit 3 and Unit 4 buildings.³⁵ The IAEA immediately requested access to the building from the Russian facility operator, but was denied, and access was not finally granted until a month later.³⁶ Subsequently, the IAEA

³¹ IAEA, "IAEA Director General Statement on Situation in Ukraine," March 9, 2023; "Ukraine War: Russian Air Strikes Cut Power at Zaporizhzhia Nuclear Plant," *BBC*, March 9, 2023, <https://www.bbc.com/news/world-europe-64897888>; IAEA, "IAEA Director General Statement on Situation in Ukraine," December 2, 2023.

³² Olena Roshchina, "More Military at Zaporizhzhia Nuclear Power Plant Than Station Personnel," *Ukrainska Pravda*, May 17, 2023, <https://www.pravda.com.ua/eng/news/2023/05/17/7402612/>.

³³ Tom Balmforth and Sarah McFarlane, "Russian Forces Dig in at Ukrainian Nuclear Plant, Witnesses Say," *Reuters*, May 19, 2023, <https://www.reuters.com/world/europe/russian-forces-dig-ukrainian-nuclear-plant-witnesses-say-2023-05-19/>; "Zaporizhzhya NPP Fortified, Mines and Trenches by Russian Troops...Over 2,500 Stationed There," *Yomiuri Shimbun*, May 22, 2023, <https://www.yomiuri.co.jp/world/20230522-OYT1T50175/>.

³⁴ "Major Dam Breached in Southern Ukraine, Unleashing Floodwaters," *Reuters*, June 7, 2023, <https://www.reuters.com/world/europe/ukraine-says-russia-blows-up-major-nova-kakhovka-dam-southern-ukraine-2023-06-06/>.

³⁵ "Explosives' on the Roof of the Zaporizhzhia NPP," *Yomiuri Shimbun*, July 5, 2023, <https://www.yomiuri.co.jp/world/20230705-OYT1T50106/>; "Russia, Ukraine Accuse Each Other of Plotting Imminent Attack on Nuclear Plant," *Reuters*, July 5, 2023, <https://jp.reuters.com/article/ukraine-crisis-zaporizhzhia-idAFKBN2YK1AA>.

³⁶ IAEA, "IAEA Director General Statement on Situation in Ukraine," July 5, 2023; IAEA, GOV/2023/44,

reported that no mines or explosives were found.

On the other hand, Rosenergoatom, a Russian nuclear energy company, claimed that “Ukraine is planning to drop munitions containing nuclear waste transported from another nuclear power plant in the country on the ZNPP” and “under cover of darkness overnight on 5th July, the Ukrainian military will try to attack the Zaporizhzhia station using long-range precision equipment and kamikaze drones.”³⁷ Officials of Rosatom, which managed the ZNPP, began evacuating the plant, and Ukrainian employees under contract to the company were advised to evacuate by July 5.³⁸ Subsequently, Russia asked the IAEA to stop the shelling of Ukrainian forces and ensure the safety of the ZNPP, but fortunately no shelling took place.³⁹

Toward the end of July, several directional

anti-personnel mines were found in the buffer zone separating the inside and outside of the ZNPP site.⁴⁰ Later, mines were also found in a location inside the site as well.⁴¹ The shelling took place again in early August. Ukraine claimed that parts of ZNPP’s facilities were severely damaged by Russian shelling and accused the Russian military of using “terror tactics” by shelling the surrounding civilian areas from within the plant.⁴² In November, the Russian military claimed to have shot down nine Ukrainian drones near the ZNPP and accused Ukraine of risking a serious nuclear crisis.⁴³

Other NPPs in Ukraine

At the Chernobyl NPP site, in March, missile attacks and disruptions to Ukraine’s domestic power grid resulted in a significant reduction in power supplied

September 5, 2023, p. 32.

³⁷ “Russia, Ukraine Accuse Each Other of Plotting Imminent Attack on Nuclear Plant,” *Reuters*, July 5, 2023, <https://jp.reuters.com/article/ukraine-crisis-zaporizhzhia-idAFKBN2YK1AA>.

³⁸ “‘Explosives’ on the Roof of the Zaporizhzhia NPP,” *Yomiuri Shimbun*, July 5, 2023.

³⁹ “Russia Asks IAEA To Ensure Zaporizhzhia Nuclear Plant Security,” *Reuters*, June 23, 2023, <https://www.reuters.com/world/europe/russia-asks-iaea-ensure-zaporizhzhia-nuclear-plant-security-2023-06-23/>.

⁴⁰ IAEA, “IAEA Director General Statement on Situation in Ukraine,” July 24, 2023. It should be noted that an initial assessment based on IAEA observations and the plant’s explanation is that the detonation of these mines would not affect the nuclear safety and security systems at the site. IAEA, “IAEA Director General Statement on Situation in Ukraine,” July 5, 2023.

⁴¹ “Land Mines Placed Around Russian Occupied Zaporizhzhia Nuclear Plant, UN Says,” *PBS*, July 25, 2023, <https://www.pbs.org/newshour/world/land-mines-placed-around-russian-occupied-zaporizhzhia-nuclear-plant-un-says>; “New IAEA Complaint about Anti-personnel Mines in Russian-held Nuclear Plant,” *Reuters*, July 25, 2023, <https://jp.reuters.com/article/ukraine-crisis-nuclear-zaporizhzhia-idAFKBN2Z41MG>.

⁴² “Ukraine War: IAEA Says Zaporizhzhia Nuclear Plant Out of Control,” *BBC*, August 3, 2023, <https://www.bbc.com/news/world-europe-62412429>; “Zaporizhzhia: Real Risk of Nuclear Disaster in Ukraine – Watchdog,” *BBC*, August 6, 2023, <https://www.bbc.com/news/world-europe-62449982>.

⁴³ “Russia Says Ukraine ‘Playing with Fire’ with Drone Attack Near Nuclear Plant,” *Reuters*, November 3, 2023, <https://www.reuters.com/world/europe/russia-says-ukrainian-drones-launched-an-attack-near-zaporizhzhia-nuclear-power-2023-11-02/>.

by off-site power lines.⁴⁴ Regarding Rivne NPP, in January, Russia claimed that Ukraine was storing U.S.-supplied weapons (HIMARS).⁴⁵ The Ukrainian side denied this, and later the IAEA also denied Russia's claims.⁴⁶ In July, certain off-site power lines were disconnected at Rivne NPP, but were reconnected two days later. All other power lines were available.⁴⁷ As for the South Ukraine NPP, a cruise missile flew in the vicinity in March.⁴⁸ Also, two off-site high-voltage lines were cut by shelling, but fortunately several backups were available. With regard to the Khmelnytsky NPP, aerial vehicles flew close to the plant in March and in late October, a blast occurred and its shockwaves damaged the windows of several buildings at the site, including the passageway to the reactor buildings.⁴⁹ Further explosions were also heard at the end of November near the NPP.⁵⁰

NPP in Russia

Attacks also occurred against facilities on Russian NPP sites near the Ukrainian border. "Three drones identified in an area near the Kursk NPP, one of which caused minor damage to the façade of the building where spent nuclear fuel is stored, and the other two fell within the grounds of the administration building."⁵¹ There was no direct impact on the operation of the NPP.

Responses by the international community

IAEA Secretariat

The IAEA Secretariat continued to proactively make efforts in 2023 in accordance with the Board of Governors resolutions⁵² adopted in 2022 as well as the request from Ukraine. The importance of the IAEA's role in dealing with this issue was further highlighted as the UN

⁴⁴ IAEA, "Nuclear Safety, Security and Safeguards in Ukraine Report by the Director General," GOV/2023/30, May 31, 2023, p. 32.

⁴⁵ "Russia Says Ukraine Storing Arms at Nuclear Plants, Kyiv Denies Claim," *Reuters*, January 23, 2023, <https://www.reuters.com/world/europe/russian-spy-service-says-himars-other-weapons-deployed-nuclear-power-stations-2023-01-23/>.

⁴⁶ "IAEA Rejects Russian Claims That Ukraine Stores Arms at Nuclear Power Plants," *Anadolu Agency*, January 25, 2023, <https://www.aa.com.tr/en/russia-ukraine-war/iaea-rejects-russian-claims-that-ukraine-stores-arms-at-nuclear-power-plants/2796455>.

⁴⁷ IAEA, GOV/2023/44, September 5, 2023, p. 33.

⁴⁸ IAEA, GOV/2023/30, May 31, 2023, p. 33.

⁴⁹ IAEA, "IAEA Director General Statement on Situation in Ukraine," October 25, 2023; "Ukraine War: Russians Likely Targeted Khmelnytsky Nuclear Plant-Zelensky," *BBC News*, October 26, 2023, <https://www.bbc.com/news/world-europe-67226741>.

⁵⁰ IAEA, "IAEA Director General Statement on Situation in Ukraine," November 29, 2023.

⁵¹ "Ukrainian Drone Struck Russian Nuclear Waste Facility Risking Disaster, Moscow Says," *BBC News*, October 28, 2023, <https://www.reuters.com/world/europe/ukrainian-drone-struck-russian-nuclear-waste-facility-ministry-says-2023-10-28/>; IAEA, "IAEA Director General Statement on Situation in Ukraine," October 27, 2023.

⁵² IAEA, GOV/2022/17, March 3, 2022; IAEA, GOV/2022/58, September 15, 2022; IAEA, GOV/2022/71, November 17, 2023. These resolutions "requested the Director General to continue to closely monitor the situation regarding nuclear safety, security and safeguards in Ukraine and regularly report formally to the Board on these matters."

Security Council, which is responsible for maintaining international peace and security, has not been functioning, because Russia, a party to the conflict, is a permanent member of the Security Council.

The IAEA launched the “IAEA Support and Assistance Mission to Zaporizhzhya NPP (ISAMZ)” and their experts have been stationed at the site since September 1, 2022. Such missions have also started at four other Ukrainian nuclear site, namely the Rivne, South Ukraine, and Khmelnytsky NPPs and the Chernobyl nuclear site since mid-January 2023. In addition to these five missions, the IAEA Support and Assistance Mission on the Safety and Security of Radioactive Sources in Ukraine (ISAMRAD) was sent to Kyiv in July.⁵³

Each of these mission teams continued to monitor and access the status of nuclear safety and security at each facility against the “Seven Pillars for Ensuring Nuclear Safety and Security in Ukraine (the ‘Seven Pillars’⁵⁴)” during an armed conflict

presented by the IAEA Director General in early March 2022.

As for Director General Grossi, he continued to emphasize the need to establish a “nuclear safety and security protection zone (“protection zone”),” which he proposed in September 2022, and engaged in negotiations with both Russia and Ukraine. However, negotiations appeared to be difficult due to the conflicting views between Ukraine, which demanded the withdrawal of Russian troops from the ZNPP, and Russia, who refused to withdraw.⁵⁵

Later, before Ukraine launched its counteroffensive operations, Mr. Grossi told the UN Security Council on May 30, “The nuclear safety and security situation at the Zaporizhzhya NPP continues to be extremely fragile and dangerous. Military activities continue in the region and may well increase very considerably in the near future. The plant has been operating on significantly reduced staff, which despite being in temporary shut-down is not sustainable.”⁵⁶ He then proposed the

⁵³ IAEA, “IAEA Director General Statement on Situation in Ukraine,” July 24, 2023.

⁵⁴ 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. IAEA, “IAEA Director General Grossi’s Initiative to Travel to Ukraine,” March 4, 2022, <https://www.iaea.org/newscenter/pressreleases/iaea-director-general-grossis-initiative-to-travel-to-ukraine>.

⁵⁵ On March 27, Mikhail Ulyanov, Permanent Representative to the Permanent Mission of Russia in Vienna, said, “Russia has no special expectations for Mr. Grossi’s visit, indicating that he was not prepared to withdraw.” “IAEA Director General Visits ZNPP Where ‘Military Activities Continue’... Russia Not Prepared to Withdraw,” *Yomiuri Shimbun*, March 29, 2023; IAEA, “IAEA Director General Statement on Situation in Ukraine,” January 6, 2023.

⁵⁶ “IAEA Director General Statement to United Nations Security Council,” *IAEA News*, May 30, 2023, <https://www.iaea.org/newscenter/statements/iaea-director-general-statement-to-united-nations-securi>

following “five principles,” which he identified “to help ensure nuclear safety and security at the ZNPP in order to prevent a nuclear accident and ensure the integrity of the plant.” He urged both Ukraine and Russia to adhere to them and asked Security Council members to clearly support these principles.⁵⁷

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.

In response to the presentation of the “five principles,” Russian Ambassador to the United Nations, Vasily Nebenzya

denied the responsibility of Russia by insisting “every effort had been made to prevent threats to the security of the ZNPP, which were caused by Ukraine and its Western-backed countries.”⁵⁸ He also insisted that “no attacks have been carried out from the plant site” that “no heavy weapons or ammunition have been placed there, and there are no military personnel who could be used to carry out an attack.” Regarding the “five principles,” he stated, it “is in line with the measures we have already taken for a long time, in accordance with decisions taken at the national level,” and “[I]n the current situation, Russia intends to take all possible measures to strengthen the safety and security of the power plant in accordance with our domestic legislation and our obligations under the relevant international legal instruments to which we are a party.”

On the other hand, Sergiy Kyslytsya, Ukraine’s ambassador to the UN refuted the Russian Ambassador’s claim by stating “Russia continues to use the ZNPP for military purposes and has deployed about 500 military personnel and 50 heavy weapons, equipment, munitions, and explosives,” and “[W]e reiterate that Russia, by illegally occupying the ZNPP and being part of its military strategy, is violating all important international principles on nuclear safety and security

ty-council.

⁵⁷ “Briefing Security Council, International Atomic Energy Agency Director Outlines Five Principles to Prevent Nuclear Accident at Zaporizhzhia Power Plant in Ukraine,” *IAEA News*, May 30, 2023, <https://press.un.org/en/2023/sc15300.doc.htm>.

⁵⁸ “IAEA Chief Outlines Five Principles to Avert Nuclear ‘Catastrophe’ in Ukraine,” *UN News*, May 30, 2023, <https://news.un.org/en/story/2023/05/1137172>.

and most of its obligations under international treaties.”⁵⁹ With regard to the “five principles,” he insisted that they “should also include the withdrawal of Russian troops and personnel illegally stationed at the plant, guaranteeing uninterrupted power supply to the facility, and humanitarian corridors to ensure the safe and orderly rotation of personnel.”

Thus, neither Russia nor Ukraine explicitly stated that they would adhere to the “five principles.”

As for reaction of countries under this survey, Brazil urged both Russia and Ukraine to individually confirm their intention to adhere to the five principles.⁶⁰ China underlined that Zaporizhzhya is “only one aspect of the crisis in Ukraine whose ultimate resolution depends on the prospects for a political settlement” and as such, both parties must meet each other halfway and resume dialogue. They further said that “countries in a position of influence should play a responsible role rather than pouring oil on the fire.”⁶¹ On the other hand, many countries called Russia to withdraw its military from Ukraine and one of them, the United

Kingdom, stated the view that “the plant’s safety and security cannot be ensured as long as the Russian Federation’s illegal control continues.”⁶² In addition, it refuted Russia’s claim by saying that “new imagery shows the establishment of sandbag fighting positions on the roofs of several reactor buildings indicating their integration into tactical defence planning.”

Regarding the new challenge of ensuring nuclear safety and security of nuclear facilities in conflict as described above, the IAEA has begun an internal review of challenges in the application of IAEA safety standards and nuclear security guidance documents in armed conflict situations.⁶³ In this relation, in the nuclear security resolution adopted by the IAEA General Conference in 2023, the following paragraph was inserted: “Encourages the Secretariat, in close consultation with Member States, to continue its work in reviewing nuclear security guidance to identify challenges in applying Nuclear Security Series in armed conflict situations” (para. 68).⁶⁴

⁵⁹ Ibid; “Ukraine NPP Counter-offensive ‘Concerns Dangerous Situation,’ IAEA Head,” *Asahi Shimbun*, June 14, 2023; “U.N. Monitor Aims to Cross Front Line in Ukraine to Inspect Nuclear Plant,” *New York Times*, June 13, 2023, <https://www.nytimes.com/2023/06/13/world/europe/grossi-zaporizhzhia-nuclear-plant.html>.

⁶⁰ “Briefing Security Council, IAEA Director Outlines Five Principles to Prevent Nuclear Accident at Zaporizhzhia Power Plant in Ukraine,” United Nations, May 30, 2023, <https://press.un.org/en/2023/sc15300.doc.htm>.

⁶¹ Ibid.

⁶² Ibid.

⁶³ IAEA, GC(66)/RES/7, September 30, 2022, p. 11. “Encourages the Secretariat to consider developing, in close consultation with Member States, new nuclear security guidance to address the security risks and implications posed by armed attacks against nuclear facilities devoted to peaceful purposes, and further encourages the Agency to consider reflecting these aspects in further Nuclear Security Plans.” (para. 66)

⁶⁴ IAEA, GC(67)/RES/8, September 2023, p. 11.

IAEA Board of Governors and General Conference

At the IAEA Board of Governors meeting on March 9, 2023, 49 countries and Euratom, including 15 countries covered by this survey (Australia, Belgium, Canada, Finland, France, Germany, Israel, Japan, South Korea, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, and the United States) issued a “Joint Statement on Nuclear Safety, Nuclear Security and Safeguards in Ukraine” which condemned Russia for occupying the ZNPP and putting the plant at risk.⁶⁵ Also, it expressed “serious concern about the continued danger to the supply of electricity to nuclear power plants in Ukraine,” and reaffirmed the importance of the “Seven Pillars.” Then, the statement called on Russia to withdraw from the ZNPP, saying that “the risk of a nuclear accident remains extremely high as long as Russia remains at the plant.”

China announced that it will contribute €200,000 in technical assistance to the IAEA to support the agency’s efforts to address safety and security issues at Ukraine’s NPPs and other nuclear facilities

for peaceful purposes.⁶⁶ China said it opposes armed attack against nuclear power plants and other peaceful nuclear facilities,⁶⁷ and urged all parties to “abide by international law, including the Convention on Nuclear Safety (CNS), and resolutely avoid human-caused nuclear accidents.” Further, China said that it will “continue to support efforts to eliminate the causes of nuclear safety risks and maintain the safety of Ukraine’s nuclear facilities by promoting talks for peace and continuing to support efforts toward a political solution to the crisis in Ukraine.”⁶⁸

The United States criticized Russia, stating that it “continues to act in defiance of IAEA Board of Governors and UN resolutions, most importantly, in violation of each of the principles set forth in the IAEA’s Seven Pillars of Nuclear Safety and Security.” The United States said Russia’s “illegal presence at the Zaporizhzhya NPP in Ukraine is the most serious nuclear security danger of our time.”⁶⁹

The EU noted that Chornobyl laboratory, which contains radioactive sources, was damaged and looted by Russian troops in

⁶⁵ “Joint Statement on Nuclear Safety, Security, and Safeguards in Ukraine,” IAEA BoG Meeting, March 2023, <https://www.government.is/library/09-Embassies/Vienna/230131-Joint%20Statment%20on%20Ukraine-FINAL-With%20Sponsors.pdf>.

⁶⁶ “China Supports IAEA’s Efforts to Ensure Nuclear Security in Ukraine,” *CGTN*, March 6, 2023, <https://news.cgtn.com/news/2023-03-06/China-supports-IAEA-s-efforts-to-ensure-nuclear-security-in-Ukraine--1hXqLFzvtQs/index.html>.

⁶⁷ Ministry of Foreign Affairs of China, “China’s Position on the Political Settlement of the Ukraine Crisis,” February 24, 2023, https://www.fmprc.gov.cn/mfa_eng/zxxx_662805/202302/t20230224_11030713.html.

⁶⁸ “Foreign Ministry Spokesperson Mao Ning’s Regular Press Conference on March,” March 8, 2023, http://ag.china-embassy.gov.cn/eng/fyrth/202303/t20230308_11037728.htm.

⁶⁹ “U.S. Statement under Agenda Item 3,” at the IAEA BoG Meeting, March 6, 2023.

2022 and reiterated concern about “the potential risk caused by radioactive sources out of regulatory control.”⁷⁰ Also, they reiterated “the need to consider new legally binding international rules specifically prohibiting armed attacks against nuclear installations devoted to peaceful purposes.”⁷¹

At the September IAEA Board of Governors meeting, Director General Grossi said that “It is the increase of military activity around the Zaporizhzhya NPP that worries us the most,” and “[T]he possibility of a nuclear accident with serious radiological consequences continues to be a reality, and we hope this will not happen” and urged that the “five principles” continue to be followed.⁷² In addition, the Director General’s Report on “Nuclear Safety, Nuclear Security and Safeguards in Ukraine” which covers the period from the end of May to the end of August 2023 was published.⁷³ The report said that all “Seven Pillars” for Nuclear Safety and Security have been, and continue to be, compromised at the ZNPP and regarding the observance of the “five principles,” Russia impeded IAEA access the site by requiring at least one week’s advance notice. It described

the situation in detail and said that Russian military forces still occupy the plant.

At the 67th IAEA General Conference in September, the resolution titled “Nuclear Safety, Nuclear Security and Safeguards in Ukraine” was adopted.⁷⁴ This resolution, *inter alia*:

- “Calls 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 consistent with the existing license issued by the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU) to ensure its safe and secure operation;
- Fully supports the Agency’s continued provision, upon request, of technical support and assistance to Ukraine to help ensure the safe and secure operation of nuclear facilities and activities involving radioactive sources, including the continued physical presence of IAEA technical experts at the Chornobyl, Rivne, Khmelnytsky, and South Ukraine Nuclear Power Plants;”

⁷⁰ “EU Statement on Nuclear Security Review 2023,” at the IAEA BoG Meeting, March 2023.

