

Executive Summary



Hiroshima Report 2024

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

March 2024

About the Hiroshima Report The *Hiroshima Report* attempts to help the movement toward a world without nuclear weapons—firstly, by clarifying the current status of the issues and efforts surrounding nuclear disarmament, non-proliferation and nuclear security. In doing so, it aims to encourage increased debate on these issues by policy-makers, experts in and outside governments, and civil society. Furthermore, by issuing this report from Hiroshima, where a nuclear weapon was once used, it aims to help focus attention and promote further actions across various fields toward the realization of a world without nuclear weapons.

The Hiroshima Report 2024: Evaluation of Achievement of Nuclear Disarmament, Non-Proliferation and Nuclear Security in 2023 is an outcome of the “Hiroshima Report Publication Project,” commissioned by Hiroshima Organization for Global Peace (HOPE) to the Center for Disarmament, Science and Technology (CDAST), the Japan Institute of International Affairs (JIIA). As with previous reports issued annually since 2013, the *Hiroshima Report 2024* is published in both English and Japanese. This project has been conducted as a part of the “Hiroshima for Global Peace” Plan launched by Hiroshima Prefecture in 2011.

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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.

The major trends in nuclear disarmament, non-proliferation and nuclear security observed in 2023 are as follows. The situation has become increasingly serious.

Items and Countries Surveyed in the *Hiroshima Report 2024*

Items (78)	Nuclear Disarmament: 41 Nuclear Non-Proliferation: 19 Nuclear Security: 18
Countries Surveyed (34)	NWS: China, France, Russia, the U.K. and the U.S. Non-NPT parties: India, Israel and Pakistan Non-nuclear-weapon states: 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, Iran, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, Norway, South Africa, Sweden, Switzerland, Turkey and the UAE Other: North Korea*

* North Korea declared its suspension from the NPT in 1993 and its withdrawal in 2003, and has conducted in total 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.

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 ad-

opted 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 intensi-

fied 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 (Prep-Com) 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 consid-

ered 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 (INFCIRC/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

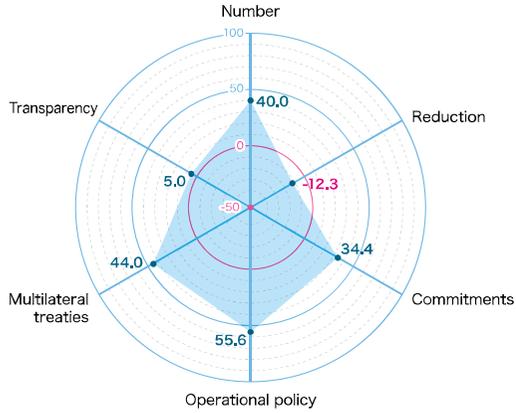
from all activities after 2022. Initiatives derived from the Nuclear Security Summit Process were also not active, except for activities related to insider threats.

6-Point Nuclear Disarmament Radar Charts (NWS)

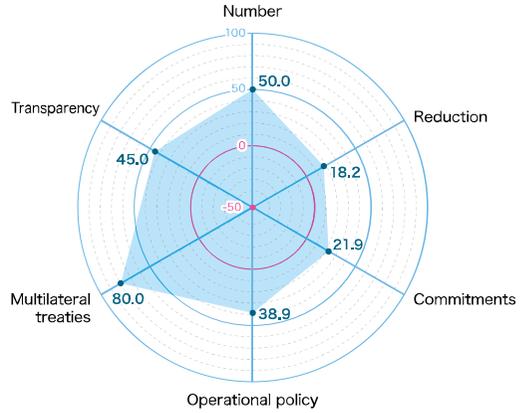
The following radar charts aim to illustrate where NWS stand in different aspects of nuclear disarmament. For this purpose, the 14 issues used for nuclear disarmament evaluation were grouped into six aspects. According to the radar charts, China is required to improve its efforts for nuclear weapons 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	<ul style="list-style-type: none"> • Number of nuclear weapons
Reduction	<ul style="list-style-type: none"> • 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 consequence 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 • Verifications • Irreversibility

