

## Executive Summary



# Hiroshima Report 2025

Evaluation of Achievement in Nuclear Disarmament,  
Non-Proliferation and Nuclear Security in 2024

March 2025

**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 2025: Evaluation of Achievement of Nuclear Disarmament, Non-Proliferation and Nuclear Security in 2024* 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 (JIJA). As with previous reports issued annually since 2013, the *Hiroshima Report 2025* 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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In 2024, there was little progress in nuclear disarmament. Nuclear-armed states have not intensified their efforts to fulfill their disarmament commitments, while a substantial nuclear arms race has continued to unfold. Amid Russia's ongoing invasion of Ukraine and escalating regional tensions, the risks of nuclear weapons use has been growing. Nuclear issues concerning North Korea and Iran also remain unresolved, with no sign of progress. Despite these deeply concerning trends, efforts to prevent the further deterioration of the nuclear situation were unsuccessful. Divisions surrounding nuclear issues have deepened not only between nuclear-armed states and non-nuclear-weapons states (NNWS) but also, more critically, among nuclear-armed states themselves, making it harder to reach agreements on nuclear issues.

The major trends in nuclear disarmament, non-proliferation and nuclear security observed in 2024 are as follows. The situation has become increasingly serious.

### Items and Countries Surveyed in the *Hiroshima Report 2025*

<b>Items (78)</b>	<b>Nuclear Disarmament:</b> 41 <b>Nuclear Non-Proliferation:</b> 19 <b>Nuclear Security:</b> 18
<b>Countries Surveyed (34)</b>	<b>NWS:</b> China, France, Russia, the U.K. and the U.S. <b>Non-NPT parties:</b> India, Israel and Pakistan <b>Non-nuclear-weapon states:</b> 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 <b>Other:</b> 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

Amid the continued stagnation and regression of nuclear disarmament, various efforts and proposals were put forward to reverse these trends and revitalize the process. Despite these efforts, the worsening situation of nuclear disarmament could not be improved, and nuclear-armed states made very little progress in reaching further agreements or implementing concrete nuclear disarmament initiatives.

The United States approached Russia and China, respectively, to discuss nuclear arms control agreements, with no progress.

Nuclear-armed states continue to emphasize the salience of nuclear deterrence in their national security and to modernize their nuclear forces. Particular attention has been drawn to the rapid expansion of China's nuclear arsenal and the possibility of changes in its nuclear strategy. NNWS that are allied with nuclear-armed states also place a high value on extended nuclear deterrence.

The number of countries that have signed or ratified the Treaty on the Prohibition of Nuclear Weapons (TPNW)—which, *inter alia*, prohibits the possession and the use of nuclear weapons—is steadily increasing. However, nuclear-armed states and their allies have not changed their policy of refusing to sign the treaty.

## *Nobel Peace Prize awarded to the Confederation of A- and H-Bomb Sufferers Organizations (Nihon Hidankyo)*

- The Japan Confederation of A- and H-Bomb Sufferers Organization (Nihon Hidankyo) was awarded the Nobel Peace Prize in October 2024. The organization was rewarded for its grassroots efforts to “achieve a world free of nuclear weapons and for demonstrating through

witness testimony that nuclear weapons must never be used again.”

- In a speech delivered at the award ceremony in December, Co-Chairperson of Nihon Hidankyo, Terumi Tanaka, emphasized the inhumanity of nuclear weapons and the necessity of their abolition. He expressed outrage at the persistence of nuclear threats and highlighted the importance of conveying this message to future generations. Mr. Tanaka also called for the universal adoption of the TPNW and strongly urged citizens to understand the dangers of nuclear weapons and to pressure their governments into changing their nuclear policies.