⁷¹ “EU Statement on Nuclear Safety, Security and Safeguards in Ukraine,” at the IAEA BoG Meeting, March 9, 2023.

⁷² “IAEA Director General Briefs Board of Governors,” *IAEA News*, September 11, 2023, <https://www.iaea.org/newscenter/news/iaea-director-general-briefs-board-of-governors-fukushima-daichi-alps-water-release-ukraine-iran-and-new-atoms4food-initiative>.

⁷³ “Nuclear Safety, Security and Safeguards in Ukraine: Report by the Director General,” GOV/2023/44, September 5, 2023, <https://www.iaea.org/sites/default/files/23/09/gov2023-44.pdf>.

⁷⁴ IAEA, GC(67)/RES/16, September 2023. The resolution also recalled the three resolutions adopted by the IAEA Board of Governors in 2022 and expressed serious concern over Russia’s failure to respond to the IAEA BoG’s request to Russia to immediately cease all actions against and in Ukraine’s nuclear facilities and to withdraw Russian military and other personnel from the ZNPP.

Sixty-nine countries voted in favour of the resolution, six opposed, including Russia, China and Iran, and 33 abstained.⁷⁵ Regarding funding, 23 donor states and the EU made extrabudgetary contributions to support all of the Ukraine-related activities.⁷⁶

The following statements were made by the countries covered by this survey at the IAEA General Conference.⁷⁷

- Australia, Belgium, France, Japan, the UAE, and the United Kingdom expressed serious concern about the impact of Russia's reckless actions on nuclear safety, security, and safeguards, while Australia condemned Russia's continued control of the ZNPP.
- Australia, Canada, France, and the United Kingdom also called on Russia to cease hostilities and withdraw immediately from the ZNPP and from all of Ukraine.
- Belgium, Brazil, Canada, France, Japan, South Korea, South Africa, Sweden, Switzerland, and the UAE expressed support for the IAEA efforts and activities to ensure nuclear safety and security in Ukraine.
- Japan, the Netherlands, Norway, South Korea, and Switzerland expressed

support for the implementation of the seven pillars and five principles.

- Australia, Belgium, Canada, France, Japan, Norway, Sweden, and Switzerland noted funding to support IAEA activities to ensure nuclear safety and nuclear security at Ukraine's nuclear facilities.

Regarding the IAEA's annual report submitted to the UN General Assembly, Russia insisted that "it is unacceptable that any provisions of the Agency's annual report or other documents ignore the fact that nuclear facilities in Sevastopol, in the Donetsk and Luhansk People's Republics and in the Kherson and Zaporizhzhya regions — including the Zaporizhzhya Power Plant — are located on the territory of the Russian Federation and under its jurisdiction."⁷⁸

At the Board of Governors Meeting in November, the Director General, warned that "the situation at the ZNPP remains challenging, with six out of 'the Seven Pillars' compromised either fully or partially. Issues concerning staffing at the site, the conduct of regular maintenance activities, and special measures taken for securing stable cooling water supply, pose continued and significant risks to the

⁷⁵ IAEA, GC(67)/RES/16, September 2023; "Invasion of Ukraine, IAEA Resolution Urging Russia to Withdraw from NPP," *Mainichi Shimbun*, September 30, 2023, p. 7; "IAEA adopts resolution demanding immediate return of Zaporizhzhia Nuclear Power Plant to full control of Ukraine," *Ukrainska Pravda*, September 29, 2023, <https://www.pravda.com.ua/eng/news/2023/09/29/7421917/>.

⁷⁶ "IAEA Director General's Introductory Statement to the Board of Governors," IAEA, November 22, 2023, <https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-22-november-2023>.

⁷⁷ "Statements to the IAEA General Conference," IAEA, September 2023, <https://www.iaea.org/about/governance/general-conference/gc67/statements>.

⁷⁸ "Frank Discussion Follows Submission of International Atomic Energy Agency Report to General Assembly, with Focus on Compliance, Risk of Nuclear Disaster," *UN Meetings Coverage and Press Release*, GA/12558, November 8, 2023.

overall nuclear safety and security of the ZNPP.”⁷⁹ He also said that “There were no indication of non-observance of the five concrete principles at the ZNPP. However, limitations on the timely and unrestricted access by the Agency’s experts have affected the ability of the Agency to fully confirm all five concrete principles are being observed at all times.”

***Preparatory Committee (PrepCom)
for the NPT Review Conference
(RevCon)***

At the First PrepCom for the 11th NPT RevCon held in Vienna on July 31-August 11, 2023, many countries expressed concern about the nuclear safety and security situation in Ukraine, condemned Russia’s aggression, and expressed support for the IAEA’s response efforts in this regard.

- The Non-Aligned Movement (NAM) countries urged all nations to “refrain from attacking or threatening to attack nuclear facilities operating or under construction for peaceful purposes in accordance with the purposes and principles of the Charter of the United Nations and with international law.”⁸⁰
- Australia, Belgium, Germany, Japan, South Korea, Sweden, Switzerland, the

United Kingdom, the United States and the EU condemned or expressed concern over Russia’s war against Ukraine and its seizure and occupation of Ukraine’s NPPs and military activities, calling on Russia to return all nuclear facilities to the Ukrainian authorities and withdraw from Ukraine.⁸¹

- Canada expressed concern that “Russian aggression, including attacks on operating nuclear power plants, continues to pose significant nuclear safety and security risks and significantly increases the risk of nuclear incidents and accidents.”⁸²

At this meeting, the Chair prepared a Chair’s Summary⁸³ under his own responsibility. In addition to expressing concern about the nuclear safety and security of the ZNPP, several paragraphs referred to the need to ensure the nuclear safety and security of Ukraine’s nuclear facilities and materials in accordance with the IAEA’s “Seven Pillars.” Although no direct accusations were made against Russia in these paragraphs, Russia strongly objected to the description of its nuclear activities and insisted that the document should not be accepted and should be removed from the official record. In the

⁷⁹ “IAEA Director General’s Introductory Statement to the Board of Governors,” IAEA, November 22, 2023, <https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-22-november-2023>.

⁸⁰ “Statement by Indonesia on Behalf of the Group of the Non-Aligned States: Cluster 3,” August 8, 2023.

⁸¹ Ray Acheson and Laura Varella, “Report on Cluster Three,” *NPT News in Review*, Reaching Critical Will, Vol. 18, No. 5, August 9, 2023.

⁸² *Ibid*, p. 11.

⁸³ It is prepared on the basis of the general discussions in the PrepCom meetings, the discussions on the three pillars of the NPT, and the contents of each country’s working papers, and is usually attached to the “decisions” (official documents) of each PrepCom meeting, as is the practice.

end, the Chair's Summary was not retained as an official document, as several countries, including Russia, expressed their opposition to it.

On the other hand, as a way forward, the document (distributed by the Chair), which contains recommendations on potential areas of focus for discussion at the Second PrepCom meeting, noted that at this PrepCom session “Many NPT States Parties stressed the importance of nuclear safety and security of nuclear facilities and materials for peaceful purposes in all circumstances, including in armed conflict zones, and expressed concern about the nuclear safety of Ukraine’s nuclear facilities, particularly the ZNPP and its nuclear materials” (para. 19).⁸⁴ It then noted as priority areas for discussion (a) “ways to strengthen compliance with the IAEA’s proposed ‘Seven Pillars’ for ensuring nuclear safety and security during armed conflict and five specific principles to help ensure nuclear safety and security in the ZNPP” and (b) “With regard to the above, ways to further support the work of the IAEA” were recommended. The Chair’s recommendations were made official documents of this Preparatory Committee in a working document entitled “Considerations by the Chair.”

Response by the G7

In April 2023, the G7 NPDG Meeting issued a joint statement, reaffirming the importance of the “Seven Pillars,”

expressing support for the IAEA efforts, and calling on “Russia to withdraw its military and civilian personnel from the ZNPP and from all of Ukraine, to return full control of the plant to the competent Ukrainian authorities, and to refrain from taking any actions that could result in a nuclear incident at the plant.”⁸⁵

(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

⁸⁴ NPT/CONF.2026/PC.I/6, August 10, 2023.

⁸⁵ “Statement of the G7 Non-Proliferation Directors Group.”

can also serve for nuclear security purposes, those nuclear safety-related conventions are regarded as nuclear security-related conventions in this report. Table 3-4 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:

- CPPNM⁸⁶ (entered into force in 1987): 164 signatories. No new signatories; the number of new signatories since 2016 has been two to three almost every year and has continuously increased, but there was no increase in 2022 and 2023.
- A/CPPNM⁸⁷ (entered into force in 2016): 134 countries ratified. New ratifications by Belarus, Laos and Zimbabwe. The number of new ratifying countries in recent years has been continuously increasing: 15 in 2016, 7 in 2017, 3 in 2018, 5 in 2019, 2 in 2020, 2 in 2021 and 4 in 2022.
- ICSANT⁸⁸ (entered into force in 2007): 122 States Parties. Newly ratified by Albania and Zimbabwe. 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 and 2 in 2022.
- CNS⁸⁹ (entered into force in 1996): 93 States Parties as of September 2023. Newly ratified by Egypt and Zimbabwe. No ratification in 2022.
- Convention on Early Notification of a Nuclear Accident⁹⁰ (entered into force 1986): 132 States Parties as of February 2023. No country ratified in 2023; One ratification in 2022.
- Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency⁹¹ (entered into force 1987): 128 States Parties as of November 2023. Newly ratified by Turkmenistan. Three countries ratified in 2022.
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management⁹² (entered into force in

⁸⁶ 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.

⁸⁷ This is the only legally binding international agreement on the protection of nuclear materials and facilities for peaceful purposes.

⁸⁸ 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.

⁸⁹ 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.

⁹⁰ 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.

⁹¹ 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.

⁹² 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

Table 3-4: Signature and Ratification Status for Major Nuclear Security and Safety-related Conventions

	CPPNM	A/CPPNM	Nuclear Terrorism Convention	Nuclear Safety Convention	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	○	○	○	○	○	○	○
Turkey	○	○	○	○	○	○	○
UAE	○	○	○	○	○	○	○
North Korea					△	△	

○: Ratification, acceptance, approval, and accession △: Signature

2001): 89 parties as of February 2023. Newly ratified by Turkey. Two States Parties ratified in 2022.

In 2023, there was an increase in the number of ratifications for all conventions except the CPPNM and the Convention on Early Notification of a Nuclear Accident. Egypt and Turkey, two countries in the Middle East, have ratified the relevant conventions, while Zimbabwe

ratified three conventions. In recent years, there has been progress in accession to the relevant conventions by the countries of the Global South due to persistent efforts to universalize the conventions. With regard to the countries covered by this study, Turkey, whose first nuclear power plant is due to be commissioned by 2025, has ratified the Joint Convention on the Safety of Spent Fuel Management and

fuel and radioactive waste.

on the Safety of Radioactive Waste Management.

During the 67th IAEA General Conference held in September, among the surveyed countries, France, Japan, Norway, the UAE, and the United Kingdom expressed their support for the universalization of international legal documents related to nuclear security, including the A/CPPNM and the ICSANT and pledged to continue their efforts towards this end. Also, they called for the full implementation of the conventions.⁹³ On the other hand, the preamble of the “Nuclear Security Resolution” adopted at the IAEA General Conference included a new paragraph (c) bis, stating, “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.”⁹⁴

Sharing information with improved transparency and protection of sensitive information is also encouraged as an international assurance of the implementation of nuclear security-related conventions by states, as 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 IAEA Nuclear Security Series Document No. 13.

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.

⁹³ “Statements to IAEA General Conference,” IAEA, <https://www.iaea.org/about/governance/general-conference/gc67/statements>.

⁹⁴ IAEA, “Nuclear Security Resolution,” September 2023, p. 1.

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			○
Sweden	○	○	○
Switzerland	○		○
Turkey			○
UAE			○
North Korea			

“○” for initiatives for which information was obtained from publicly available information, etc., or for which implementation was announced.
“○” indicates new initiatives in 2023 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, October 5, 2022, <https://www.ntiindex.org/news/country-actions-october-2022-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/000295616.pdf>; “Draft Follow-up Mission Report: Sweden,” October 2016, <https://www.stralsakerhetsmyndigheten.se/contentassets/27a6dd9e94e54dc189ccfa7c7f2f910/draft-follow-up-mission-report-sweden.pdf>; “Nuclear Security Index 2020,” Nuclear Threat Initiative, <https://www.ntiindex.org/>.

However, the extent and level of application vary among the respective countries.

In the following sections, the actions and initiatives taken in 2023 by the countries under this survey, as well as trends in international efforts coordinated by organizations, regarding the implementation of main recommended measures in INFCIRC/225/Rev.5.

Development of national laws and regulations

Each country is responsible for establishing and maintaining a national regulatory framework to govern physical protection.

- Canada⁹⁵: In response to proposals received during the International Physical Protection Advisory Service (IPPAS) mission in 2015, aimed at improving the regulatory framework for nuclear security in line with international nuclear security principles and recommendations, amendments to regulations are being undertaken. Specifically, revisions are being pursued for aspects such as nuclear security culture, interface between nuclear material accountancy and control (NMAC) and nuclear security, protection of sensitive information in physical and digital media, two-person rule in the Central Alarm Station. The existing regulations do not contain explicit requirements for security culture, interface of safety, security and safeguards, or the protection of sensitive information.
- Turkey⁹⁶: After going through amendments, the Regulation on Nuclear Regulation Authority Administrative Sanction was enacted in January 2023.

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 assessments of threats. When considering

threats, particular attention should be given to insider threats, as individuals within the organization, with access rights, authority, and knowledge, pose a different risk compared to external threats. Insiders can bypass measures for nuclear security and safety procedures, given their ability to utilize access rights and knowledge.

- Belgium⁹⁷: As a follow-up to the “International Symposium on Mitigating Insider Threats” held in 2019, Belgium is organizing a new symposium in 2024. The objective of this symposium is to continue raising awareness about insider threats.
- Canada⁹⁸: “With the legalization of cannabis in early 2021, as part of its proactive efforts to enhance nuclear safety and security at high-security-level nuclear facilities, the Canadian Nuclear Safety Commission (CNSC) introduced new regulatory requirements for pre-assignment inspections and random inspections of personnel. These requirements ensure that Canada is adhering to international best practices and allows the CNSC to impose the highest safety standards possible on licensees operating high-security-level nuclear facilities.”

⁹⁵ “Canada Gazette, Part I, Volume 156, Number 46: Nuclear Security Regulations, 2023,” November 22, 2022, <https://gazette.gc.ca/rp-pr/p1/2022/2022-11-12/html/reg1-eng.html>.

⁹⁶ “National Submission of Türkiye,” February 8, 2023, <https://www.un.org/en/sc/1540/documents/TurkiyeReport8Feb2023.pdf>.

⁹⁷ “Statement by Belgium,” at the 67th IAEA General Conference, September 25, 2023.

⁹⁸ CNSC, “CNSC statement on the Federal Court decision to uphold pre-placement and random alcohol and drug testing of workers in safety-critical positions at high-security nuclear facilities,” June 12, 2023, <https://www.canada.ca/en/nuclear-safety-commission/news/2023/06/cnsc-statement-on-the-federal-court-decision-to-uphold-pre-placement-and-random-alcohol-and-drug-testing-of-workers-in-safety-critical-positions-at.html>.

- UAE⁹⁹: The Federal Authority for Nuclear Regulation (FANR) hosted the National Training Course on Preventive and Protective Measures against Insider Threat to Nuclear Material, which was being organized in cooperation with the IAEA in May. FANR has issued FANR REG 08 “Physical Protection for Nuclear Materials and Nuclear Facilities.” “The Regulation requests the licences to implement an insider threat mitigation programme, including requirement for an access authorization program, a fitness-for-duty programme and the Cyber Security Plan.”
- The United States¹⁰⁰: The National Intelligence Office designated September as “National Insider Threat Awareness Month” and called for cooperation from government agencies, including the Nuclear Regulatory Commission (NRC), in detecting, deterring, and mitigating insider threat risks. This initiative emphasized the importance of remaining vigilant against such threats and encouraged collaboration through the distribution of policy memos to administrative agencies.

previous index issued in 2020, there has been no progress in enhancing measures for insider threat mitigation and strengthening nuclear security culture among countries possessing weapons-usable nuclear materials and nuclear facilities.¹⁰¹ Furthermore, it suggests that while national governments need to strengthen efforts in establishing and enhancing programs to identify and mitigate insider threats, addressing this vulnerability is not sufficient through government actions alone. Therefore, there is an emphasis on the need for enhancing nuclear security culture by entities such as operators, as this is considered essential in addressing this vulnerability.

In October 2023, IAEA organized an international training course on insider threats at the newly established Nuclear Security Training and Demonstration Center (NSTDC) in Seibersdorf.¹⁰² This training course “introduces the concepts that underlie the evaluation of preventive and protective measures and explains how these should be applied to enhance nuclear security with regard to insider threats.”

In the 2023 edition of the NTI *Nuclear Security Index*, it is noted that, since the

⁹⁹ “The Federal Authority for Nuclear Regulation Hosts National Training Course,” Federal Authority for Nuclear Regulation, May 10, 2023, <https://www.fanr.gov.ac/en/media-centre/news?g=846214EB-3965-4D8B-9D2C-1928D1BF72AF>.

¹⁰⁰ Office of the Director of National Intelligence, “September 2023 is National Insider Threat Awareness month,” NCSC-23-00047, 2023, https://www.dni.gov/files/NCSC/documents/features/NCSC%20NTIAM%20MEMO_230047_SIGNED.pdf.

¹⁰¹ *The 2023 NTI Nuclear Security Index*, Nuclear Threat Initiative, July 2023, p. 9.

¹⁰² “International Training Course on Insider Threat Using the Shapsha 3D Model,” https://www.tenmak.gov.tr/attachments/article/3755/23-03568E_Encl.pdf.

Cybersecurity

- Canada¹⁰³: The existing nuclear security regulations do not contain provisions related to cybersecurity or the protection of digital information. Therefore, in the cybersecurity program, revisions are underway to address cybersecurity risks identified in threat and risk assessments, protect computer-based systems and components affecting or impacted by the functions of nuclear safety, nuclear security, emergency response, and safeguards from cyber attacks. The revisions also aim to require license applicants and licensees to identify and protect confidential information, in physical or digital form, throughout its lifecycle, safeguarding it from threats identified in the licensee’s threat and risk assessments.
- Kazakhstan¹⁰⁴: In February and May, training courses on the application of information security for nuclear facilities were conducted with the cooperation of the U.S. Defense Threat Reduction Agency’s (DTRA) Global Nuclear Security (GNS) program. This course is part of the ongoing trainer development efforts by DTRA-GNS, aiming to establish a sustainable and growing nuclear security curriculum and a pool of leaders in Kazakhstan.
- France¹⁰⁵: In March, France held the IAEA international workshop in Paris on instrumentation and control (I&C) as well as computer security for small modular reactors.
- Japan and United States¹⁰⁶: In March, a workshop titled “Japan-U.S. Collaboration for Building Cybersecurity Capabilities” was co-hosted by the Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN) of the Japan Atomic Energy Agency’s (JAEA) and the U.S. Department of Energy in Washington D.C. Discussions revolved around challenges in training personnel involved in computer security.
- Norway¹⁰⁷: Expressed their commitment to contribute to the IAEA’s technical assistance to member states in improving their regulator capacity for cybersecurity inspections of nuclear facilities.

¹⁰³ “Canada Gazette, Part I, Volume 156, Number 46: Nuclear Security Regulations, 2023,” November 22, 2022, <https://gazette.gc.ca/rp-pr/p1/2022/2022-11-12/html/reg1-eng.html>.

¹⁰⁴ “DTRA’s Global Nuclear Security Program Partners with Kazakhstan’s Nuclear Security Stakeholders,” U.S. Embassy & Consulate in Kazakhstan, February 21, 2023, <https://kz.usembassy.gov/dtras-global-nuclear-security-program-partners-with-kazakhstans-nuclear-security-stakeholders/>; “DTRA Partners with Kazakhstan’s Civilian Nuclear Stakeholders to Conduct a Computer Security Training,” U.S. Embassy & Consulate in Kazakhstan, May 23, 2023, <https://kz.usembassy.gov/dtra-partners-with-kazakhstans-civilian-nuclear-stakeholders-to-conduct-a-nuclear-facility-computer-security-training/>.

¹⁰⁵ IAEA, *Nuclear Security Report 2023*, September 2023, p. 17.

¹⁰⁶ “Report on the JAEA/ISCN-US/DOE co-hosted workshop ‘US-Japan Cooperation for Building Computer Security Capability,’” *ISCN Newsletter*, No. 0317, May 2023, pp. 51-52.

¹⁰⁷ “Statement by Norway on Nuclear Security: Nuclear Security Review 2023,” at the IAEA BoG, March 2023.

- The United States¹⁰⁸: The Nuclear Regulatory Commission (NRC) has issued Revision 1 of Regulatory Guide (RG) 5.71, titled “Cybersecurity Program for Nuclear Reactors.” This revision aims to clarify guidance on deep defense for cybersecurity, incorporating content based on the latest guidelines from the National Institute of Standards and Technology (NIST) and the IAEA.

important to ensure the continued effectiveness of nuclear security measures, including for 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.