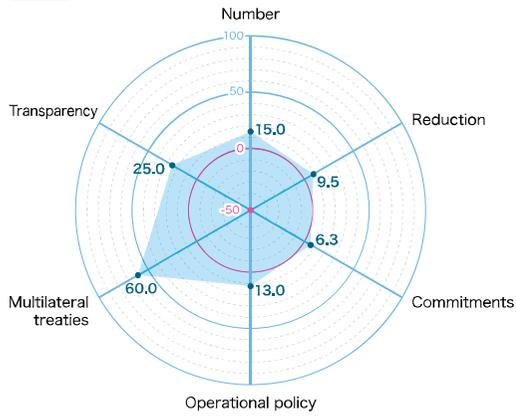
 **China**



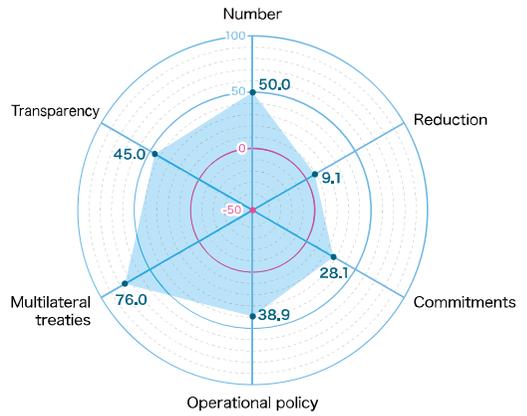
 **France**



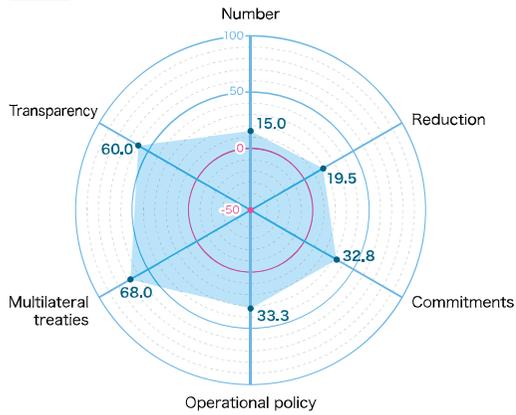
 **Russia**



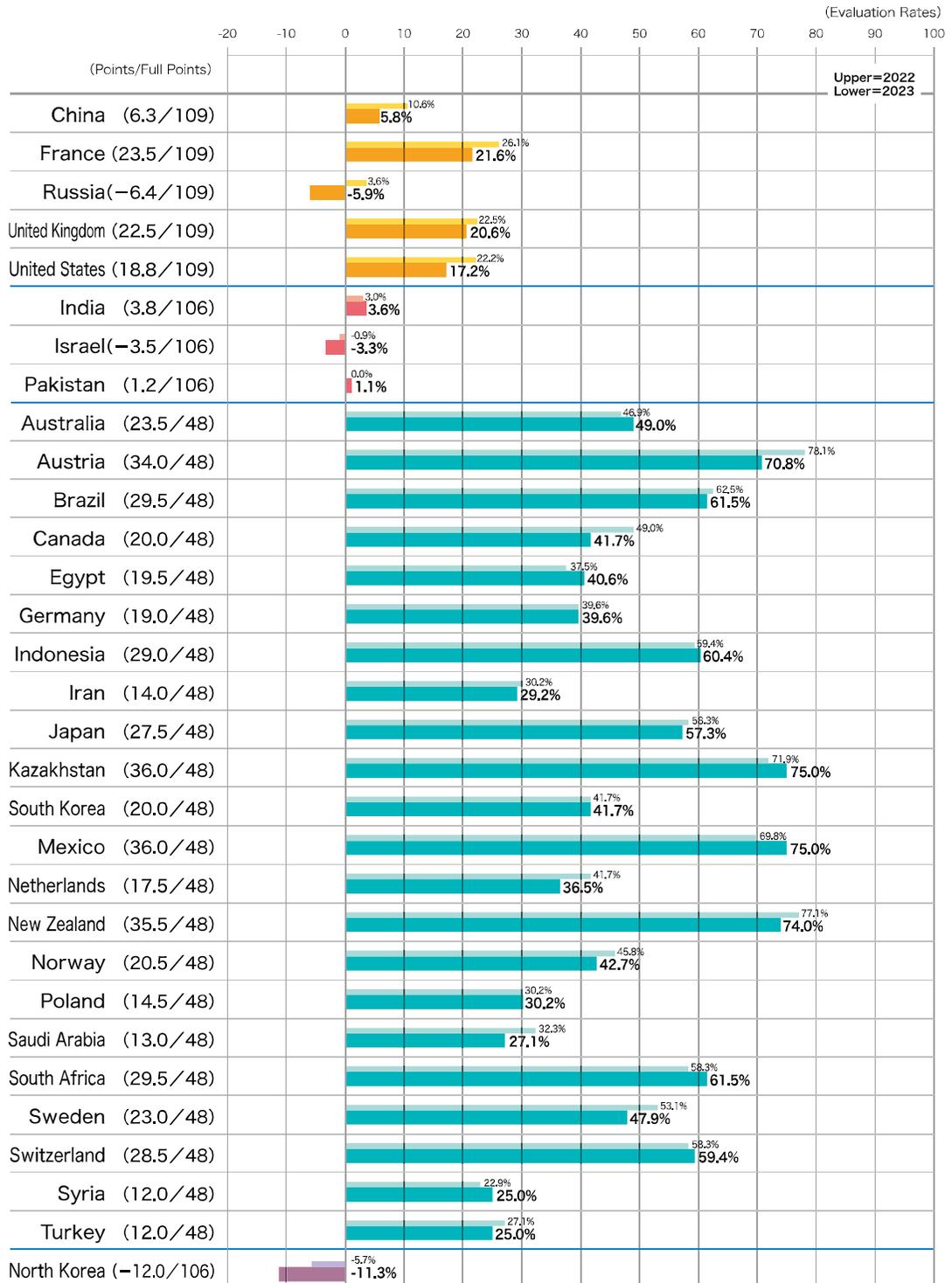