## *The Status of Nuclear Forces (estimates)*

- While the total number of nuclear weapons is gradually decreasing to 12,121 (estimated), the number of nuclear warheads in military stockpiles, excluding those retired, as well as the number of nuclear warheads deployed with operational forces are both estimated to have turned upward.
- China has accelerated the expansion of its nuclear arsenal, with an estimated increase of 90 warheads in just one year. India, Pakistan and North Korea have also been gradually increasing their stockpiles of nuclear warheads over the past decade.

## *Commitment to Achieving a World without Nuclear Weapons*

- No country openly opposes the goals of “the total elimination of nuclear weapons” and “a world without nuclear weapons.” However, in 2024, nuclear-armed states made little progress in the steady and concrete implementation and pro-

motion of nuclear disarmament toward achieving these goals. As a result, many NNWS have intensified their criticism of this situation.

- 152 countries, including the United Kingdom and the United States, voted in favor of the Japan-led UN General Assembly (UNGA) Resolution titled “Joint courses of action and future-oriented dialogue towards a world without nuclear weapons.” However, China, Russia, North Korea and other countries voted against it.

### *Humanitarian Consequences of Nuclear Weapons*

- NNWS, mainly “humanitarian groups,” have emphasized the humanitarian dimensions of nuclear weapons in forums, including the Nuclear Non-Proliferation Treaty (NPT) Preparatory Committee (PrepCom).
- A resolution was adopted at the 2024 UNGA to establish a scientific panel on the effects of nuclear war, with the aim of conducting international research on the multifaceted effects of nuclear weapon use.

### *TPNW*

- By the end of 2024, 73 countries had become states parties to the TPNW.
- TPNW signatory and supporting countries as well as the Scientific Advisory Group (SAG) are constructively preparing for the third Conference of the States Parties (CSP) to the TPNW in 2025.
- Nuclear-armed states and their allies remain opposed to the TPNW. Japan has expressed a cautious stance on participating as an observer in the third CSP, in line with its previous position.

### *Reduction of Nuclear Weapons*

- Since 2023, Russia has maintained its suspension of the New Strategic Arms Reduction Treaty (New START), refusing to provide data or permit on-site inspections. While it claims to comply with the treaty’s quantitative limits, its actual compliance has not been verified.
- No nuclear-armed state has unveiled new specific plans or proposals for further reductions of nuclear weapons in 2024. The United States has reached out to Russia and China, respectively, to evoke bilateral arms control discussions. However, Russia has declined, citing allegedly hostile U.S. policies, and China has consistently stated that it would not engage in such discussions unless the United States and Russia, the world’s two largest nuclear powers, further reduce their nuclear arsenals.
- All nuclear-armed states continue to modernize their nuclear forces. Notably, Russia and North Korea have been actively pursuing the development and the deployment of various new delivery vehicles for nuclear warheads. China has significantly strengthened its nuclear forces, both qualitatively and quantitatively. The United States estimates that China could be capable of deploying over 1,000 operational nuclear warheads by 2030.

### *Diminishing the Roles and Significance of Nuclear Weapons in the National Security Strategies and Policies*

- As Russia continues its invasion of Ukraine, it has repeatedly resorted to nuclear threats in 2024, heightening international concerns regarding the potential use of nuclear weapons. Furthermore, it has revised the “Fundamentals of State

Policy of the Russian Federation on Nuclear Deterrence,” which outlines its nuclear doctrine.

- North Korea has stated that the role of its nuclear arsenal is to deter war and to seize the initiative in war. It has explicitly acknowledged the possibility of using nuclear weapons first. Furthermore, North Korea continues to strengthen its nuclear forces from both strategic and tactical perspectives.
- There were no significant changes in NWS / nuclear-armed states’ policies regarding sole purpose, no first-use, negative security assurances (NSAs) or extended nuclear deterrence (except some changes made by Russia). In response to allegations that China’s policies of minimum deterrence and no first use of nuclear weapons may be changing, China has asserted that its nuclear policy and posture remain unchanged.
- Russia has included the provision of extended nuclear deterrence to Belarus in its military doctrine. It is also reported to have deployed tactical nuclear weapons in Belarus.
- In March 2024, Sweden officially joined NATO and became the 32nd member-state. Poland has stated its readiness to deploy nuclear weapons on its territory as part of nuclear sharing arrangements.
- Japan and South Korea have been actively collaborating with the United States to strengthen their respective extended deterrence.
- Five nuclear-weapon states (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. The United

States and China each sent prior notifications to the relevant countries when they conducted ICBM launch tests.