Additionally, although not part of the countries under investigation, Egypt, Ghana, and Nigeria are implementing programs, with the support of the IAEA, to develop and strengthen computer security regulations to appropriately protect various types of nuclear facilities, including research reactors, from computer-based malicious activities. Many African countries are learning from the experiences of these three nations in this regard.¹⁰⁹

Nuclear security culture¹¹⁰

It has been increasingly recognized in recent years that fostering and maintaining a nuclear security culture is extremely

- Canada¹¹¹: The existing Nuclear Security Regulations do not contain explicit requirements for security culture. The work to change the regulations is underway. Specifically, Canada is working to amend the regulations to require licensees to develop, implement, and promote nuclear security culture measures and practices at their facilities. These efforts were supported by an IPPAS mission that Canada hosted in 2015, which proposed “improving the CNSC’s nuclear security regulatory framework and suggested better alignment with important international nuclear security fundamental principles and recommendations.”
- Japan¹¹²: In January, JAEA/ISCN, in

¹⁰⁸ “88 FR 9117 - Cyber Security Programs for Nuclear Power Reactors,” Federal Register Volume 88, Issue 29, February 13, 2023, <https://www.govinfo.gov/app/details/FR-2023-02-13/2023-02941>; “NRC Updates Guidance on Cybersecurity Programs for Nuclear Power Reactors,” UP & ATOM, February 24, 2023, <https://www.morganlewis.com/blogs/upandatom/2023/02/nrc-updates-guidance-on-cybersecurity-programs-for-nuclear-power-reactors>.

¹⁰⁹ Andrea Rahandini, “IAEA Assists African Countries in Developing Computer Security Regulations,” *IAEA Bulletin*, June 23, 2023, pp. 10-11.

¹¹⁰ 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.

¹¹¹ “Canada Gazette, Part I, Volume 156, Number 46: Nuclear Security Regulations, 2023,” November 22, 2022, <https://gazette.gc.ca/rp-pr/p1/2022/2022-11-12/html/reg1-eng.html>.

¹¹² IAEA, *Nuclear Security Report 2023*, September 2023, p. 8.

collaboration with the World Institute for Nuclear Security (WINS), organized a domestic workshop on Self-Assessment of Nuclear Security Culture with 30 participants from nuclear operators, regulatory authorities, etc. The workshop employed a “drama-based session,” utilizing scenes from various plays to extract challenges related to nuclear security culture, initiating discussions among participants on self-assessment. Additionally, IAEA regional workshop on the practical aspects of nuclear security culture was conducted in Tokai-mura from February to March.¹¹³

- The United Kingdom¹¹⁴: In 2022, the Office for Nuclear Regulation (ONR) conducted a stakeholder survey on ONR’s nuclear security culture. The stakeholders expressed continued confidence (93%) in ONR’s mission to “protect society by ensuring the safe operation of nuclear facilities.” The survey results concluded that ONR had a positive impact on public safety and influenced improvements in nuclear safety and security culture among licensees and dutyholders.

In Japan, the deterioration of the nuclear security culture became an issue in 2020 at TEPCO Holdings’ (TEPCO) Kashiwazaki-Kariwa Nuclear Power Station due to incidents of ID card misuse and partial loss of nuclear material protection functions (see *Hiroshima Report*

2022, pp. 118-119). In December 2023, TEPCO released an improvement measures implementation report on its efforts to strengthen nuclear material protection since September 2021.¹¹⁵ TEPCO has identified three root causes, drawn up improvement measure plans with 36 items, and has been taking remedial measures, according to the report. In the process, TEPCO re-evaluated the cause analysis pertaining to both incidents and identified three root causes: weak risk awareness, weak understanding of the actual situation at the site, and weak organizational capacity to correct the situation. In addition, it evaluated the implementation provisions and effectiveness of the improvement measure plans. TEPCO also established an improvement mechanism for issues pointed out by the Nuclear Regulation Authority, such as the practice of non-transitory efforts, and completed corrective actions after confirming the results of the efforts.

In a statement to the IAEA Board of Governors in March, the EU stressed the importance of nuclear security culture in preparation for the IAEA International Conference on Nuclear Security (ICONS) to be held in 2024, saying that “efforts must be maintained to strengthen nuclear security and nuclear security culture,

¹¹³ “Report on ISCN-WINS Joint Workshop “Self-assessment of nuclear security culture,”” *ISCN Newsletter*, No. 0315, March 2023, pp. 30-31, https://www.jaea.go.jp/04/iscn/nnp_news/attached/0315_en.pdf#page=31.

¹¹⁴ Office for Nuclear Regulation, Annual Report and Accounts 2022/23, HC186, 2023.

¹¹⁵ On these two incidents, see TEPCO, “Efforts to Strengthen Nuclear Material Protection and Improve Nuclear Safety at the Kashiwazaki-Kariwa Nuclear Power Station,” December 28, 2023, https://www.tepco.co.jp/nigata_hq/data/publication/pdf/2023/2023122802p.pdf.

which are essential for the development of peaceful uses of nuclear energy.”¹¹⁶

As noted above, NTI states that no progress has been made beyond 2020 in efforts for nuclear security culture by states with weapons-usable nuclear materials or nuclear facilities.¹¹⁷ It also states that nuclear operators should develop programs to strengthen nuclear security culture, and that regulatory agencies, intelligence agencies, law enforcement agencies, industry, and nongovernmental organizations should improve information sharing on nuclear security matters.¹¹⁸

(3) Efforts to Maintain and Improve the Highest Level of Nuclear Security

A) Minimization of HEU and separated plutonium stockpile in civilian use

Today, minimizing HEU and separated plutonium inventory is one of the key indicators for achieving the highest level of nuclear security.¹¹⁹ As a result of the

2004 GTRI as well as through a series of efforts through the Nuclear Security Summit process since 2010 to minimize the use of HEU and plutonium, South America, Central Europe, and Southeast Asia have become areas where there are no high-risk nuclear materials at present.¹²⁰

HEU

- China¹²¹: Will “continue to participate in the cooperation on conversion of HEU to low enriched uranium (LEU) for micro-reactors and to support countries in minimising the use of HEU.”
- Kazakhstan¹²²: Has “successfully completed the power startup of the water-cooled IVG.1M reactor low-enriched fuel” in May. With this, two out of three Kazakhstan’s nuclear reactors have already been converted to LEU fuel. For the remaining pulsed graphite nuclear reactor, analysis and other work is underway to convert the reactor to low-enriched uranium fuel.

¹¹⁶ “EU Statement on Nuclear Security Review 2023,” at IAEA BoG Meeting, March 7, 2023.

¹¹⁷ *The 2023 NTI Nuclear Security Index*, p. 9.

¹¹⁸ *Ibid.*

¹¹⁹ Regarding separated plutonium, it was mentioned for the first time in the series of Nuclear Security Summits the need to maintain them at the minimum level in the communique of the 2014 Hague Summit. 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.

¹²⁰ “Secretary Moniz Remarks on Nuclear Security at IAEA Conference,” U.S. Department of Energy, December 5, 2016, <https://www.energy.gov/articles/secretary-moniz-remarks-nuclear-security-iaea-conference>.

¹²¹ Ray Acheson and Laura Varela, “Report on Cluster Three,” *NPT News in Review*, Reaching Critical Will, Vol. 18, No. 5, August 9, 2023, p. 12.

¹²² “Statement by Kazakhstan,” at the 67th IAEA General Conference, September 25, 2023.

- Japan¹²³: “Japan decided to remove HEU fuel from the Kinki University Teaching and Research Reactor (UTR-KINKI), which is the last research reactor possessing HEU in Japan, and convert it to an LEU reactor last September and started preparing for implementing this decision.”
 - Norway¹²⁴: The Institute for Energy Technology is collaborating with the NNSA and Savannah River National Laboratory in the United States on a project to eliminate all HEU in Norway by diluting it to LEU. Dilution is expected to begin in 2024, and when the project is completed in the next few years, Norway will be HEU-free.
- The United States announced a policy to improve nuclear material security and prevent any act of nuclear terrorism, including following points.¹²⁵
- “Minimize the production and retention of weapons-usable nuclear materials to only those quantities required to support vital national security interests;
 - Refrain from the use of weapons-usable nuclear material in new civil reactors or for other civil purposes unless that use supports vital U.S. national interests;
 - Focus civil nuclear research and development on approaches that avoid producing and accumulating weapons-usable nuclear material and enable viable technologies to replace current civil uses of these materials;
 - Dispose of nuclear material that is in excess to national security or civil needs in a safe and secure manner.”
- The EU encouraged all states to minimize HEU in civilian stocks and use, where technically and economically feasible, and to share experiences including updates on progress in this regard.¹²⁶

In addition, Kazakhstan and the United States signed a joint statement on minimizing HEU stockpiling in Kazakhstan during the IAEA General Conference in September.¹²⁷ In the statement, the two countries agreed to continue cooperation on the safe storage and eventual dilution of spent HEU fuel from the IVG.1M and to complete the dilution and immobilization of irradiated HEU fuel from the impulse graphite reactor (IGR) in 2027 and to develop a roadmap for identifying alternatives for

¹²³ “Statement by Japan,” at the 67th IAEA General Conference, September 25, 2023.

¹²⁴ “NNSA Administrator Visits Norway, A Key Ally, To Discuss Mutual Goals and Review Progress on an Innovative Nonproliferation Effort,” NNSA, April 6, 2023, <https://www.energy.gov/nnsa/articles/nnsa-administrator-visits-norway-key-ally-discuss-mutual-goals-and-review-progress>.

¹²⁵ “FACT SHEET: President Biden Signs National Security Memorandum to Counter Weapons of Mass Destruction Terrorism and Advance Nuclear and Radioactive Material Security,” The White House, March 2, 2023.

¹²⁶ Ray Acheson and Laura Varela, “Report on Cluster Three,” *NPT News in Review*, Reaching Critical Will, Vol. 18, No. 5, August 9, 2023, p. 12.

¹²⁷ “Joint Statement between the NNSA of the U.S. Department of Energy and the Ministry of Energy of the Republic of Kazakhstan,” National Nuclear Center, September 26, 2023, <https://www.nnc.kz/en/news/show/464>.

the conversion of IGRs to LEU fuel.

On the other hand, in the United States, which has led international efforts to minimize HEU, the Idaho National Laboratory is planning to conduct a Molten Chloride Reactor Experiment (MCRE) as part of the Molten Chloride Fast Reactor (MCFR) project with a commercial partner. According to the draft environmental assessment, the MCRE will use more than 600 kilograms of weapon-grade HEU as fuel. Although MCFR is expected to use high-purity LEU, the experiment will use HEU as fuel. While MCFR is projected to use high-assay LEU, the experiment will use HEU as a cost-saving measure.¹²⁸ This move has been criticized as going against efforts to minimize HEU.¹²⁹

In addition to the efforts by the countries mentioned above to minimize HEU, Germany and the United Kingdom each voluntarily reported their civilian HEU inventories in their plutonium management reports (INFCIRC/549) for

2023 as well.¹³⁰ On the other hand, no other countries in this survey made similar reports.

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.¹³¹ 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 six countries (Australia and Norway) have so far submitted reports to the IAEA using this form. No country did so in 2023.¹³²

G7-NPDG statement issued in April stated G7 countries affirmed their “commitment to minimise HEU stocks

¹²⁸ “US Reactor Experiment to Use HEU,” *IPFM Blog*, May 21, 2023, https://fissilematerials.org/blog/2023/05/us_reactor_experiment_to_.html; “US Government Urged to Stop The HEU Test Reactor Project,” *IPFM Blog*, May 30, 2023, https://fissilematerials.org/blog/2023/05/us_government_urged_to_st.html.

¹²⁹ “Proposed MCRE Reactor Violates U.S. Nonproliferation Policy of HEU Minimization,” Nonproliferation Policy Education Center, May 30, 2023, <https://npolicy.org/proposed-mcre-reactor-violates-u-s-nonproliferation-policy-of-heu-minimization/>; Alan J. Kuperman, “U.S. Plan to Put Weapons-Grade Uranium in a Civilian Reactor Is Dangerous and Unnecessary,” *Scientific American*, October 20, 2023, <https://www.scientificamerican.com/article/u-s-plan-to-put-weapons-grade-uranium-in-a-civilian-reactor-is-dangerous-and-unnecessary/>.

¹³⁰ INFCIRC/549/Add.2-26, August 31, 2023; INFCIRC/549/Add.8/26, November 16, 2023.

¹³¹ “Joint Statement on Minimising and Eliminating the Use of Highly Enriched Uranium in Civilian Applications,” INFCIRC/912, February 16, 2020; “Australia’s 2019 INFCIRC/912 HEU Report,” *IPFM Blog*, January 23, 2020, http://fissilematerials.org/blog/2020/01/australias_2019_infcirc91.html.

¹³² 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).

globally and encourage states with civil stocks of HEU to further reduce or eliminate them where economically and technically feasible.”¹³³

Separated plutonium

While the Nuclear Security Resolution adopted at the 67th IAEA General Conference recognizes the importance of minimizing HEU use where technically and economically feasible, it does not mention minimizing separated plutonium. 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.”¹³⁴

In this regard, in February, Japan announced its latest Plutonium Utilization Plan. In response to this plan, on February 28, the Atomic Energy Commission (AEC) announced their views on the validity of the Plutonium Utilization Plan for FY2023, which was issued by the Federation of Electric Power Companies and stated that the amount of plutonium held in FY2023 is expected to be about 44.5 tons, since no new plutonium will be recovered and about 0.7 tons of plutonium will be consumed. With this, the AEC expressed its views on the validity of the Plutonium Utilization

Plan for FY2023 is appropriate at this moment, taking into account the operation plan of the plutonium thermal reactors in FY2023, the outlook for the operation of the Rokkasho Reprocessing Plant and other facilities, as well as the status of efforts to process Mixed Oxide (MOX) fuel from the plutonium held overseas.¹³⁵

In Japan, the amount of plutonium held has been gradually decreasing each year since the AEC decided in July 2018 to reduce its holdings and to ensure that such holdings do not exceed the level as of 2018.¹³⁶ According to the NTI, no other country has pledged to cap its inventory of separated plutonium like Japan.¹³⁷ On the other hand, Japan’s inventory remains by far the largest, accounting for almost 99% of all non-nuclear-weapon States’ stockpiles.

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 measures for preventing illicit trafficking of nuclear materials. The ITDB is a database on

¹³³ “Statement of the G7 Non-Proliferation Directors Group.”

¹³⁴ “The Hague Nuclear Security Summit Communiqué,” Ministry of Foreign Affairs of Japan, March 25, 2014, <https://www.consilium.europa.eu/media/23823/141885.pdf>.

¹³⁵ Japan Atomic Energy Commission, “Plutonium Utilization Plans Published by the Federation of Electric Utilities and others (Opinion),” February 28, 2023, http://www.aec.go.jp/jicst/NC/sitemap/pdf/230228_kenkai.pdf.

¹³⁶ Japan Atomic Energy Commission, “The Basic Principles on Japan’s Utilization of Plutonium,” July 31, 2018, <http://www.aec.go.jp/jicst/NC/iinkai/teirei/3-3set.pdf>.

¹³⁷ Nuclear Threat Initiative (NTI), *The 2023 NTI Nuclear Security Index*, July 2023, p. 36.

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	○
Turkey	○ Completely removed	○
UAE	Never possessed	○
North Korea		

Note:

“●” indicates that the commitment/expression of continued commitment to HEU minimization in 2023 has been confirmed.

“○” indicates past efforts.

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 us to realize the real threat of nuclear terrorism.

Myanmar newly joined the ITDB, bringing the total number of participating countries to 143 as of the end of 2022

(see Table 3-6 for participation status of countries surveyed).¹³⁸ From the start of the ITDB in 1993 to the end of December 2022, 4,075 cases were reported in total. In 2022, 146 incidents were reported in total by 31 countries, which is an increase of 26 incidents from 2021. The IAEA points out that “these indicate that unauthorized activities and events involving nuclear and other radioactive material, including incidents of

¹³⁸ IAEA, “IAEA Incident and Trafficking Database (ITDB) 2023 Factsheet,” <https://www.iaea.org/sites/default/files/22/01/itdb-factsheet.pdf>.

trafficking and malicious use, continue to follow historical averages.”¹³⁹

The ITDB categorizes the types of incidents to 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 4,075 confirmed incidents, there are 344 within Group I, 1,036 incidents within Group II and 2,695 incidents within Group III. Of these, 14% of all cases involved nuclear material,¹⁴⁰ 59% involved other radioactive material and 27% involved radioactive contamination or other material. It is estimated that about 52% of all theft incidents since 1993 have occurred during authorized transport. Over the past decade, the proportion has been about 62%, which the IAEA says highlights 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.¹⁴¹

The trafficking or intent of malicious use around 88% of thefts remains undetermined. On the other hand, 3.5% of the reported thefts have been confirmed to be related to trafficking.

The ITDB does not disclose details of reported cases or illicit trafficking in order to protect sensitive information in participating countries.

In connection with the illicit trafficking of nuclear and other radioactive materials, countries are working to develop national nuclear security detection architectures, and the IAEA has been assisting them through the development of roadmaps for their design and implementation. Five new countries in the African region drafted roadmaps for 2022, bringing the total number of countries using roadmaps to 36.¹⁴²

Ensuring nuclear security at large public events in each country has also become important, and in May 2023, a national workshop on the Development and Implementation of Nuclear Security Systems and Measures for Major Public Events was held in Dubai, UAE.¹⁴³

C) Acceptance of international nuclear security review missions

The IAEA’s international assessment missions, in which international experts

¹³⁹ Ibid.

¹⁴⁰ These included 12 cases of HEU, three cases of plutonium and five cases of plutonium-beryllium neutron sources.

¹⁴¹ 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.”

¹⁴² IAEA, *Nuclear Security Review 2023*, August 2023, p. 27.

¹⁴³ Ibid, p. 19.

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, the International Nuclear Security Advisory Service (INSServ) and missions to develop Integrated Nuclear Security Support Programmes (INSSP).¹⁴⁴ In addition, a new advisory mission, the Regulatory Infrastructure Mission for Radiation Safety and Nuclear Security (RISS), was launched in March 2022.¹⁴⁵

For the IPPAS missions, which are particularly high-profile, a total of five countries have hosted them in 2023: Nigeria, Kuwait, and Zambia,¹⁴⁶ plus two of the countries covered by this survey, the Netherlands and Switzerland. The mission to Zambia in September brought the total number of IPPAS missions to 100 since its inception in 1996. For the first three countries, it was the first time for them to receive the mission. It indicates that there has been an expansion

of mission acceptance to countries in the “Global South.”

As for the Netherlands, this was their fifth time to host the mission, following the previous one in 2012. In addition to the country’s overall nuclear security regime, including computer security, the implementation of the CPPNM and A/CPPNM was also reviewed.¹⁴⁷

Switzerland hosted the mission as a follow-up to the one in 2018 and all five modules were reviewed for the first time for them.¹⁴⁸ The mission team commented that “the inclusion of one additional module on the security of radioactive material underscores Switzerland’s integrated approach towards physical protection.”¹⁴⁹

Regarding future missions, Japan, which decided in December 2022 to accept their second IPPAS mission, announced the status of their preparations in April 2023. According to the announcement, they

¹⁴⁴ 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.

¹⁴⁵ IAEA, *Nuclear Security Review 2023*, p. 9.

¹⁴⁶ “IAEA Concludes International Physical Protection Advisory Mission in Nigeria,” *IAEA News*, July 14, 2023; “IAEA Completes International Physical Protection Advisory Service Mission in Kuwait,” *IAEA News*, June 8, 2023; “IAEA Concludes International Physical Protection Advisory Service Mission in Zambia,” *IAEA News*, September 8, 2023.

¹⁴⁷ “IAEA Concludes International Physical Protection Advisory Service Mission in the Netherlands,” *IAEA News*, October 16, 2023.

¹⁴⁸ The five modules are: nuclear security regimes; nuclear facilities; transport; information and computer security; nuclear security of radioactive materials; and associated facilities and activities. “IAEA Concludes International Physical Protection Advisory Follow-Up Mission in Switzerland,” *IAEA News*, November 10, 2023, <https://www.iaea.org/newscenter/pressreleases/iaea-concludes-international-physical-protection-advisory-follow-up-mission-in-switzerland>.

¹⁴⁹ *Ibid.*

Table 3-7: Participation Status in and Efforts toward Nuclear Security Initiatives

	IPPAS	Nuclear Forensics	Nuclear Security Fund	G7GP	GICNT
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	●	●	●	○	○
Turkey	○	○			○
UAE		○			○
North Korea					

IPPAS: “●” indicates acceptance in 2023. “○” indicate acceptance in the past five years.

Nuclear Forensics: “○” indicates past participation in ITWG activities or other achievements (obtained from public information).

Nuclear Security Fund: “●” indicates new contributions confirmed for 2023. “○” indicate the actual contributions made in the past three years.

plan to receive a mission in mid-2024 (June/July).¹⁵⁰

While there has been a noticeable trend toward active acceptance of IPPAS missions and follow-up missions in the Western countries covered by this survey, there are a certain number of countries that have never accepted a mission, indicating a bifurcation of the situation (see Table 3-7).

It once became trend 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, the Netherlands, Sweden, Australia, Canada and Japan released part of their reports (see Table 3-

¹⁵⁰ “Statement by Japan,” at the 67th IAEA General Conference, September 25, 2023; Nuclear Regulation Authority, “Status on the Preparation for Receiving an IAEA IPPAS Mission,” April 12, 2023, <https://www.nra.go.jp/data/000426587.pdf>.

6).¹⁵¹ However, no similar developments have been seen since 2020.