 **United Kingdom**



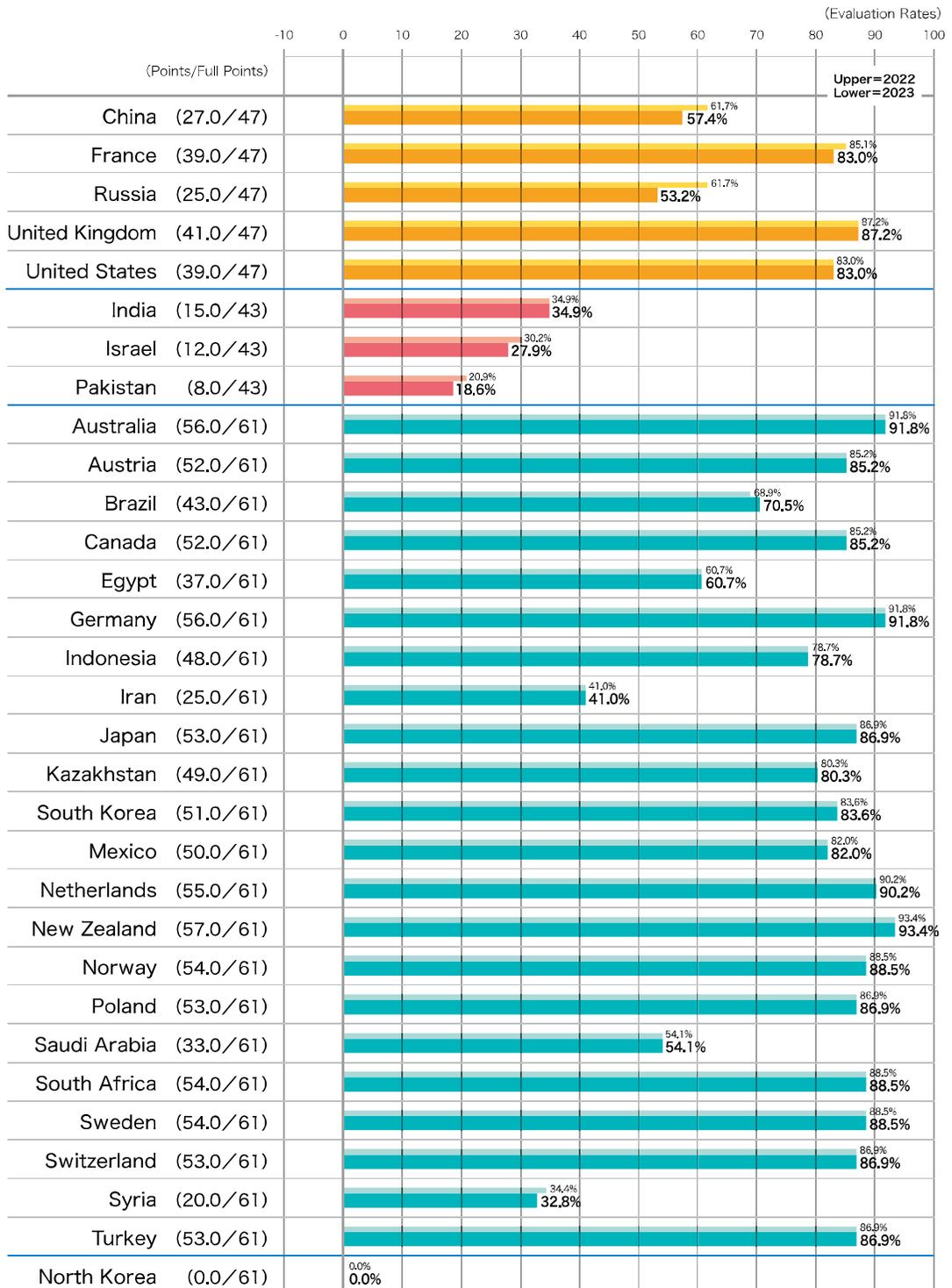
 **United States**



Nuclear Disarmament



Nuclear Non-Proliferation



Nuclear Security