INSServ is a mission initiated in 2006 to review national nuclear security regimes for radioactive materials out of regulatory control. In 2023, Viet Nam and Georgia hosted this mission.¹⁵² A total of 85 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. Efforts and support for further advancement of this technology, the establishment of national systems as well as international networking systems have been made to date. Capacity building in the areas of radiological crime scene management and nuclear forensics

continues to be important for countries. The Nuclear Security Resolution adopted by the IAEA General Conference in September 2023 encouraged countries that have not yet done so “to consider establishing, where practical, national nuclear forensics libraries”¹⁵³ (para. 55).¹⁵⁴ In July, an IAEA Technical Document entitled “Establishing a Nuclear Forensics Capability: Application of Analytical Techniques” was published.¹⁵⁵

On nuclear forensics, Japan’s Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Atomic Energy Authority of Thailand, hosted a joint workshop on nuclear security and safeguards in Bangkok in January, with a tabletop exercise on nuclear forensics as a special event of the workshop. Thirty-eight participants from 12 countries (including the five countries surveyed in this survey: Australia, China, Kazakhstan, Japan and South Korea) took part in the

¹⁵¹ “Report of the Netherlands,” February 2012, <https://www.autoriteitnvs.nl/binaries/anvs/documenten/rapporten/2014/12/24/ippas/international-physical-protection-advisory-service-ippas-v2.pdf>; “Report of Sweden,” October 2016, <https://www.stralsakerhetsmyndigheten.se/contentassets/27a6dd9e94e54dc189cecf7c7f2f910/draft-follow-up-mission-report-sweden.pdf>; “Report of Australia,” November 2017, <https://www.dfat.gov.au/sites/default/files/2017-ippas-follow-up-mission-report.pdf>; “Report of Canada,” October 2015, <http://www.nuclearsafety.gc.ca/eng/pdfs/IPPAS/Canadas-IPPAS-Mission-Report-2015-eng.pdf>; “Report of Japan,” February 2015, <https://www.nra.go.jp/data/000295552.pdf>.

¹⁵² IAEA, *Nuclear Security Report 2023*, p. 20.

¹⁵³ “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.

¹⁵⁴ IAEA, “Nuclear Security Resolution,” September 2023, p. 10. Whether to build a national nuclear forensics library is a matter of national sovereignty, and according to the ISCEN, the number of countries that are building such libraries is quite small by global standards. “How Far Has the Nuclear Forensics Library Establishment Progressed? (in Japanese),” ISCEN, December 2021, <https://www.jaea.go.jp/04/isen/activity/2021-12-15/2021-12-15-07.pdf>.

¹⁵⁵ IAEA, “Establishing a Nuclear Forensic Capability: Application of Analytical Techniques,” 2023, <https://www.iaea.org/publications/15286/establishing-a-nuclear-forensic-capability-application-of-analytical-techniques>.

exercise.¹⁵⁶ The United States hosted an IAEA international training course on nuclear forensics methodology in March.¹⁵⁷

At the First PrepCom for the 11th NPT RevCon held in July, Australia, on behalf of 19 countries (the countries covered by this survey: Australia, Canada, Finland, France, Germany, Japan, Mexico, the Netherlands, Norway, South Korea, Sweden, Switzerland, the United Kingdom, and the United States), submitted a working paper entitled “Nuclear Forensic Science for Nuclear Security.”¹⁵⁸ The working paper encourages states:

- “To develop and enhance nuclear forensic capabilities and utilize, as appropriate, the support of IAEA and the Nuclear Forensics International Technical Working Group in areas such as enhancing nuclear forensic capabilities and providing relevant training assistance to States;
- To evaluate and adapt existing national response frameworks to incorporate the effective use of nuclear forensic capabilities;

- Cooperation within regions to identify areas of focus for future regional training activities in relation to nuclear forensics, with a view to enhancing training effectiveness and to ensuring that the provision of training matches the needs of States within the region.”

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.¹⁵⁹

In June 2023, the ITWG held its 26th annual meeting in Tbilisi, Georgia, with approximately 80 participants.¹⁶⁰ The countries covered by this survey, including Australia, Canada, Germany, Kazakhstan, South Africa, the United Kingdom, and the United States, participated in the meeting. At the meeting, the IAEA, Interpol, and the Global Initiative to Combat Nuclear Terrorism (GICNT)¹⁶¹ reported on their latest activities, and the main results of the seventh exercise of the Cooperative Material Comparison Exercise (CMX),¹⁶² one of the ITWG’s

¹⁵⁶ “Report of FNCA 2022 Workshop on Nuclear Security and Safeguards Project January 10-12, 2023, Bangkok, Thailand,” Forum for Nuclear Cooperation in Asia, https://www.fnca.mext.go.jp/English/nss/e_ws_2022.html.

¹⁵⁷ IAEA, *Nuclear Security Report 2023*, p. 18.

¹⁵⁸ NPT/CONF.2026/PC.I/WP.7/Rev.1, August 10, 2023.

¹⁵⁹ ITWG, “Nuclear Forensics Update,” No. 24, September 2022, p. 2.

¹⁶⁰ Michael Curry and Maria Wallenius, “Co-Chairs’ Summary of the ITWG-26 Annual Meeting,” ITWG Nuclear Forensics Update, No. 28, September 2023, p. 1; “MOIA Hosted the 26th Annual Meeting of the Nuclear Forensics International Technical Working Group (ITWG),” U.S. Embassy Tbilisi, June 23, 2023.

¹⁶¹ Within the GICNT, a Nuclear Forensics Working Group (NFWG, chaired by Canada) has been established, which also conducts a number of workshops and desk exercises with a view to strengthening nuclear forensics capabilities through multilateral cooperation and works closely with the ITWG.

¹⁶² Although CMX had only six participating analytical laboratories at the start of the initiative, in recent

main activities, were presented.¹⁶³ Several task groups under the ITWG have been active, including the Library Task Group, which reviewed the latest implementation of the Galaxy Serpent Exercise, a web-based international desktop exercise to build a national nuclear forensics library. The most recent, Exercise 5 (GSv5), involved 30 teams comprised of about 180 people.¹⁶⁴

According to the ITWG newsletters which featured South Africa's efforts to establish nuclear forensics capabilities, it has established an advanced nuclear forensics laboratory over the past decade in cooperation with the United States.¹⁶⁵ It developed analytical methods for forensic fingerprinting of uranium ore concentrates and radioactive materials and established a prototype for a national nuclear forensics lab.

E) Human resource development and capacity building and support activities

It is an essential responsibility of a state to

build the capacity of organizations and people to establish, implement and sustain a nuclear security regime.¹⁶⁶ The IAEA plays an important role in providing coordinated education and training programs that strengthen capabilities in states to address and sustain nuclear security.¹⁶⁷

On October 3, 2023, the IAEA's Nuclear Security Training and Demonstration Center (NSTDC), "the first international facility of its type, to support the growing efforts to tackle nuclear terrorism," opened in Seibersdorf, on the outskirts of Vienna. According to the IAEA, NSTDC "will provide more than 2,000 square meters of specialized technical infrastructure and equipment for course participants to learn about the physical protection of nuclear and other radioactive material, as well as detection and response to criminal acts involving nuclear material and facilities."¹⁶⁸

The NSTDC provides for advanced training in areas such as physical protection of nuclear and other

years CMX has had more than 20 participating institutions.

¹⁶³ Michael Curry and Maria Wallenius, "Co-Chairs' Summary of the ITWG-26 Annual Meeting," *ITWG Nuclear Forensics Update*, No. 28, September 2023, p. 1.

¹⁶⁴ *Ibid*, p. 2.

¹⁶⁵ Aubrey Newwamondo, Jeaneth Kabini, Banyana Kokwane and Rachel Lindvall, "Establishing A Nuclear Forensics Laboratory at NESCA in South Africa," *ITWG Nuclear Forensics Update*, No. 27, June 2023, pp. 4-5.

¹⁶⁶ IAEA, "Building Capacity for Nuclear Security Implementing Guide," IAEA Nuclear Security Series, No. 31-3, 2018, p. 1.

¹⁶⁷ IAEA, *Nuclear Security Plan 2022-2025*, GC(65)/24, September 15, 2021, p. 18.

¹⁶⁸ "IAEA Training Centre for Nuclear Security Opens Doors to Build Expertise in Countering Nuclear Terrorism," *IAEA Press Release*, October 3, 2023, <https://www.iaea.org/newscenter/pressreleases/iaea-training-centre-for-nuclear-security-opens-doors-to-build-expertise-in-countering-nuclear-terrorism>; "Nuclear Security Training and Demonstration Centre," IAEA, <https://www.iaea.org/about/organizational-structure/departments-of-nuclear-safety-and-security/division-of-nuclear-security/iaea-nuclear-security-training-and-demonstration-centre>.

radioactive material and facilities; detection of and response to criminal and intentional unauthorized acts; computer and information security; nuclear forensics; preparation for major public events implementing nuclear security measures; transport nuclear security.¹⁶⁹

Elena Buglova, Director of the IAEA Nuclear Security Division said, “By building this new centre, the IAEA can offer unique training activities to address existing gaps using specialized up-to-date equipment, computer-based simulation tools and advanced training methods.”¹⁷⁰

Belgium, Canada, Denmark, South Korea, Saudi Arabia, Switzerland, the United Kingdom and the United States contributed €14 million in total to the construction and development of the NSTDC.¹⁷¹

In the area of nuclear security education, the IAEA held the International School of Nuclear Security in the Vienna in August 2023. This was attended by 56 female fellows from 46 countries from the Marie Skłodowska-Curie Fellowship

Program (MSCFP), which was established by the IAEA in 2020.¹⁷²

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.¹⁷³ 75 institutions from 68 countries and 10 observers are participating in the NSSC network. 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.¹⁷⁴ To date, the following six regional and sub-regional groups have

¹⁶⁹ “Nuclear Security Training and Demonstration Centre.”

¹⁷⁰ “IAEA Training Centre for Nuclear Security Opens Doors to Build Expertise in Countering Nuclear Terrorism,” *IAEA Press Release*, October 3, 2023.

¹⁷¹ “IAEA Nuclear Security Training and Demonstration Centre Nears Completion,” IAEA, August 15, 2022, <https://www.iaea.org/newscenter/news/iaea-nuclear-security-training-and-demonstration-centre-nears-completion>.

¹⁷² The MSCFP aims to support the next generation of women leaders in the nuclear field through scholarships, internships, and training and networking opportunities. In the last three years since 2020, a total of 169 MSCFP recipients from various educational backgrounds in the field of nuclear science and technology have participated in the school. IAEA, “Marie Skłodowska-Curie Fellows Trained in Nuclear Security,” September 4, 2023, <https://www.iaea.org/newscenter/news/marie-sklodowska-curie-fellows-trained-in-nuclear-security>.

¹⁷³ 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>.

¹⁷⁴ IAEA, *Nuclear Security Review 2023*, August 2023, p. 12, Appendix C, p. 1.

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.¹⁷⁵

In February 2023, an annual meeting of NSSC Network took place in Thailand with more than 70 participants from 42 states and two observer organizations. “The aim of the event was to bring together IAEA Member States that have established or are planning to establish an NSSC, in order to facilitate information and resources sharing on key technical themes relevant to developing and operating an NSSC as well as to work individually and collaboratively among the NSSC Network Working Groups to plan activities and discuss priorities for the upcoming year.”¹⁷⁶

As for efforts for human resources development by the countries covered by this survey, China hosted the IAEA Regional Workshop and Technical Exchange on Human Resource Development for NSSCs in the Asia and the Pacific Region at State Nuclear Security Technology Center from October

30 to November 3.¹⁷⁷ In October, the JAEA/ISCN organized the Regional Training Course on the Physical Protection of Nuclear Material and Nuclear Facilities in Japan.¹⁷⁸ On human resource development, the United States stated at the March IAEA Board of Governors meeting that, “developing states’ human resources is necessary to prevent nuclear terrorism and strengthen nuclear security,” and that “diverse teams and workforces are not only important in achieving the fifth UN Sustainable Development Goals (achieve gender equality and empower all women and girls) but are essential if we are to have the necessary talent and resources to tackle complex nuclear security challenges before us.”¹⁷⁹ (phase in parentheses added by the citer)

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.¹⁸⁰

¹⁷⁵ “The Chair’s Report on the 2023 Annual Meeting of the International Network for Nuclear Security Training and Support Centres (NSSC Network),” IAEA, https://www.iaea.org/sites/default/files/23/06/chairs_report_annual_meeting_2023.pdf.

¹⁷⁶ Ibid.

¹⁷⁷ “Regional Workshop and Technical Exchange on Human Resource Development for Nuclear Security Support Centres in the Asia and the Pacific Region,” https://elesen.aelb.gov.my/ipakar/upload/20230721111938.23-02983E_Encl.pdf?p_kur_iklanDir=Asc&p_kur_iklanPageSize=5&id=1697.

¹⁷⁸ “Statement by Japan,” at the 67th IAEA General Conference, September 25, 2023.

¹⁷⁹ “U.S. Statement under Agenda Item 3,” at the IAEA BoG Meeting, March 6, 2023.

¹⁸⁰ 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

As of August 2023, the INSEN had 204 members and 13 observers from a total of 72 countries.¹⁸¹ According to the IAEA's *Nuclear Security Review 2023*, membership in INSEN increased by 11 institutions from nine states and three observer institutions in 2022.¹⁸² Among the countries covered by this survey, institutions from Brazil, Canada, France, Germany, India, Japan, Kazakhstan, the Netherlands, Pakistan, Russia, South Africa, Sweden, Turkey, the United Kingdom and the United States participated.

In recent years, “there was an increase in the number of INSEN members offering new degree programmes in nuclear security. There was also an increase in the number of members teaching courses or modules in existing programmes.”¹⁸³

As for its activity in 2023, Leadership Meeting was held in Vienna in February. “At the meeting, participants evaluated the progress of the action plan for the current year, discussed nuclear security working group activities, and prepared for the annual meeting.”¹⁸⁴

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 2023 were carried out based on the sixth plan adopted in 2021,¹⁸⁵ covering the period from 2022 to 2025.

The NSF is sustained through voluntary contributions from IAEA Member States and others. In paragraph 12 of the IAEA Nuclear Security Resolution adopted in 2023, 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

security education; and other related activities.

¹⁸¹ Andrea Rahandini, “Nuclear Security Education: IAEA Partners with Universities and Research Institutions,” *IAEA News*, August 1, 2023, <https://www.iaea.org/newscenter/news/nuclear-security-education-iaea-partners-with-universities-and-research-institutions>; IAEA, *Nuclear Security Review 2023*, August 2023, p. 12.

¹⁸² IAEA, *Nuclear Security Review 2023*, August 2023, p. 13.

¹⁸³ *Ibid*, pp. 12-13.

¹⁸⁴ *Ibid*, p. 10.

¹⁸⁵ IAEA, *Nuclear Security Plan 2022-2025: Report by the Director General*, GC(65)/24, September 15, 2021.

bilateral, regional, and international levels.”¹⁸⁶

According to the *IAEA Nuclear Security Review 2023*, in 2022, contributions or pledges to the NSF were made by 15 countries, including 12 countries subject to this survey (Canada, China, Finland, France, Germany, Japan, the Netherlands, South Korea, Russia, Switzerland, the United Kingdom, and the United States).¹⁸⁷ The total revenue for the NSF in 2022 amounted to €29 million, approximately €5 million less than the previous year, marking the lowest amount in recent years.¹⁸⁸ The NSTDC, inaugurated in October 2023, incurred construction costs exceeding €18 million, covered by contributions from 15 donors.¹⁸⁹

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.¹⁹⁰ The reason is because the IAEA “is unable to fund any of these activities with existing contributions due to the conditions placed by donors on the large majority of funds contributed to the NSF.”

On NSF, in its statement issued in April 2023, the G7-NPDG encouraged all

IAEA Member States, “who are able to do so, to make financial and/or technical contributions to enable the IAEA to continue its work in this area, in particular to assist new comer countries to access nuclear technologies while observing the highest standards of nuclear safety, security and non-proliferation.”¹⁹¹

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. Also, there are efforts by the G7 and the GICNT as a framework for multilateral cooperation on nuclear security.

UN Security Council Resolution 1540

With regard to Security Council Resolution 1540, it 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 calls for the

¹⁸⁶ IAEA, “Nuclear Security Resolution,” September 2023, p. 3, p. 5.

¹⁸⁷ IAEA, *Nuclear Security Review 2023*, p. 31.

¹⁸⁸ In 2018, 2019, 2020 and 2021, the revenue was €33 million, €38 million, €45 million, and €34 million, respectively.

¹⁸⁹ “IAEA Training Centre for Nuclear Security Opens Doors to Build Expertise in Countering Nuclear Terrorism,” *IAEA Press Release*, October 3, 2023.

¹⁹⁰ *Ibid*, pp. 32-33.

¹⁹¹ “Statement of the G7 Non-Proliferation Directors Group.”

development and maintenance of appropriate and effective measures of physical protection for that purpose.¹⁹² 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 3-6 for the status of submission of this report by the countries covered by this survey.

In 2023, two of the surveyed countries, India and Turkey, submitted the latest information to the United Nations. Regarding India, the recent activities of the Center of Excellence (COE) for the Global Centre for Nuclear Energy Partnership, which was established based on the commitment made by the Prime Minister at the 2010 Nuclear Security Summit to promote education on nuclear safety and security, were reported.¹⁹³ Turkey provided updated information on

achievements such as hosting the IPPAS mission in 2021 and the enactment of the Nuclear Regulation Law in March 2022.¹⁹⁴

IAEA International Conference on Nuclear Security (ICONS)¹⁹⁵

For ICONS, the fourth conference entitled “ICONS2024: Creating the Future” is scheduled to take place in May 2024, and the first Programme Committee Meeting was held in Vienna in March 2023 as part of the preparations for the conference.¹⁹⁶ At the Board of Governors meeting in November, IAEA Director General urged “all Member States to participate at the highest level possible.”¹⁹⁷ Regarding ICONS2024, Australia said that it “will provide an opportunity to share information and discuss best practices for ensuring nuclear security in the face of emerging threats” and it expects “the active engagement of all Members States in ICONS2024, and to an ambitious Ministerial Declaration that will inform the Agency’s future nuclear security activities.”¹⁹⁸ The United States stated that

¹⁹² UN Security Council, “Resolution 1540 (2004),” S/RES/1540 (2004), April 28, 2004.

¹⁹³ “National Submission of India,” S/AC.44/2023/2, August 8, 2023, p. 7.

¹⁹⁴ “National Submission of Türkiye,” February 8, 2023, <https://www.un.org/en/sc/1540/documents/TurkiyeReport8Feb2023.pdf>.

¹⁹⁵ ICONS has its origins in a ministerial-level meeting held in 2013 to maintain momentum for international efforts through the high-level political commitment brought about through the Nuclear Security Summit process. Subsequently, the second meeting took place in 2016, and it has been convened every four years since then. ICONS serves as a crucial platform, providing an opportunity for countries to announce their achievements and new commitments in the field of nuclear security. ICONS also allows countries to announce additional financial, human resources, and technical contributions to support these efforts.

¹⁹⁶ IAEA, *Nuclear Security Report 2023*, p. 3.

¹⁹⁷ “IAEA Director General’s Introductory Statement to the Board of Governors,” IAEA, November 22, 2023.

¹⁹⁸ “Statement by Australia on Agenda Item 4,” at IAEA BoG Meeting, September 11, 2023, Australian Embassy and Permanent Mission in Austria, https://austria.embassy.gov.au/vien/IAEASeptBoard_4.html.

ICONS2024 “is an important opportunity to collectively assess the current nuclear security landscape and collaborate to forge a better future” and urged “Member States to send ministerial-level participation and bring concrete deliverables and action plans.”¹⁹⁹

Also, in the G7-NPDG statement issued in April, it stated that the G7 countries remain committed to contributing to the success of the ICONS2024 and it “will be a significant opportunity to raise awareness and strengthen nuclear security globally.”²⁰⁰

Furthermore, the Nuclear Safety and Security Group (NSSG) which was established under the G7 Global Partnership against Proliferation of Weapons and Materials of Mass Destruction (G7GP) published a report of activities for 2023 in December.²⁰¹ The report mentioned regarding ICONS that each NSSG member states shared their priorities for the Conference and discussed promoting universalization of A/CPPNM and the ICSANT, transportation security, new technologies, cyber security, Ukraine, and new types of reactors such as small modular reactors

(SMRs). It also said that the NSSG recognizes “the importance of a successful outcome to the Conference, given the increase in the number of nuclear facilities being built, the development and expansion of nuclear science and technology for peaceful applications, and evolving advancements in technology requires more focus on strengthening the nuclear security framework to address contemporary challenges.”

Nuclear Security Summit Process²⁰²

The Nuclear Security Summit Process ended in 2016, but efforts have continued after the process ended 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.

As for the “Basket Initiative,”²⁰³ which launched at the Nuclear Security Summit Process, in which volunteer states promote initiatives through joint statements on specific themes, efforts are underway regarding the “Insider Threat

¹⁹⁹ “Statement by the U.S.-Agenda Item 8,” at the IAEA B BoG Meeting, U.S. Mission in Vienna, November 2023, <https://vienna.usmission.gov/u-s-statement-agenda-item-iaea-board-of-governors-meeting-november-2023/>.

²⁰⁰ “Statement of the G7 Non-Proliferation Directors Group.”

²⁰¹ “Japanese G7 Presidency 2023 Report Nuclear Safety and Security Group (NSSG),” Ministry of Foreign Affairs of Japan, December 1, 2023, <https://www.mofa.go.jp/mofaj/files/100593408.pdf>.

²⁰² Launched in 2010 at the initiative of US 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 US).

²⁰³ 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. “What Are INFCIRCS?” Nuclear Threat Initiative, <https://www.ntindex.org/story/what-are-nuclear-security-infcircs/>.

Mitigation (INFCIRC/908)” led by the United States. For example, the “Insider Threat Newsletter” was published in 2023. It reviews the initiatives taken in 2022 and describes future initiatives, including plans for an international symposium on insider threats to be held in Belgium in March 2024.²⁰⁴ After being invited to participate in ICONS and other events, Switzerland and Slovenia joined INFCIRC/908 in 2020, but no new countries have been confirmed to participate since then. At the IAEA Board of Governors meeting in March 2023, Norway stated that endorsing these joint statements is a concrete step by Member States to demonstrate their commitment to improve their nuclear security efforts.²⁰⁵

GICNT²⁰⁶

The GICNT is 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, South Africa, and

North Korea have participated in the GICNT. The organization appears to have temporarily suspended its activities in response to Russia’s invasion of Ukraine in February 2022, and no information is available beyond its participation in the aforementioned ITWG annual meeting.

G7

The G7’s initiatives related to nuclear security include the G7GP,²⁰⁷ the NPDG, the NSSG, and the Nuclear and Radiological Working Group (NRSWG). In 2023, Japan held the G7 Presidency. The following is a summary of their respective activities in 2023.

The NPDG issued a statement at its meeting in April and stated that the threat of nuclear terrorism remains a grave and constant concern, expressing its position on pressing challenges.²⁰⁸ While the specific details have been described in various major sections of this report, some other key points include: for example, those G7 countries “strongly encourage the consideration of safety, security, and safeguards in nascent phases of reactor and facility design so that the next generation of peaceful nuclear technology contributes to reducing

²⁰⁴ “Know Your Insiders,” Newsletter of the Advancing INFCIRC/908 “Mitigating Insider Threats” International Working Group, January 2023, http://insiderthreatmitigation.org/assets/docs/2022_IWG_Newsletter_20230131_PNNL-SA-181576.pdf.

²⁰⁵ “Statement by Norway on Nuclear Security Review 2023,” at the IAEA BoG Meeting, March 2023.

²⁰⁶ 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.

²⁰⁷ 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.

²⁰⁸ “Statement of the G7 Non-Proliferation Directors Group.”

nuclear risks.”²⁰⁹

The GP Working Group met in Nagasaki in November, with approximately 140 participants from 15 Member States, the EU and other international organizations. Discussions were held on the prevention of the proliferation of weapons of mass destruction, as well as the exchange of views on specific initiatives for this purpose.²¹⁰

As mentioned above, the NSSG published its report of activities for 2023 in December and in relation to nuclear security, mentioned about ICONS.²¹¹

The NRSWG held a meeting in Tokyo in March, with the participation of 21 countries. Discussions covered the latest information on nuclear security situation in Ukraine, the universality of the A/CPPNM, and issues related to human resource development.²¹²

²⁰⁹ Specific efforts are: 1) Incorporate the highest standards of safety, safeguards, and security by design; 2) Avoid unnecessary use and accumulation of weapons-usable nuclear materials; 3) Minimize opportunities for theft and diversion of nuclear material; and 4) Contain resilient safety mechanisms.

²¹⁰ Ministry of Foreign Affairs of Japan, “Second Meeting of the Global Partnership Working Group (Summary of Results),” November 10, 2023, https://www.mofa.go.jp/press/release/press4e_003338.html.

²¹¹ “Japanese G7 Presidency 2023 Report Nuclear Safety and Security Group (NSSG),” Ministry of Foreign Affairs of Japan, December 1, 2023, <https://www.mofa.go.jp/mofaj/files/100593408.pdf>.

²¹² “Report on the Session of the Nuclear and Radiation Security Sub-Working Group (NRSWG) of the G7 Global Partnership,” *ISCN Newsletter*, No. 317, May 2023, pp. 52-53.

Part II: Evaluation

Country-by-Country Analysis

Evaluation Points and Criteria

In this “Evaluation” part, the performances of the 36 countries surveyed in this project are evaluated numerically in three areas—that is, nuclear disarmament, non-proliferation and nuclear security—based upon study and analysis compiled in the “Report” section.

Evaluations of the four groups—nuclear-weapon states (NWS), non-parties to the Nuclear Non-Proliferation Treaty (NPT), non-nuclear-weapon states (NNWS), and one particular state (North Korea)—are

made separately because of their different characteristics. Since different sets of criteria are applied to different groups of countries, full points differ according to the group each country belongs to. Then, as a measure to visualize a comparison of the 36 countries’ relative performances, each country’s performance in each area is shown on a chart in percentage terms.

The following lists the point values and scale of measurement of each evaluation criteria.

[Full points for each group of countries]

Groups	(1) NWS	(2) Non-NPT Parties	(3) NNWS	(4) Other
Areas	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, Turkey <u>Nuclear disarmament and non-proliferation:</u> Austria, Egypt, Indonesia, New Zealand, Poland, Saudi Arabia, Syria <u>Nuclear security:</u> 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 declared its suspension from the NPT in 1993 and its withdrawal in 2003, and has conducted totally six nuclear tests in 2006, 2009, 2013, 2016 (twice) and 2017. However, there is no agreement among the states parties on North Korea’s official status under the NPT.

[Nuclear Disarmament]

Evaluation criteria	Maximum points	Scale of measurement
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~) <hr/> (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 and other initiatives having a major impact on global momentum toward a world without nuclear weapons (maximum 3 points)
C) Actions that run counter to nuclear disarmament	(-3)	Deduct 1~3 points for actions that run counter to nuclear disarmament, excluding actions evaluated under other items
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 point on each participation in joint statements and international conferences on humanitarian consequences of nuclear weapons
C) Victim assistance and environmental remediation	(2)	Add 1 point on each implementation and initiative regarding victim assistance and environmental remediation—including, 0 (against); 0.5 (abstention); 1 (in favor) for the UNGA resolution
4. Treaty on the Prohibition of Nuclear Weapons (TPNW)	10	
A) Signing and ratifying the TPNW	(7)	0 (not signing); 3 (not ratifying); 7 (ratifying) As for non-signing states, add 1 point for participating 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 for legally binding UNGA resolutions on prohibition of nuclear weapons	(2)	On each resolution: 0 (against); 0.5 (abstention); 1 (in favor)
5. Reduction of Nuclear Weapons	22	
A) Reduction of nuclear weapons	(15)	<ul style="list-style-type: none"> • 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 5 years); add 1 (engaging in nuclear weapons reduction under legally-binding frameworks such as New Strategic Arms Reduction Treaty); add 1

Evaluation criteria	Maximum points	Scale of measurement
		(announcing further reduction plan and implementing it in 2023) • 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 plans for further reduction of nuclear weapons	(3)	0 (no announcement on a plan of nuclear weapons reduction); 1 (declaring a rough plan of nuclear weapons reduction); 2 (declaring a plan on the size of nuclear weapons reduction); 3 (declaring a concrete and detailed plan of reduction) (not applicable to the NNWS)
C) Trends on strengthening/modernizing nuclear weapons capabilities	(4)	0 (modernizing/reinforcing nuclear forces in a backward move toward nuclear weapons reduction); 2 ~ 3 (modernizing/reinforcing nuclear forces which may not lead to increasing the number of nuclear weapons); 4 (not engaging in nuclear modernization/reinforcement) (not applicable to the NNWS)
6. Diminishing the Roles 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 their national security, and deduct 2 points for actions such as threats with nuclear weapons (not applicable to the NNWS)
B) Commitment to no first use, “sole purpose,” and related doctrines	(3)	0 (not adopting either policy); 2 (adopting a similar policy or expressing its will to adopt either policy in the future); 3 (already adopting either policy) Deduct 2 points for actions that violate the commitment and 1 point for words and deeds that raise doubts about the commitment (not applicable to the NNWS)
C) Negative security assurances	(2)	0 (not declaring); 1 (declaring with reservations); 2 (declaring without reservations) Deduct 2 points for actions that violate the commitment and 1 point for words and deeds that raise doubts about the 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)
E) Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	(3)	Add 0.5 point for the ratification of one protocol; a country ratifying all protocols marks 3 points (not applicable to countries except NWS)
F) Relying on extended nuclear deterrence	(-5)	(not applicable to the NWS and Non-NPT Parties) (applied solely to the 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

Evaluation criteria	Maximum points	Scale of measurement
		reduction, add another 1 point for proposals and initiatives. NNWS: 1 point for proposals and initiatives.
H) Actions that increases nuclear risk	(-3)	Deduct 3 points for actions that increases nuclear risk
7. De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	4	
De-alerting or measures for maximizing decision time to authorize the use of nuclear weapons	(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 for increasing the credibility of (lowered) alert status (not applicable to the NNWS)
8. CTBT	12	
A) Signing and ratifying the CTBT	(4)	0 (not signing); 2 (not ratifying); 4 (ratifying)
B) Moratoria on nuclear test explosions pending CTBT's entry into force	(3)	0 (not declaring); 2 (declaring); 3 (declaring and closing nuclear test sites) (not applicable to the NNWS)
C) Voting behavior on UNGA resolutions on 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 verification systems	(2)	Add 1 point for establishing and operating the IMS; add another 1 point for participating in the discussions on enhancing the CTBT verification capabilities
F) Nuclear testing	(-3)	-3 (conducting nuclear test explosions in the past 5 years); -1 (conducting nuclear tests without explosions or tests with unclear status); 0 (not conducting any nuclear tests) (not applicable to the NNWS)
9. FMCT	10	
A) Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	(4)	Add 1 (expressing a commitment); add 1~2 (actively engaging in the promotion of 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)
C) Moratoria on the production of fissile material for use in nuclear weapons	(3)	0 (not declaring); 1 (not declaring but not producing fissile material for nuclear weapons); 2 (declaring); 3 (declaring and taking measures for the cessation of 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 in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	6	

Evaluation criteria	Maximum points	Scale of measurement
Transparency in nuclear forces, fissile material for nuclear weapons, and nuclear strategy/doctrine	(6)	Add 1~2 (disclosing the nuclear strategy/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 Verifications	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 with comprehensiveness and completeness); deduct 1~2 points in case of non-compliance or problems in implementation (not applicable to the NNWS)
B) Engagement in research and development for verification measures of nuclear disarmament	(1)	0 (not engaging or no information); 1 (engaging in R&D)
C) The IAEA inspections to 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 for implementing or strengthening implementation, except in the case of already implementing (not applicable to the NNWS)
12. Irreversibility	7	
A) Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	(3)	0 (not implementing or no information); 1 (perhaps implementing but not clear); 2~3 (implementing) (not applicable to the NNWS)
B) Decommissioning/conversion of nuclear weapons-related facilities	(2)	0 (not implementing or no information); 1 (implementing in a limited way); 2 (implementing extensively) (not applicable to the NNWS)
C) Measures for fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	(2)	0 (not implementing or no information); 1 (implementing in a limited way); 2 (implementing extensively) (not applicable to the NNWS)
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 2021 but has attended at least once during the past 3 years); 1 (attending any one of the ceremonies)

[Nuclear Non-Proliferation]

Evaluation criteria	Maximum points	Scale of measurement
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)
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 in 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-

Evaluation criteria	Maximum points	Scale of measurement
		all); add 1~2 (if continuing to implement appropriate export controls); deduct 1~2 (not adequately implementing)
B) Requiring the conclusion of an 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)
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 criteria	Maximum points	Scale of measurement
1. The Amount of Weapon-Usable Nuclear Material and Possession of Relevant Facilities	-15	
A) The amount of weapon-usable nuclear material	(-13)	<ul style="list-style-type: none"> •HEU: -5 (100t or more); -4 (50t or more); -3 (10t or more); -2 (1t or more); -1 (possessing less than 1t) •Military separated Pu: -5 (50t or more); -4 (20t or more); -3 (5t 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)	<ul style="list-style-type: none"> •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 (Convention 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)

Evaluation criteria	Maximum points	Scale of measurement
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)
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 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 and above); 1(35 points or above); 0 (Less than 35 points)
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 2023 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 2023 (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 2023)
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 2023)
E) IAEA Nuclear Security Plan and Nuclear Security Fund	(2)	0 (no contribution or information); 1 (made contributions: contributions made in 2023); 2 (made active contributions: continuous contributions (*points added if contributions have been made continuously over the years even if contributions cannot be confirmed in 2023))
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

Evaluation criteria	Maximum points	Scale of measurement
4. Responding to Nuclear Security Threats Posed by States	-2	
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) Attack against nuclear facilities	(-3)	0 (none); -3 (attacked nuclear facilities)

As for the evaluation section, a set of objective evaluation criteria is established by which the respective country's performance is assessed.

The Research Committee of this project recognizes the difficulties, limitations and risk of “scoring” countries' performances. However, the Committee also considers that an indicative approach is useful to draw attention to nuclear issues, so as to prompt debates over priorities and urgency.

The different numerical values within each category (i.e., nuclear disarmament, nuclear non-proliferation and nuclear security) reflect each activity's importance within that area, as determined through deliberation by the Research Committee of this project. However, the differences in the scoring arrangements within each of the three categories do not necessarily reflect a category's relative significance in comparison with others, as they have been driven by the differing number of items surveyed. Thus, the value assigned to nuclear disarmament (maximum of 109 points) does not mean that it is more than twice as important as nuclear non-proliferation (maximum of 61 points) or nuclear security (maximum of 38 points).

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 more nuclear weapons or weapons-usable fissile material a country possesses, the greater the task of reducing them and ensuring their security. However, the Research Committee recognizes that “numbers” or “amounts” are not the sole decisive factors. It is definitely true that other factors—such as implications of missile defense, chemical and biological weapons, or conventional force imbalance and a psychological attachment to a minimum overt or covert nuclear weapon capability—would affect the issues and the process of nuclear disarmament, non-proliferation and nuclear security. However, they were not included in our criteria for evaluation because it was difficult to make objective scales of the significance of these factors. In addition, in view of the suggestions and comments made to the *Hiroshima Report 2013*, the Research Committee modified the criteria of the following items: current status of the roles and significance of nuclear weapons in national security strategies and policies; reliance on extended nuclear

deterrence; and nuclear testing.

In the end, there is no way to mathematically compare the different factors contained in the different areas of disarmament, non-proliferation and nuclear security. Therefore, the evaluation points should be taken as indicative of performances in general but by no means as an exact representation or precise assessment of different countries' performances. Since the *Hiroshima Report 2014*, such items as “relying on extended nuclear deterrence” and “nuclear testing” have been negatively graded if applicable.

Along with the adoption of the Treaty on the Prohibition of Nuclear Weapons (TPNW), its signature and ratification status was newly added to the evaluation item in the *Hiroshima Report 2018*. In addition, since the *Hiroshima Report 2019*, the Research Committee has added an evaluation item addressing whether the respective countries attended the Hiroshima or the Nagasaki Peace Memorial Ceremonies, while attendance at the Hiroshima Peace Memorial Ceremony alone had been evaluated until the *Hiroshima Report 2018*. (the maximum score in this item remains the same). Since the *Hiroshima Report 2020*, increase of the number of possessed nuclear weapons in the past five years without any reductions, and activities that are not covered by the existing evaluation items but contrary to nuclear disarmament and non-proliferation are negatively graded, if applicable. Furthermore, since the *Hiroshima Report 2021*, the Research Committee modified grading range as follows: grading range of negative

evaluation on actions against nuclear non-proliferation has been expanded; grading range on the International Atomic Energy Agency (IAEA) “Recommendations on the Physical Protection of Nuclear Material and Facilities (INFCIRC/225/Rev.5),” has been expanded and measures against insider threat and cyber threat have been positively evaluated; grading range on enactment of laws and establishment of regulations for national implementation has been expanded. In addition, not only efforts made in 2021 but also previous efforts have been evaluated.

Furthermore, in the *Hiroshima Report 2023*, the evaluation items and evaluation criteria were modified to reflect changes in the situation in light of new trends surrounding nuclear issues and the 10th NPT Review Conference (RevCon) and the TPNW First Meeting of States Parties (1MSP). The changes are described below. A comparison table with the previous year's evaluation items and criteria is also attached at the end of this report.

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

For the NWS, radar charts were produced to illustrate where each country stands with respect to different aspects of nuclear disarmament. For this purpose, the 12 issues used for nuclear

disarmament evaluation were grouped into six aspects: (1) the number of nuclear weapons, (2) reduction of nuclear weapons, (3) commitment to achieving a “world without nuclear weapons,” (4) operational policy, (5) the status of signature and ratification of, or attitudes of negotiation to 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: “Actions that run counter to nuclear disarmament,” which had been one of the evaluation criteria in “Important policy announcements and implementation of activities,” was made an independent medium-term item, with no change in grade, but with the newly specified “excluding actions evaluated under other items” as the evaluation criteria.
- Humanitarian consequences of nuclear weapons
 - ✧ What had been evaluated as a middle item in “Commitment to achieving a world without nuclear weapons” was changed to an independent major item due to the increase in evaluation items based on the treatment under the TPNW and other factors.
 - ✧ The status of efforts regarding “participation in international conferences and joint statements” and “Victim assistance and environmental remediation” were established as new sub-items.
- TPNW
 - ✧ Signature and ratification of the TPNW: Participating as observers was added to the evaluation criteria following the holding of the First Meeting of the States Parties.
 - ✧ Voting on three UNGA resolutions: split the evaluation item into one related to TPNW and one related to the other two (overall, no change in evaluation criteria)
- Diminishing the roles and significance of nuclear weapons in national security strategies and policies
 - ✧ Current status of the roles and significance of nuclear weapons: In light of the outbreak of acts of aggression under nuclear threat, in addition to the conventional reliance on nuclear weapons (points were reduced uniformly for nuclear powers), points were reduced for acts such as nuclear threats in the evaluation criteria. No change was made to the total score (point reduction) for the relevant evaluation item.
 - ✧ With regard to “no first use” and “negative security assurances,” in order to clarify that actions, etc. that differ from the declared policy have occurred, points are deducted for actions that violate the commitment or words and deeds that raise doubts about the commitment, respectively.
 - ✧ In response to the fact that assurance of safety to non-nuclear weapons States has become an important issue, “Voting for a legally binding UNGA

resolution on security assurances to non-nuclear-weapons States” was newly added as an evaluation item.

- ✧ In response to the fact that nuclear risk reduction has become an important issue, “nuclear risk reduction” was newly established as an evaluation item.
- CTBT: “Voting behaviors for a UN General Assembly resolution on the CTBT” was newly established to further clarify the situation surrounding the CTBT and the responses of countries under investigation.
- FMCT: “Voting behaviors for the UN General Assembly Resolution on an FMCT” was newly established to clarify the situation surrounding the FMCT and the responses of the countries surveyed.
- Disarmament and non-proliferation education, and cooperation with civil society: Based on the discussions at the 10th NPT Review Conference, the evaluation criteria were changed 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” (No change to the total grade).

Nuclear non-proliferation

- Compliance with nuclear non-proliferation obligations: “Actions contrary to nuclear non-proliferation,” which had been one of the evaluation

criteria for the middle item

“Compliance with NPT Articles I and II and related Security Council resolutions,” was set as an independent middle item (no change in grade).

- Cooperation with the IAEA: In light of the occurrence of actions that impeded IAEA safeguards, a point reduction was added to the evaluation item for “actions that impede the activities of the IAEA.”

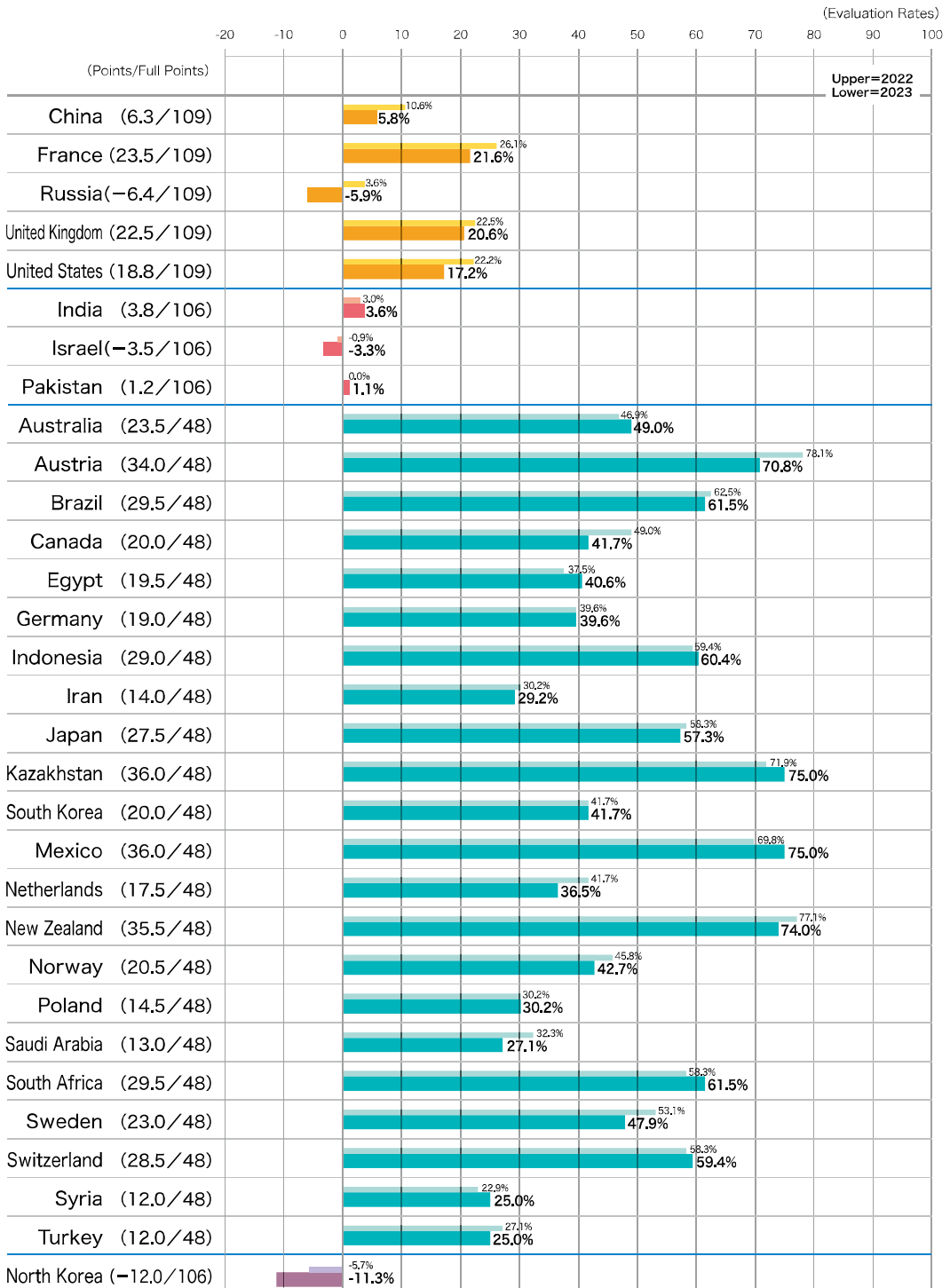
Nuclear security

- The amount of weapon-usable nuclear material
 - ✧ The base holding was revised so that the point reduction categories would be based on the current holdings of each country.
 - ✧ Plutonium classification was changed from “weapons-grade plutonium” to “military separated plutonium” and from “reactor-grade plutonium” to “non-military separated plutonium.” Because it was difficult to collect data under the old classification name, the name was changed to one that is more commonly used and more stable today.
 - ✧ The item “Possession of facilities that could cause serious radiological effects” was added. This item was added in response to recent concerns about the risk of sabotage of nuclear facilities as well as the risk of theft of nuclear materials. In addition to commercial reactors and reprocessing facilities, there are other facilities that could have radiological consequences in the event of sabotage, but two were

- selected as the main representative facilities that could have serious consequences.
- Enactment of laws and establishment of regulations for the national implementation
 - ✧ For the “IAEA Recommendations on the Physical Protection of Nuclear Material,” in order to clarify the grading criteria and from the viewpoint of objective evaluation, the evaluation method was changed to use the score of the Nuclear Security Index of the Nuclear Threat Initiative (NTI), which is the most recognized worldwide.
 - ✧ Regarding “Establishment of laws and system,” because evaluation is made focusing on the “Convention on the Physical Protection of Nuclear Material,” which is the key convention among nuclear security-related conventions, it was moved to “2-G)” immediately after “F) Convention on Assistance to Nuclear Accidents,” which is the last item in the series of conventions, rather than after the IAEA recommendation document.
 - ✧ Clarified the scoring criteria for “establishment of laws and institutions for domestic implementation.”
 - Efforts to maintain and improve the highest level of nuclear security
 - ✧ Removed “separated plutonium inventory” from “minimization of HEU and separated plutonium inventory for civilian use” (because separated plutonium inventory for civilian use is evaluated as “separated plutonium for non-military use” under “Item 1”). In addition, the evaluation criteria for this evaluation item were clarified.
 - ✧ “Prevention of illicit trafficking” was omitted due to difficulty in obtaining data for each country that would allow an objective assessment.
 - ✧ Clarified the evaluation criteria for “acceptance of international evaluation missions.”
 - ✧ Clarified the evaluation criteria for “Technology Development - Nuclear Forensics.”
 - ✧ Clarified the evaluation criteria for “Human Resource Development/ Capacity Building and Support Activities.”
 - ✧ Clarified the evaluation criteria for “IAEA Nuclear Security Plan and Nuclear Security Fund.”
 - ✧ Clarified the evaluation criteria regarding “Participation in International Initiatives,” and the international initiatives covered were revised and updated.
 - “Response to Nuclear Security Threats Posed by States” was newly added (in response to Russia’s attack against Ukraine’s nuclear facilities).

Chapter 1 Area Summary

(1) Nuclear Disarmament



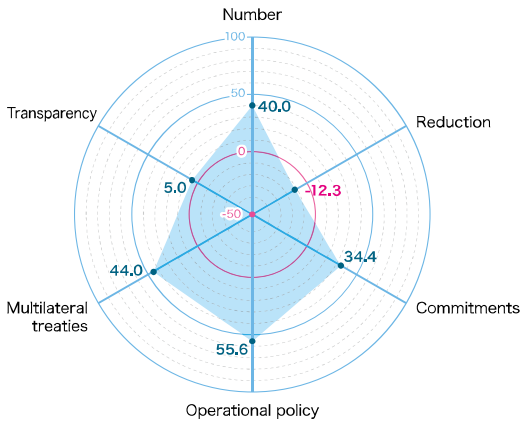
6-point Nuclear Disarmament Radar Charts

According to the following radar charts illustrating where each nuclear-weapon state stands with respect to different aspects of nuclear disarmament, China is required to improve its efforts for nuclear weapons reduction and transparency. Russia and the United States are urged to undertake further reductions of their

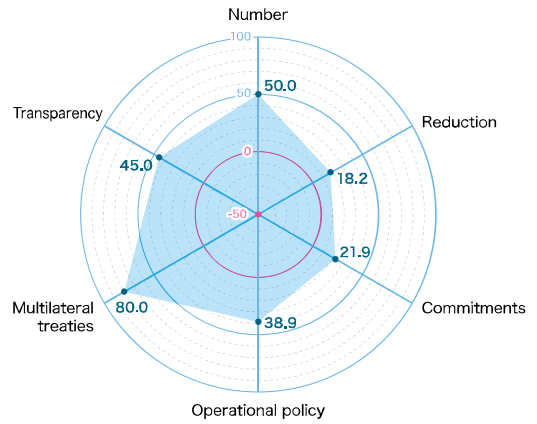
nuclear arsenals. The performances of France and the United Kingdom are relatively well-balanced, compared to the other NWS. Still, those two countries need to improve their efforts regarding reductions, commitments and operational policies.

Aspects	Issues
Number	✧ Number of nuclear weapons
Reduction	✧ Reduction of nuclear weapons
Commitments	<ul style="list-style-type: none"> ✧ 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	<ul style="list-style-type: none"> ✧ Diminishing roles and significance of nuclear weapons in the national security strategies and policies ✧ De-alerting, or measures for maximizing decision time to authorize the use of nuclear weapons
Multilateral treaties	<ul style="list-style-type: none"> ✧ Comprehensive Nuclear-Test-Ban Treaty (CTBT) ✧ Fissile Material Cut-off Treaty (FMCT)
Transparency	<ul style="list-style-type: none"> ✧ Transparency regarding nuclear forces, fissile material for nuclear weapons, and nuclear strategy/doctrine ✧ Verification ✧ Irreversibility

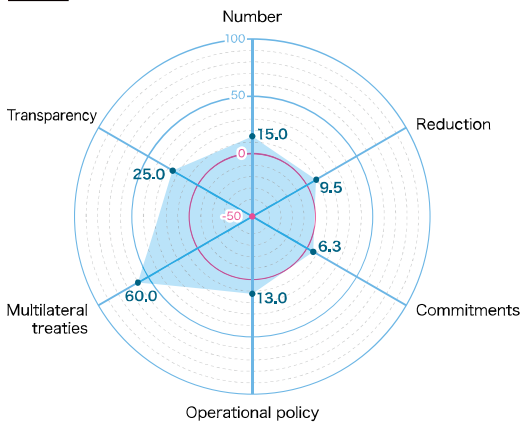
 **China**



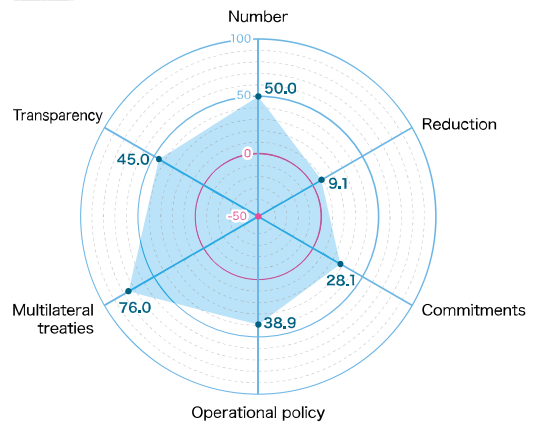
 **France**



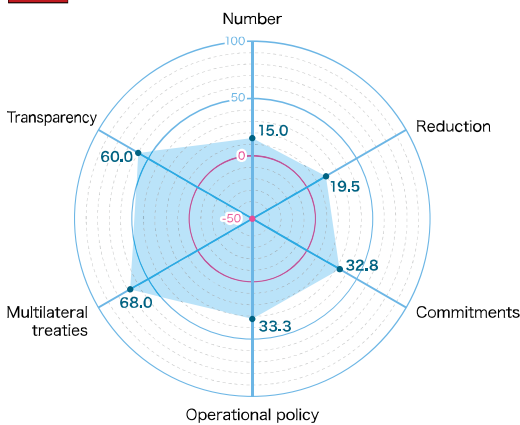
 **Russia**



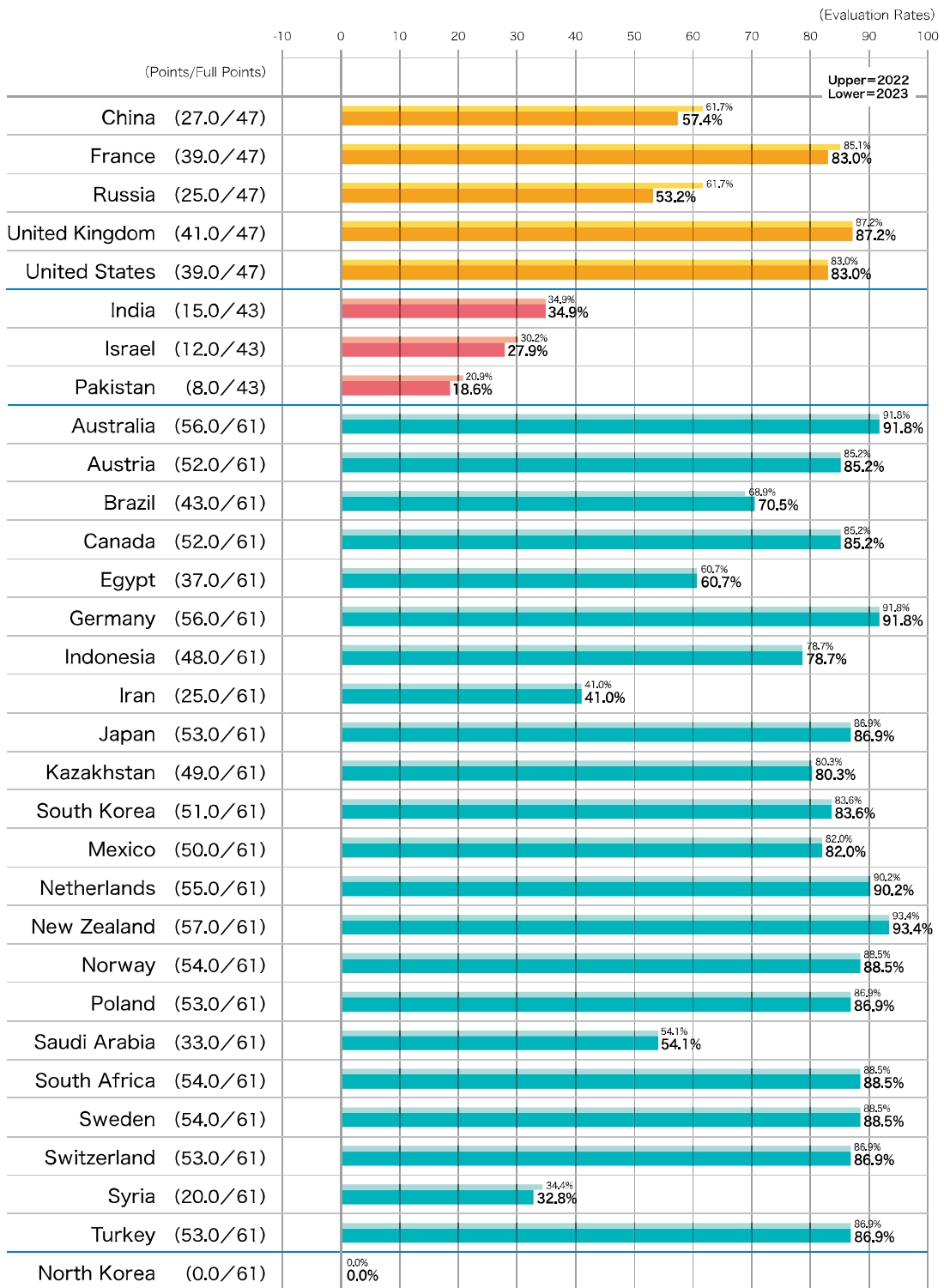
 **United Kingdom**



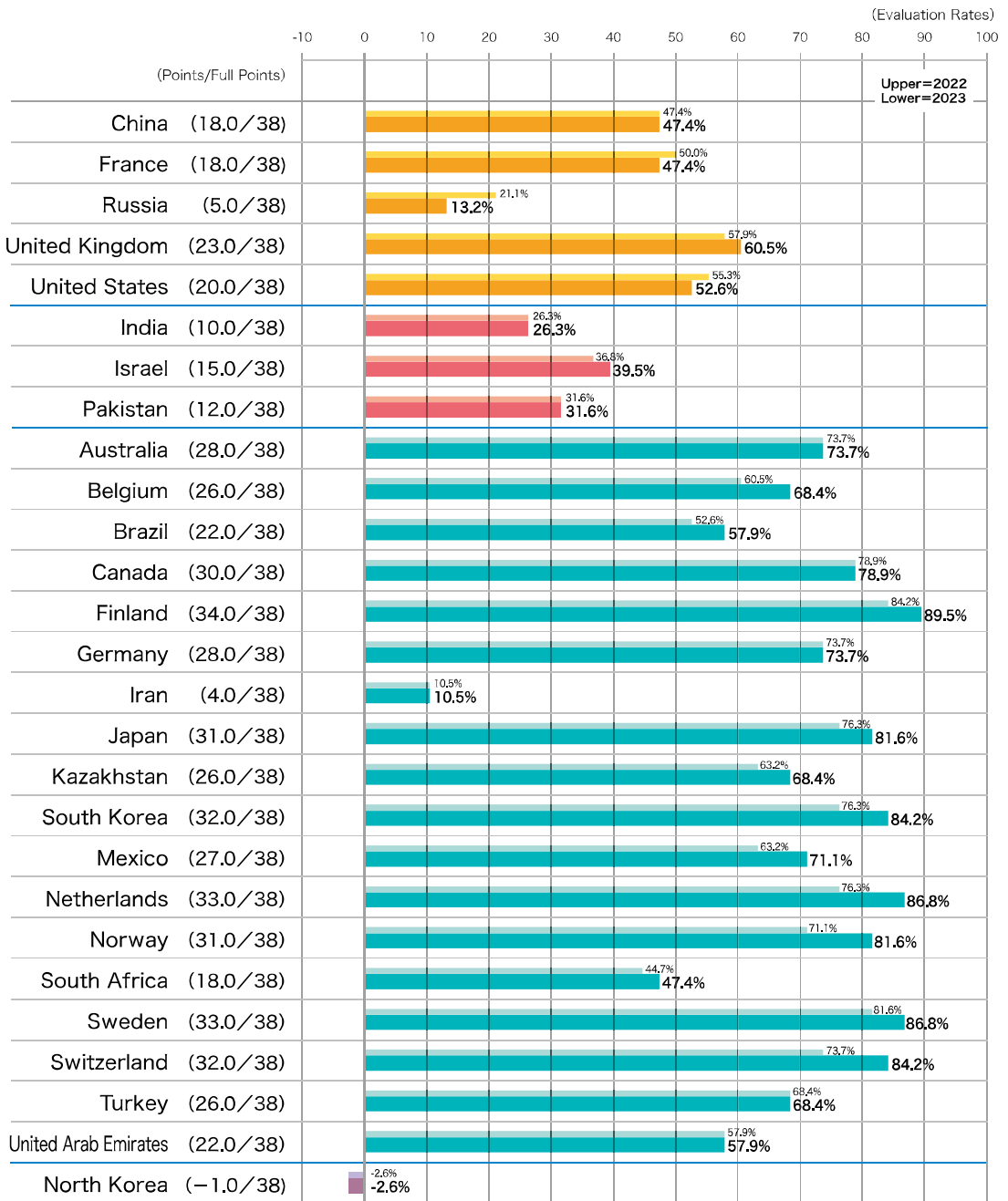
 **United States**



(2) Nuclear Non-Proliferation



(3) Nuclear Security



Chapter 2

Country-by-Country Summary

(1) Nuclear-Weapon States

1. China ■ Nuclear-Weapon State

Nuclear Disarmament	6.3 Points	Full Points 109	5.8%
	Change compared to the <i>Hiroshima Report 2023</i> -5.2		
<p>China is the only NWS that has not implemented substantial nuclear disarmament measures, and insists that its participation in the nuclear weapons reduction process is premature. It voted against the UN General Assembly (UNGA) resolution on nuclear disarmament proposed by Japan. It has promoted active modernization programs for its nuclear forces (particularly, ICBMs and SLBMs). It is estimated to possess 410 nuclear warheads, and the pace of increase has been accelerating. It has been speculated that China would possess more than 1,000 operational nuclear weapons in the next decade. China has not signed the TPNW. It has not yet ratified the CTBT. It voted against the UNGA resolution on an FMCT. The country has not declared a moratorium on production of fissile material for nuclear weapons, and concerns have been raised about the possibility of civilian nuclear facilities being used for nuclear weapons purposes. It has declared no first use of nuclear weapons and the unconditional negative security assurance; however, there are also concerns that it is increasing the role of nuclear weapons in national security, including through changes in such policies. While arguing the importance of transparency in intention, China has maintained the least transparency about nuclear weapon capabilities among the NWS.</p>			
Nuclear Non-Proliferation	27 Points	Full Points 47	57.4%
	Change compared to the <i>Hiroshima Report 2023</i> -2		
<p>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 AUKUS. The country repeatedly defended North Korea's nuclear and missile activities at the United Nations Security Council (UNSC). Although China has stated that it has been engaged in the implementation of sanction measures vis-à-vis North Korea under the UNSCRs, violations on sanction measures also have been pointed out. 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.</p>			
Nuclear Security	18 Points	Full Points 38	47.4%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>China has ratified all nuclear security-related conventions; and has established a national implementation system for A/CPPNM. It is promoting capacity building through increased investment in nuclear security-related innovations. 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.</p>			

2. France ■Nuclear-Weapon State

Nuclear Disarmament	23.5 Points	Full Points 109	21.6%
	Change compared to the <i>Hiroshima Report 2023</i> -5		
<p>France has announced its maximum number of nuclear warheads as 300, and has reduced its overall nuclear forces. It has converted fissile material excess for military purposes to civilian use, which has been placed under international safeguards. France also emphasized that a step-by-step approach to nuclear disarmament based on the “strategic context” is necessary. It voted against most of the UNGA Resolutions regarding nuclear disarmament, and abstained from voting on the resolution proposed by Japan. It has not signed the TPNW. It has ratified the CTBT and agrees on the early conclusion of negotiations on an FMCT. France participates in the IPNDV.</p>			
Nuclear Non-Proliferation	39 Points	Full Points 47	83%
	Change compared to the <i>Hiroshima Report 2023</i> -1		
<p>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.</p>			
Nuclear Security	18 Points	Full Points 38	47.4%
	Change compared to the <i>Hiroshima Report 2023</i> -1		
<p>France has ratified all nuclear security-related conventions and has established a national implementation system for A/CPPNM. It hosted an IPPAS mission in 2018. Its civilian plutonium stockpile has continued to increase. France participates in nearly all INFCIRC initiatives and continues to contribute to the NSF. There is room for improvement in enhancing measures against insider threats and for cybersecurity as well as in enhancing nuclear security culture.</p>			

3. Russia ■Nuclear-Weapon State

Nuclear Disarmament	-6.4 Points	Full Points 109	-5.9%
	Change compared to the <i>Hiroshima Report 2023</i> -10.3		
<p>Russia continued its invasion of Ukraine and repeated nuclear intimidations. It also started to deploy nuclear weapons to Belarus. It is estimated to possess approximately 5,900 nuclear warheads, and has actively modernized ICBMs. The development of hypersonic boost-glide weapons as well as nuclear-powered torpedoes is also closely monitored. Russia announced a suspension on implementing the New START and declined to allow on-site inspections and sharing data. In the meantime, it asserted its commitment to adhering to the treaty’s quantitative limits. It also insists that further progress on nuclear disarmament requires the Western countries to abandon their hostile policies toward Russia. Russia decided to revoke its ratification of the CTBT. At the same time, it argued that as long as the United States does not conduct nuclear explosion tests, it would not do so either. It voted against most of the UNGA Resolutions regarding nuclear disarmament, including the resolutions on nuclear disarmament proposed by Japan and on an FMCT. It has not signed the TPNW.</p>			
Nuclear Non-Proliferation	25 Points	Full Points 47	53.2%
	Change compared to the <i>Hiroshima Report 2023</i> -4		
<p>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 UN Security Council. In addition, it appears to have procured arms and ammunition, including missiles from North Korea, an obvious violation of the UNSC resolution.</p>			

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	5 Points	Full Points 38	13.2%
	Change compared to the <i>Hiroshima Report 2023</i> -3		
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. Russia has never used the IPPAS mission. It continues to contribute to the NSF. Russia has continued to attack and occupy nuclear power plants in Ukraine. There is room for improvement in enhancing measures against insider threats and for cybersecurity.			

4. The United Kingdom ■ Nuclear-Weapon State

Nuclear Disarmament	22.5 Points	Full Points 109	20.6%
	Change compared to the <i>Hiroshima Report 2023</i> -2		
The U.K. maintained its nuclear policies formulated in 2021 to increase the limit on the number of the overall nuclear weapons stockpile it possesses to no more than 260, and to impose certain restrictions on transparency. Meanwhile, the U.K. maintained to construct a new class of four SSBNs, as replacement for the existing Vanguard-class vessels. However, the delay of the construction due to technical problems and the cost overruns are pointed out. It has not signed the TPNW. It has ratified the CTBT and agrees on early conclusion of negotiations on an FMCT. Meanwhile, the U.K. has engaged in joint work to develop nuclear disarmament verification measures with the U.S. and Norway, respectively, and participates in the IPNDV. NWS. It 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 <i>Hiroshima Report 2023</i> 0		
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 submitted a report based on the Guidelines for the Management of Plutonium to the IAEA. 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.			
Nuclear Security	23 Points	Full Points 38	60.5%
	Change compared to the <i>Hiroshima Report 2023</i> 1		
The U.K. has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. It hosted an IPPAS mission in 2016 and announced in 2022 a plan to host a new one. Its civilian plutonium stockpile has continued to increase slightly. Insider threat and cyber security measures have been taken and efforts are the most advanced in the world and among all nuclear-weapon states. 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	18.8 Points	Full Points 109	17.2%
	Change compared to the <i>Hiroshima Report 2023</i> -5.4		
<p>The U.S. is estimated to possess approximately 5,200 nuclear warheads, the second largest NWS next to Russia, and continues to reduce the number. In response to the suspension on implementing the New START by Russia, the U.S. launched a countermeasure. The country has called for arms control dialogue with Russia and China, but has not yet achieved concrete results. The U.S. has not signed the TPNW. Its plans to modernize nuclear forces would continue and the deployment of SLBMs with low-yield nuclear warheads would be maintained. The U.S. stated that it would not adopt policies such as no first use of nuclear weapons or the sole purpose of nuclear weapons. While the U.S. has not ratified the CTBT, it expressed its intention to make efforts toward a treaty's entry into force. It remains the one of the most transparent NWS on nuclear issues. It has established and led the "International Partnership for Nuclear Disarmament Verification (IPNDV)." It voted in favor of the UNGA resolution on nuclear disarmament proposed by Japan.</p>			
Nuclear Non-Proliferation	39 Points	Full Points 47	83%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>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. 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 the efforts to bolster nuclear non-proliferation, including contributions to the IAEA safeguards systems and implementation of stringent export controls. It acceded to the IAEA Additional Protocol with the provision for complementary access visits. The U.S. submitted a report based on the Guidelines for the Management of Plutonium to the IAEA. 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.</p>			
Nuclear Security	20 Points	Full Points 38	52.6%
	Change compared to the <i>Hiroshima Report 2023</i> -1		
<p>The U.S. has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. It has made efforts to strengthen measures against insider threat and cyber threat. The U.S. received an IPPAS mission in 2013. It is vigorously supporting other countries' HEU minimization efforts. The U.S. participates in all INFCIRC initiatives and continues to contribute to the NSF. The U.S. is keen to address insider threats and cybersecurity measures.</p>			

(2) Non-Parties to the NPT**6. India ■Non-Party to the NPT**

Nuclear Disarmament	3.8 Points	Full Points 106	3.6%
	Change compared to the <i>Hiroshima Report 2023</i> 0.6		
India is estimated to possess approximately 164 nuclear warheads and continues to increase its numbers incrementally. It also continues to actively develop various types of nuclear delivery vehicles. India has not signed the TPNW. India maintains a moratorium on nuclear test explosions, but refuses to sign the CTBT, and abstained the UNGA Resolution calling for the treaty's earlier entry into force. India maintains its NFU policy despite reserving an option of nuclear retaliation vis-à-vis a major biological or chemical attack against it.			
Nuclear Non-Proliferation	15 Points	Full Points 43	34.9%
	Change compared to the <i>Hiroshima Report 2023</i> 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. Actual nuclear cooperation with India by the NPT states parties has not necessarily been conducted, except India's import of uranium.			
Nuclear Security	10 Points	Full Points 38	26.3%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
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 A/CPPNM. Its separated plutonium for military use has continued to slightly increase. India has never utilized an IPPAS mission. Efforts to prevent the illicit trafficking of nuclear materials and to strengthen cyber security measures will continue to receive attention. In 1988, an agreement was concluded with Pakistan prohibiting attacks against nuclear facilities. There is room for improvement in enhancing measures against insider threats.			

7. Israel ■Non-Party to the NPT

Nuclear Disarmament	-3.5 Points	Full Points 106	-3.3%
	Change compared to the <i>Hiroshima Report 2023</i> -2.5		
Israel has consistently pursued the policy of "nuclear opacity" while being estimated to possess approximately 90 nuclear warheads. Due to such a policy, its nuclear capabilities and posture remain unclear. Israel has developed and deployed IRBMs and SLCMs which can load nuclear warheads. Israel has yet to ratify the CTBT. It does not declare a moratorium on production of fissile material for nuclear weapons, and abstained the UNGA resolution on an FMCT. It also voted against most of the UNGA resolutions regarding nuclear disarmament. Israel has not signed the TPNW. One of the far-right cabinet ministers made a comment suggesting the possibility of a nuclear attack on the Gaza Strip.			
Nuclear Non-Proliferation	12 Points	Full Points 43	27.9%
	Change compared to the <i>Hiroshima Report 2023</i> -1		
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.			

Nuclear Security	15 Points	Full Points 38	39.5%
	Change compared to the <i>Hiroshima Report 2023</i> 1		
<p>Israel has not ratified multiple nuclear security-related conventions, but has established national implementation system for A/CPPNM. Israel has never utilized IPPAS missions. It has actively participated in multilateral initiatives. There is room for improvement in disseminating information on nuclear security efforts.</p>			

8. Pakistan ■Non-Party to the NPT

Nuclear Disarmament	1.2 Points	Full Points 106	1.1%
	Change compared to the <i>Hiroshima Report 2023</i> 1.2		
<p>Pakistan continues to increase its nuclear arsenal incrementally, and is estimated to possess 170 nuclear warheads. It continues to develop and to deploy short- and medium-range ballistic missiles. Pakistan has not signed the TPNW. While maintaining a moratorium on nuclear test explosions, it refuses to sign the CTBT. Pakistan continues to block the commencement of negotiations on an FMCT at the CD, and voted against the UNGA resolution calling for immediate commencement of FMCT negotiations. It has yet to declare a moratorium on production of fissile material for nuclear weapons.</p>			
Nuclear Non-Proliferation	8 Points	Full Points 43	18.6%
	Change compared to the <i>Hiroshima Report 2023</i> -1		
<p>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.</p>			
Nuclear Security	12 Points	Full Points 38	31.6%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>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 A/CPPNM. Its military use HEU holdings has increased. Pakistan has never utilized an IPPAS mission service. The country is actively engaged in human resource development. In 1988, an agreement was concluded with India prohibiting attacks against nuclear facilities. There is room for improvement in enhancing measures against insider threats and for cybersecurity.</p>			

(3) Non-Nuclear-Weapon States

9. Australia ■ Non-Nuclear-Weapon State

Nuclear Disarmament	23.5 Points	Full Points 48	49%
	Change compared to the <i>Hiroshima Report 2023</i> 1		
Australia advocates the “progressive approach” toward a world without nuclear weapons through incremental, practical measures. While Australia has not signed the TPNW, Australia participated as an observer in the Second Meeting of the States Parties to the TPNW (2MSP) following the previous meeting. Australia has increased its reliance on extended (nuclear) deterrence. Australia participated in the IPNDV. It has actively engaged in the promotion for entry into force of the CTBT. The country co-hosted a Commemorative High-Level Event on an FMCT. It has proactively engaged in cooperation with civil society and gender mainstreaming.			
Nuclear Non-Proliferation	56 Points	Full Points 61	91.8%
	Change compared to the <i>Hiroshima Report 2023</i> 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	28 Points	Full Points 38	73.7%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
Australia has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. It hosted an IPPAS mission in 2017. Australia is one of the few countries that have made some of the IPPAS mission reports publicly available. It hasn't make contributions to NSF recent years. Australia participates in almost all INFCIRC initiatives. Australia has been ahead in cybersecurity measures.			

10. Austria ■ Non-Nuclear-Weapon State

Nuclear Disarmament	34 Points	Full Points 48	70.8%
	Change compared to the <i>Hiroshima Report 2023</i> -3.5		
Austria is a state party to the TPNW and has consistently led the way in the legal prohibition of nuclear weapons, including serving as a chair country of the 1MSP. It has also taken a leading role in the humanitarian impacts of nuclear weapons. Austria argues that nuclear weapons undermine common security. It has proactively engaged in cooperation with civil society and gender mainstreaming.			
Nuclear Non-Proliferation	52 Points	Full Points 61	85.2%
	Change compared to the <i>Hiroshima Report 2023</i> 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	26 Points	Full Points 38	68.4%
	Change compared to the <i>Hiroshima Report 2023</i> 3		
<p>Belgium ratified all nuclear security-related conventions; established a national implementation system for A/CPPNM. Belgium has hosted an IPPAS mission in 2019. Belgium continues to take initiative to strengthen international efforts on insider threat, but there is room for improvement in the areas of domestic efforts and cybersecurity measures. Belgium is the most advanced country in efforts to foster nuclear security culture. It contributed to NSF in 2021.</p>			

12. Brazil ■Non-Nuclear-Weapon State

Nuclear Disarmament	29.5 Points	Full Points 48	61.5%
	Change compared to the <i>Hiroshima Report 2023</i> -0.5		
<p>Brazil has played a leading role in adopting the TPNW, which it has signed. It participated in the 2MSP as an observer. It voted for most of the UNGA Resolutions regarding nuclear disarmament. It has ratified the CTBT. Brazil participates in the IPNDV.</p>			
Nuclear Non-Proliferation	43 Points	Full Points 61	70.5%
	Change compared to the <i>Hiroshima Report 2023</i> 1		
<p>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.</p>			
Nuclear Security	22 Points	Full Points 38	57.9%
	Change compared to the <i>Hiroshima Report 2023</i> 2		
<p>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 has never used IPPAS mission service. There is room for improvement in participation in multilateral efforts. There is room for improvement in enhancing measures against insider threats and for cybersecurity.</p>			

13. Canada ■Non-Nuclear-Weapon State

Nuclear Disarmament	20 Points	Full Points 48	41.7%
	Change compared to the <i>Hiroshima Report 2023</i> -3.5		
<p>Canada advocates the “progressive approach” toward a world without nuclear weapons through implementing practical measures. It has not signed the TPNW. Canada has engaged in promoting the CTBT’s entry into force, developing its verification systems, and commencing to negotiate an FMCT. Canada has also undertaken active cooperation with civil society and gender mainstreaming. Canada participated in the IPNDV.</p>			
Nuclear Non-Proliferation	52 Points	Full Points 61	85.2%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>Canada acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. It undertakes proactive efforts for nuclear non-proliferation, including the appropriate implementation of export controls. Canada exported uranium to India, as part of their civil nuclear cooperation.</p>			

Nuclear Security	30 Points	Full Points 38	78.9%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>Canada has ratified all nuclear security-related conventions and established a national implementation system for the A/CPPNM. In addition to strengthening national laws and cybersecurity regulations, it is also actively involved in fostering a nuclear security culture. Canada hosted an IPPAS mission in 2015 and is one of the few countries that have made part of the IPPAS mission report publicly available. Canada participates in almost all INFCIRC initiatives and is a continuous contributor to the NSF.</p>			

14. Egypt ■Non-Nuclear-Weapon State

Nuclear Disarmament	19.5 Points	Full Points 48	40.6%
	Change compared to the <i>Hiroshima Report 2023</i> 1.5		
<p>Egypt voted for most of the UNGA Resolutions regarding nuclear disarmament, and has expressed approval regarding issues on the humanitarian dimensions and legal prohibition of nuclear weapons. While it has not yet signed the TPNW, it participated as an observer in the 2MSP. Egypt has not been actively engaged in promotion of nuclear disarmament. It has not ratified the CTBT. It also abstained the UNGA resolution on an FMCT.</p>			
Nuclear Non-Proliferation	37 Points	Full Points 61	60.7%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>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.</p>			

15. Finland ■Non-Nuclear-Weapon State

Nuclear Security	34 Points	Full Points 38	89.5%
	Change compared to the <i>Hiroshima Report 2023</i> 2		
<p>Finland has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. They have hosted an IPPAS mission in 2022 and 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 2025. Finland is ahead in cybersecurity measures.</p>			

16. Germany ■Non-Nuclear-Weapon State

Nuclear Disarmament	19 Points	Full Points 48	39.6%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>While Germany has proactively engaged in nuclear disarmament, it was against, or abstained, in voting on the other UNGA Resolutions related to the humanitarian dimensions as well as legal prohibition of nuclear weapons. Germany has not signed the TPNW, but Germany participated as an observer in the 2MSP following the previous meeting. It advocates the “progressive approach” toward a world without nuclear weapons through incremental, practical measures. Germany, which has increased reliance on extended (nuclear) deterrence, is hosting U.S. non-strategic nuclear weapons as part of NATO’s nuclear sharing policy. It has ratified the CTBT and advocated immediate commencement of negotiation of an FMCT. It participated in the IPNDV.</p>			

Nuclear Non-Proliferation	56 Points	Full Points 61	91.8%
	Change compared to the <i>Hiroshima Report 2023</i> 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	28 Points	Full Points 38	73.7%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
Germany has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. They have hosted an IPPAS mission in 2017. Germany is ahead in cybersecurity measures. It participates in a number of INFCIRC initiatives and continues to contribute to the NSF.			

17. Indonesia ■Non-Nuclear-Weapon State

Nuclear Disarmament	29 Points	Full Points 48	60.4%
	Change compared to the <i>Hiroshima Report 2023</i> 0.5		
Indonesia has actively advocated promotion of nuclear disarmament at various nuclear disarmament fora, including the OEWG and the UNGA. It voted for most of the UNGA Resolutions regarding nuclear disarmament. Indonesia signed the TPNW, but has not ratified it. The country participated as an observer in the 2MSP. It has ratified the CTBT. It participated in the IPNDV.			
Nuclear Non-Proliferation	48 Points	Full Points 61	78.7%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
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. On export controls, however, Indonesia has yet to prepare a list of dual-use items and technologies, or to implement catch-all control.			

18. Iran ■Non-Nuclear-Weapon State

Nuclear Disarmament	14 Points	Full Points 48	29.2%
	Change compared to the <i>Hiroshima Report 2023</i> -0.5		
Iran voted for most of the UNGA Resolutions regarding nuclear disarmament, including the UNGA resolution titled “Taking forward multilateral nuclear disarmament negotiations,” and other UNGA Resolutions related to the humanitarian dimensions as well as legal prohibition of nuclear weapons. However, it has not actively engaged in promotion of nuclear disarmament. Iran has neither ratified the CTBT nor signed the TPNW. It was against the UNGA resolutions on nuclear disarmament proposed by Japan and on an FMCT. It has been strengthening its relations with Russia continuing its invasion of Ukraine.			
Nuclear Non-Proliferation	25 Points	Full Points 61	41%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
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. 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. It has refused to accept IAEA inspectors from the U.S. and some European countries. Iran has reportedly been engaged in illegal procurement activities of nuclear-related materials, equipment, and technology.			
Nuclear Security	4 Points	Full Points 38	10.5%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
Iran is not a party to several nuclear security-related conventions, and there is room for improvement. Although Iran should have completed the domestic procedures for ratification of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste, it appears that the Convention was not ratified in 2023. Iran continued to produce HEU for civilian use and increased its holdings. Iran received an IPPAS mission in 2004. There is room for improvement in disseminating information on nuclear security efforts.			

19. Japan ■ Non-Nuclear-Weapon State

Nuclear Disarmament	27.5 Points	Full Points 48	57.3%
	Change compared to the <i>Hiroshima Report 2023</i> -0.5		
Japan advocates the “progressive approach” toward a world without nuclear weapons, through incremental practical measures. At the G7 Hiroshima Summit, as a host country, Japan led the adoption of the “G7 Leader’s Hiroshima Vision on Nuclear Disarmament.” It has not signed the TPNW. It has increased reliance on extended (nuclear) deterrence. Japan has proactively engaged in nuclear disarmament, including promoting entry into force of the CTBT, co-hosting a Commemorative High-Level Event on an FMCT, improving transparency regarding nuclear weapons, and undertaking disarmament and non-proliferation education as well as cooperation with civil society. The first phase of the “Youth Leader Fund for a World Without Nuclear Weapons,” funded by Japan, was launched. Japan participated in the IPNDV.			
Nuclear Non-Proliferation	53 Points	Full Points 61	86.9%
	Change compared to the <i>Hiroshima Report 2023</i> 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	31 Points	Full Points 38	81.6%
	Change compared to the <i>Hiroshima Report 2023</i> 2		
Japan ratified all nuclear security related conventions and established a national implementation system for A/CPPNM. Japan is working on minimizing HEU and fostering a nuclear security culture. It has accepted an IPPAS follow-up mission in 2018 and is preparing to receive an IPPAS mission in 2024. Japan is one of the few countries that have made part of the IPPAS mission report publicly available. It participates in a number of INFCIRC initiatives and continues to contribute to the NSF. Japan has been making efforts to strengthening cybersecurity measures.			

20. Kazakhstan ■ Non-Nuclear-Weapon State

Nuclear Disarmament	36 Points	Full Points 48	75%
	Change compared to the <i>Hiroshima Report 2023</i> 1.5		
Kazakhstan has actively advocated for the importance of the CTBT. It voted for the UNGA Resolutions regarding nuclear disarmament, and has expressed approval of issues regarding the humanitarian dimensions and legal prohibition of nuclear weapons. It is a state party to the TPNW, and proactively addresses promotion of victim assistance and environmental remediation.			

Kazakhstan participates in the IPNDV.			
Nuclear Non-Proliferation	49 Points	Full Points 61	80.3%
	Change compared to the <i>Hiroshima Report 2023</i> 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	26 Points	Full Points 38	68.4%
	Change compared to the <i>Hiroshima Report 2023</i> 2		
Kazakhstan has ratified all nuclear security-related conventions and established a national implementation system for 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. No clear position statement on the prohibition of attacks against nuclear facilities could be confirmed.			

21. South Korea ■Non-Nuclear-Weapon State

Nuclear Disarmament	20 Points	Full Points 48	41.7%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
South Korea advocates the “progressive approach” toward a world without nuclear weapons, through incremental practical measures. It has not signed the TPNW. It has increased reliance on extended (nuclear) deterrence. It has ratified the CTBT and advocated immediate commencement of negotiation of an FMCT. South Korea has engaged in promoting the CTBT’s entry into force, and developing its verification systems. It participates in the IPNDV. It also actively advocates nuclear disarmament and non-proliferation education.			
Nuclear Non-Proliferation	51 Points	Full Points 61	83.6%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
South Korea acceded to the IAEA Additional Protocol, and has applied the integrated safeguards. An appropriate export controls has also been implemented. With North Korea’s rapid development of nuclear weapons and missiles, South Korea occasionally implied an interest in acquiring nuclear weapons. Still, the country has stated that it has no intension of doing so.			
Nuclear Security	32 Points	Full Points 38	84.2%
	Change compared to the <i>Hiroshima Report 2023</i> 3		
South Korea has ratified all nuclear security-related conventions and established a national implementation system for 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 is one of the few countries that has taken cyber security measures and is one of the most advanced in its efforts. There is room for enhancing nuclear security culture.			

22. Mexico ■Non-Nuclear-Weapon State

Nuclear Disarmament	36 Points	Full Points 48	75%
	Change compared to the <i>Hiroshima Report 2023</i> 2.5		
Mexico has played a leading role in promoting the discussion on the humanitarian dimensions of nuclear weapons, as well as adopting and developing the TPNW to which it is a state party. Mexico also participates in the IPNDV. It has also engaged actively in gender mainstreaming.			
Nuclear Non-Proliferation	50 Points	Full Points 61	82%
	Change compared to the <i>Hiroshima Report 2023</i> 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	27 Points	Full Points 38	71.1%
	Change compared to the <i>Hiroshima Report 2023</i> 3		
Mexico has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. It hosted an IPPAS mission (follow-up mission) in 2006 and has participated in many INFCIRC initiatives. There is room for improvement in enhancing measures against insider threats and for cybersecurity.			

23. The Netherlands ■ Non-Nuclear-Weapon State

Nuclear Disarmament	17.5 Points	Full Points 48	36.5%
	Change compared to the <i>Hiroshima Report 2023</i> -2.5		
The Netherlands advocates the “progressive approach” toward a world without nuclear weapons, through incremental practical measures. It has not signed the TPNW. It has ratified the CTBT and advocated immediate commencement of negotiation of an FMCT. It is hosting U.S. non-strategic nuclear weapons as part of NATO’s nuclear sharing policy. The Netherlands participated in the IPNDV.			
Nuclear Non-Proliferation	55 Points	Full Points 61	90.2%
	Change compared to the <i>Hiroshima Report 2023</i> 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	33 Points	Full Points 38	86.8%
	Change compared to the <i>Hiroshima Report 2023</i> 4		
The Netherlands has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. It received its 5th IPPAS mission in 2023 and is one of the few countries that have made part of the IPPAS mission report publicly available. The Netherlands participates in many INFCIRC initiatives and continues to contribute to the NSF. It is ahead in cybersecurity measures but there is room for improvement for insider threat measures.			

24. New Zealand ■ Non-Nuclear-Weapon State

Nuclear Disarmament	35.5 Points	Full Points 48	74%
	Change compared to the <i>Hiroshima Report 2023</i> -1.5		
New Zealand was actively involved in adopting the TPNW, and is a state party to it. It has played a leading role in promoting the discussion on the humanitarian dimensions of nuclear weapons. It has also proactively advocated promotion of nuclear disarmament at various fora, including the UN General Assembly. It has engaged in promoting the CTBT’s entry into force, and developing its verification systems. It is one of the members of the “De-alerting Group,” which actively proposes that alert levels be reduced.			
Nuclear Non-Proliferation	57 Points	Full Points 61	93.4%
	Change compared to the <i>Hiroshima Report 2023</i> 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 <i>Hiroshima Report 2023</i> -1.5		
Norway advocates the “progressive approach” toward a world without nuclear weapons, through incremental practical measures. Norway has increased reliance on extended (nuclear) deterrence. It has not signed the TPNW, but it participated as an observer in the 2MSP. It has also engaged actively in gender mainstreaming. It has ratified the CTBT and advocated immediate commencement of negotiation of an FMCT. Norway participates in the IPNDV.			
Nuclear Non-Proliferation	54 Points	Full Points 61	88.5%
	Change compared to the <i>Hiroshima Report 2023</i> 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	31 Points	Full Points 38	81.6%
	Change compared to the <i>Hiroshima Report 2023</i> 4		
Norway has ratified all nuclear security-related conventions and established a domestic implementation system for A/CPPNM. They continue to work with the United States to minimize the use of HEU. Norway hosted an IPPAS mission in 2015, participates in almost all INFCIRC initiatives and continues to contribute to the NSF. There is room for improvement in enhancing measures against insider threat and for cybersecurity.			

26. Poland ■Non-Nuclear-Weapon State

Nuclear Disarmament	14.5 Points	Full Points 48	30.2%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
Poland maintains a cautious stance on legally banning nuclear weapons. It has not signed the TPNW. Along with the other U.S. allies, it advocates the “progressive approach” toward a world without nuclear weapons, through incremental practical measures. It has increased reliance on extended (nuclear) deterrence, and expressed interest in participating in nuclear sharing. It has ratified the CTBT. Poland participates in the IPNDV.			
Nuclear Non-Proliferation	53 Points	Full Points 61	86.9%
	Change compared to the <i>Hiroshima Report 2023</i> 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	13 Points	Full Points 48	27.1%
	Change compared to the <i>Hiroshima Report 2023</i> -2.5		
Saudi Arabia voted for most of the UNGA Resolutions regarding nuclear disarmament related to the humanitarian dimensions as well as legal prohibition of nuclear weapons. However, it is hardly active in promoting nuclear disarmament and has not signed the TPNW or the CTBT. Saudi Arabia abstained from both the respective UNGA resolutions on the CTBT and an FMCT.			
Nuclear Non-Proliferation	33 Points	Full Points 61	54.1%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
Saudi Arabia stated that its first research reactor is nearing completion and that it has decided to abandon the Small Quantity Protocol (SQP) and fully implement 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. It has occasionally suggested that if Iran acquires nuclear weapons, Saudi Arabia would do so as well.

28. South Africa ■Non-Nuclear-Weapon State

Nuclear Disarmament	29.5 Points	Full Points 48	61.5%
	Change compared to the <i>Hiroshima Report 2023</i> 1.5		
<p>South Africa has played a leading role in promoting the issue on the humanitarian dimensions of nuclear weapons, as well as adopting the TPNW to which it is a state party. On the other hand, it was cautious in condemning Russia' nuclear intimidations. It has ratified the CTBT. South Africa has been critical of Western countries' nuclear disarmament efforts, such as voting against a UNGA resolution on nuclear disarmament proposed by Japan.</p>			
Nuclear Non-Proliferation	54 Points	Full Points 61	88.5%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>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.</p>			
Nuclear Security	18 Points	Full Points 38	47.4%
	Change compared to the <i>Hiroshima Report 2023</i> 1		
<p>South Africa has not ratified the A/CPPNM and was in the final stages of domestic procedures as of 2021 but did not appear to have completed them in 2023. It has ratified all other nuclear security-related conventions. South Africa has never used IPPAS missions. It still possesses a large number of HEUs. Nuclear forensics capacity-building efforts are underway. There is room for improvement in participation in multilateral efforts. There is room for improvement in enhancing measures against insider threats and for cybersecurity as well as in enhancing nuclear security culture.</p>			

29. Sweden ■Non-Nuclear-Weapon State

Nuclear Disarmament	23 Points	Full Points 48	47.9%
	Change compared to the <i>Hiroshima Report 2023</i> -2.5		
<p>Sweden proposed the "Stockholm Initiative," and proactively advocate nuclear risk reduction at the NPT RevCon. Sweden argues that it cannot sign the TPNW in its present form. After Russia's invasion of Ukraine, Sweden applied for membership in NATO. It has engaged in promoting the CTBT's entry into force, and developing its verification systems. Sweden participated in the IPNDV. It has also proactively engaged in cooperation with civil society as well as gender mainstreaming.</p>			
Nuclear Non-Proliferation	54 Points	Full Points 61	88.5%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>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.</p>			
Nuclear Security	33 Points	Full Points 38	86.8%
	Change compared to the <i>Hiroshima Report 2023</i> 2		
<p>Sweden has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. It received an IPPAS mission in 2016 and is one of the few countries that have made part of the IPPAS mission report publicly available. Sweden participates in a number of INFCIRC initiatives and continues to contribute to the NSF. There is room for improvement in enhancing measures against insider threats and for cybersecurity.</p>			

30. Switzerland ■Non-Nuclear-Weapon State

Nuclear Disarmament	28.5 Points	Full Points 48	59.4%
	Change compared to the <i>Hiroshima Report 2023</i> 0.5		
Switzerland argues that it cannot sign the TPNW in its present form. However, it participated as an observer in the 2MSP following the previous meeting. It has engaged in promoting the CTBT's entry into force, and developing its verification systems. It has ratified the CTBT and advocated immediate commencement of negotiation of an FMCT. It has also taken a proactive attitude regarding cooperation with civil society. Switzerland participates in the IPNDV. It enacted national laws which restrict financing for nuclear weapons production.			
Nuclear Non-Proliferation	53 Points	Full Points 61	86.9%
	Change compared to the <i>Hiroshima Report 2023</i> 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	32 Points	Full Points 38	84.2%
	Change compared to the <i>Hiroshima Report 2023</i> 4		
Switzerland has ratified all nuclear security-related conventions and established a national implementation system for A/CPPNM. It received an IPPAS follow-up mission in 2023. Switzerland has established a national cyber security policy, and has been working on the implementation of the A/CPPNM. It has emphasized and implemented cybersecurity measures, including the development of cybersecurity regulatory guidelines. Switzerland continues to contribute to the NSF. Switzerland is one of the few countries that has taken cyber security measures and is one of the most advanced in its efforts. There is room for enhancing nuclear security culture.			

31. Syria ■Non-Nuclear-Weapon State

Nuclear Disarmament	12 Points	Full Points 48	25%
	Change compared to the <i>Hiroshima Report 2023</i> 1		
Syria voted for most of the UNGA Resolutions related to the humanitarian dimensions, as well as the legal prohibition of nuclear weapons. It was against the UNGA resolution on nuclear disarmament proposed by Japan, however. It has not actively engaged in promotion of nuclear disarmament. Syria, which has not signed the TPNW or the CTBT, and abstained the UNGA resolutions on an FMCT.			
Nuclear Non-Proliferation	20 Points	Full Points 61	32.8%
	Change compared to the <i>Hiroshima Report 2023</i> -1		
Syria has yet to address and resolve the allegation of constructing a clandestine nuclear power plant, despite repeated requests by the IAEA. Syria has not concluded the IAEA Additional Protocol, and has yet to take appropriate measures on export controls.			

32. Turkey ■Non-Nuclear-Weapon State

Nuclear Disarmament	12 Points	Full Points 48	25%
	Change compared to the <i>Hiroshima Report 2023</i> -1		
Turkey advocates the “progressive approach” toward a world without nuclear weapons, through incremental practical measures. It has been under the U.S. extended (nuclear) deterrence, and has hosted the U.S. nuclear weapons. Turkey has increased its reliance on extended (nuclear)			

deterrence. It has not signed the TPNW. Turkey participates in the IPNDV.			
Nuclear Non-Proliferation	53 Points	Full Points 61	86.9%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
Turkey 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 <i>Hiroshima Report 2023</i> 0		
Turkey has ratified the Convention on the Safety of Radioactive Waste and now joined all nuclear security-related conventions. It established a national implementation system for A/CPPNM. Turkey accepted an IPPAS mission in 2021 to strengthen its national legal system and apply the recommended measures of INFCIRC/225/Rev.5 in the country.			

33. The UAE ■Non-Nuclear-Weapon State

Nuclear Security	22 Points	Full Points 38	57.9%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
The UAE is a country 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 A/CPPNM. The UAE hosted an IPPAS mission in 2016. There is room for improvement in cybersecurity measures.			

(4) Other**34. North Korea ■Other**

Nuclear Disarmament	-12 Points	Full Points 106	-11.3%
	Change compared to the <i>Hiroshima Report 2023</i> -6		
<p>North Korea repeatedly conducted launch tests and drills of various types of missiles, including ICBMs. The number of its nuclear warheads is likely to have increased. North Korea stated that the roles of its nuclear arsenal are to deter war and take the initiative in war. It has clearly indicated the possibility of first use of nuclear weapons, and strengthening its nuclear capability from both strategic and tactical perspectives. It was against the UNGA resolution on nuclear disarmament proposed by Japan. It is likely to continue the production of fissile materials for nuclear weapons. North Korea abstained the UNGA resolution on an FMCT. It has not signed the TPNW or the CTBT. It also opposed to the UNGA Resolution calling earlier entry into force of the CTBT. The moratorium on nuclear explosion tests has also been withdrawn.</p>			
Nuclear Non-Proliferation	0 Points	Full Points 61	0.0%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>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 to engage in illicit trafficking and procurement of nuclear-related items and others through, inter alia, ship-to-ship transfers and cyber activities. It has been a concern that Russia, with which it has deepened its strategic relationship, may provide military- and rocket-related technology.</p>			
Nuclear Security	-1 Points	Full Points 38	-2.6%
	Change compared to the <i>Hiroshima Report 2023</i> 0		
<p>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.</p>			

Appendix

Chronology (January-December 2023)

Jan	U.S. Department of States released the report to Congress on implementation of the New START (Strategic Arms Reduction Treaty) (31st)
Feb	Five nuclear-weapon states (NWS) held a working group meeting (Dubai) (2~3rd) Russia suspended implementation of the New START (28th)
Mar	Australia, the U.K. and the U.S. revealed the nuclear submarine program at the AUKUS meeting (13th) Japan funded the United Nations Office for Disarmament Affairs (UNODA) for the Youth Leader Fund for a World Without Nuclear Weapons (14th) Russia decided to deploy nuclear weapons to Belarus (25th) The U.S. halted sharing data on strategic nuclear weapon stockpiles (28th)
Apr	G7 Non-Proliferation Directors Group released a statement (17th) The U.S. and South Korea released the Washington declaration (27th)
May	G7 Hiroshima Summit (19~21st) High-Level Political Meeting of the Proliferation Security Initiative and its exercise “Eastern Endeavor 23” (30~Jun 2nd)
Jun	The U.S. announced countermeasures in response to the Russian suspension implementation of the New START (1st) NWS Working-Level Experts Meeting (Cairo) (13~14th) International Conference on Computer Security in the Nuclear World: Security for Safety (Vienna) (19~23rd)
Jul	The First Preparatory Committee for the 2026 Nuclear Non-Proliferation Treaty (NPT) Review Conference (Vienna) (31~Aug 11th)
Aug	Hiroshima Peace Memorial Ceremony (6th) Nagasaki Peace Memorial Ceremony (9th)
Sep	Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) (New York) (22nd) The 67th General Conference of the International Atomic Energy Agency (IAEA) (Vienna) (25~29th)
Nov	Russia revoked the ratification of CTBT (2nd) The U.S. and China held arms control meeting (Washington D.C.) (6th) The second Meeting of States Parties to the Treaty on the Prohibition of Nuclear Weapons (New York) (27~Dec 1st)
Dec	Japan, U.S. and South Korea started sharing missile information (19th)

Abbreviation

ABACC	Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials
A/CPPNM	Amendment to the Convention on the Physical Protection of Nuclear Material
AEC	Atomic Energy Commission
AEOI	Atomic Energy Organization for Iranian
AI	Artificial Intelligence
ALCM	Air-Launched Cruise Missile
ALBM	Air-Launched Ballistic Missile
AP	Additional Protocol
ASEAN	Association of Southeast Asian Nations
ASMPT	Air-to-Surface Medium-Range Cruise Missile
ASN4G	Air-Sol Nucléaire 4ème Génération
AUKUS	Australia-UK-U.S. Security Cooperation Partnership
BCC	Bilateral Consultation Committee
CD	Conference on Disarmament
CEND	Creating an Environment for Nuclear Disarmament
CMX	Collaborative Materials Exercise
CNS	Convention on Nuclear Safety
COE	Center of Excellence
COP28	The 28th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change
CPPNM	Convention on the Physical Protection of Nuclear Material
CRP	Coordinated Research Project
CSA	Comprehensive Safeguard Agreement
CSNC	Canadian Nuclear Safety Commission
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
CUAV	Counter-Uncrewed Aerial Vehicle
CVID	Complete, Verifiable and Irreversible Dismantlement
DIV	Design Information Verification
DoD	Department of Defense
DPRK	Democratic People's Republic of Korea
DTRA	Defense Threat Reduction Agency
EDD	Extended Deterrence Dialogue
EDPC	Extended Deterrence Policy Committee
EDSCG	Extended Deterrence Strategy and Consultation Group
EU	European Union
EURATOM	European Atomic Energy Community
E3	France, Germany and the United Kingdom
FANR	Federal Authority for Nuclear Regulation
FEP	Fuel Enrichment Plant
FFEP	Fordow Fuel Enrichment Plant

FMCT	Fissile Material Cut-Off Treaty
FOBS	Fractional Orbital Bombardment System
GBSD	Ground-Based Strategic Deterrent
GICNT	Global Initiative to Combat Nuclear Terrorism
GIS	Geospatial Information System
GLCM	Ground-Launched Cruise Missile
GNS	Global Nuclear Security
GSv5	Galaxy Serpent Exercise 5
GTRI	Global Threat Reduction Initiative
G7	Group of Seven
G7GP	Group of Seven Global Partnership
G20	Group of 20
HEU	Highly Enriched Uranium
HIMARS	High Mobility Artillery Rocket System
HOPe	Hiroshima Organization for Global Peace
HWPP	Heavy Water Production Plant
IAEA	International Atomic Energy Agency
IC	Integrated Circuit
ICAN	International Campaign to Abolish Nuclear Weapons
ICBM	Intercontinental Ballistic Missile
ICJ	International Court of Justice
ICNND	International Commission on Nuclear Non-Proliferation and Disarmament
ICONS	International Conference on Nuclear Security
ICRC	International Committee of the Red Cross
ICSANT	International Convention on the Suppression of Acts of Nuclear Terrorism
IEA	International Energy Agency
IGR	Impulse Graphite Reactor
IMF	International Monetary Fund
IMS	International Monitoring System
INF	Intermediate-Range Nuclear Forces
INSEN	International Nuclear Security Education Network
INSServ	International Nuclear Security Advisory Service
INSSP	Integrated Nuclear Security Support Plan
INTERPOL	International Criminal Police Organization
IPNDV	International Partnership for Nuclear Disarmament Verification
IPPAS	International Physical Protection Advisory Service
IRBM	Intermediate-Range Ballistic Missile
IRGC	Islamic Revolutionary Guard Corps
ISAMRAD	IAEA Support and Assistance Mission on the Safety and Security of Radioactive Sources in Ukraine
ISAMZ	IAEA's Support and Assistance Mission to Zaporizhzhia
ISCN	Integrated Support Center for Nuclear Nonproliferation and Nuclear Security
ITDB	Incident and Trafficking Database

ITWG	Nuclear Forensics International Technical Working Group
IUEC	International Uranium Enrichment Centre
IAEA	Japan Atomic Energy Agency
JAEC	Japan Atomic Energy Commission
JCPOA	Joint Comprehensive Plan of Action
KCNA	Korean Central News Agency
KOMID	Korea Mining Development Trading Corporation
KPA	Korean People's Army
KuNPP	Kursk Nuclear Power Plant
LACM	Land-Attack Cruise Missile
LEU	Low Enriched Uranium
LOF	Location Outside Facilities
LOW	Launch on Warning
LRSO	Long Range Stand-Off Weapon
LWR	Light-Water Reactor
MCFR	Molten Chloride Fast Reactor
MCRE	Molten Chloride Reactor Experiment
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MFFF	Mixed Oxide Fuel Fabrication Facility
MIRV	Multiple Independently-Targetable Reentry Vehicle
ML	Machine Learning
MOX	Mixed Oxide
MRBM	Medium-Range Ballistic Missile
MSCFP	Marie Sklodowska-Curie Fellowship Program
MSP	Meeting of States Parties
MTCR	Missile Technology Control Regime
NAC	New Agenda Coalition
NAM	Non-Aligned Movement
NATO	North Atlantic Treaty Organization
NGC	Nuclear Consultative Group
NDAA	National Defense Authorization Act
NDV	Nuclear Disarmament Verification
NFU	No First Use
NFWG	Nuclear Forensics Working Group
NFZ	Nuclear Free Zone
NGO	Non-Governmental Organization
NIC	National Intelligence Council
NIST	National Institute of Standards and Technology
NMAC	Nuclear Material Accountancy and Control
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NNWS	Non-Nuclear-Weapon States
NPDG	Nonproliferation Director-General's Group

NPDI	Non-Proliferation and Disarmament Initiative
NPP	Nuclear Power Plant
NPR	Nuclear Posture Review
NPT	Nuclear Non-Proliferation Treaty
NRC	Nuclear Regulatory Commission
NRSWG	Nuclear and Radiological Working Group
NSA	Negative Security Assurance
NSCG	Nuclear Security Contact Group
NSF	Nuclear Security Fund
NSG	Nuclear Suppliers Group
NSSC	Nuclear Security Training and Support Centers
NSSG	Nuclear Safety and Security Group
NSTDC	Nuclear Security Training and Demonstration Center
NTI	Nuclear Threat Initiative
NuDiVe	Nuclear Disarmament Verification Exercise
NWFZ	Nuclear-Weapon-Free Zone
NWS	Nuclear-Weapon States
ODNI	Office of the Director of National Intelligence
OECD	Organization for Economic Co-operation and Development
ONR	Office for Nuclear Regulation
OPANAL	The Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean
PFEP	Pilot Fuel Enrichment Plant
PIV	Physical Inventory Verification
PLA	People's Liberation Army
PMDA	Plutonium Management and Disposition Agreement
PRC	People's Republic of China
PrepCom	Preparatory Committee
PSI	Proliferation Security Initiative
P5	Permanent Members of the United Nations Security Council
R&D	Research and Development
RECA	Radiation Exposure Compensation Act
RECNA	Research Center for Nuclear Weapons Abolition
RevCon	Review Conference
RG	Regulatory Guide
RISS	Regulatory Infrastructure Mission for Radiation Safety and Nuclear Security
RMI	Republic of the Marshall Islands
ROK	Republic of Korea
SEANWFZ	Southeast Asian Nuclear-Weapon-Free Zone
SIPRI	Stockholm International Peace Research Institute
SLA	State-Level Approach
SLBM	Submarine Launched Ballistic Missile
SLC	State-Level Concept
SLCM	Sea-Launched Cruise Missile

SLCM-N	Nuclear-Armed Sea-Launched Cruise Missile
SMR	Small Modular Reactor
SNRIU	State Nuclear Regulatory Inspectorate of Ukraine
SQP	Small Quantities Protocol
SRBM	Short-Range Ballistic Missile
SSBN	Nuclear-Powered Ballistic Missile Submarine
SSN	Nuclear-Powered Attack Submarine
SSP	Stockpile Stewardship Program
New START	New Strategic Arms Reduction Treaty
TPNW	Treaty on the Prohibition of Nuclear Weapons
UAV	Unmanned Aerial Vehicle
UCF	Uranium Conversion Facility
UF6	Uranium Hexafluoride
UN	United Nations
UNGA	United Nations General Assembly
UNIDIR	United Nations Institute for Disarmament Research
UNOCT	United Nations Office of Counter-Terrorism
UNODA	United Nations Office for Disarmament Affairs
UNSCR	UN Security Council Resolution
UOC	Uranium Oxide Concentrate
UTR-KINKI	Kinki University Teaching and Research Reactor
WGU	Weapon-Grade Uranium
WINS	World Association for Nuclear Security
WMD	Weapons of Mass Destruction
WPK	Worker's Party of Korea
WTO	World Trade Organization
ZNPP	Zaporizhzhia Nuclear Power Plant
2MSP	Second Meeting of the States Parties to the TPNW