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

- There have been no changes in nuclear-armed states’ policies regarding the alert status of their nuclear forces. Russian and U.S. strategic nuclear forces are considered to remain on high alert status.
- China denied allegations that it has been putting some of its nuclear forces on higher alert.

### *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.
- Except for North Korea, all countries which have declared possession of nuclear weapons maintain a moratorium on nuclear explosion tests. Russia, which withdrew its ratification of the CTBT in 2023, has repeatedly stated that as long as the United States does not conduct nuclear explosion tests, it will not do so either.
- North Korea has reportedly completed preparations for a nuclear explosion test. However, it did not conduct such a test in 2024.
- Some nuclear-armed states are considered to have conducted nuclear tests without explosions, such as subcritical experiments and computer simulations.



## FMCT

- At the 2024 session of the Conference on Disarmament (CD) in Geneva, states once again failed to begin negotiations on a Fissile Material Cut-Off Treaty (FMCT). Pakistan continues to strongly oppose the negotiation of a treaty that would only ban the new production of fissile material for military purposes. China, Iran, Pakistan and Russia also voted against the UNGA resolution on an FMCT.
- Japan has established a group called the “Friends of an FMCT” to maintain and strengthen political momentum for an FMCT. Australia, Brazil, Canada, France, Germany, Japan, the Netherlands, the United Kingdom and the United States were among the 12 participating countries. A high-level launch meeting of the “Friends of an FMCT” was held in September.
- China, India, Israel, Pakistan and North Korea are yet to declare a moratorium on the production of fissile material for nuclear weapons. It is believed that India, Pakistan and North Korea continue to produce 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.
- In August 2024, following a similar release in October 2021, the United States

declassified and publicly released information about its nuclear weapons stockpiles and the number of dismantled nuclear warheads.

- While China insists that transparency in intentions and policies is important, it has not disclosed any information regarding the types or numbers of its nuclear forces.

## Verifications of Nuclear Weapons Reductions

- The International Partnership for Nuclear Disarmament Verification (IPNDV), launched by the United States, marked its 10th anniversary. A report was released, which highlighted the key insights gained from its activities over this period.
- Russia has criticized the separate development of “universal” measures to verify nuclear disarmament, stating that it would not take part in concrete negotiations that do not take the strategic situation into account.

## Irreversibility

- The United States and Russia are believed to continue the dismantlement or conversion of their respective strategic delivery vehicles, nuclear warheads, and surplus fissile material. However, neither country has provided detailed reports on the concrete status of these efforts.

## Disarmament and Non-Proliferation Education and Cooperation with Civil Society

- At the NPT PrepCom, the importance of disarmament and non-proliferation education, diversity and inclusion (notably gender) and the participation of civil society were emphasized. At the 2024 UNGA, a resolution titled “Youth,

Disarmament and Non-Proliferation” calling for greater promotion of disarmament and non-proliferation as well as the involvement of young people was adopted without a vote.

- During the first phase of the “Youth Leader Fund for a World Without Nuclear Weapons,” funded by Japan, participants visited Hiroshima and Nagasaki in 2024.
- Some countries have started to divest from or ban lending to organizations and companies involved in the production and the development of nuclear weapons. An increasing number of companies are independently adopting such policies.

### *Hiroshima and Nagasaki Peace Memorial Ceremonies*

- Representatives from 109 countries attended the peace memorial ceremony in Hiroshima and representatives from 100 countries attended in Nagasaki. Neither Russia, due to its invasion of Ukraine, nor Belarus, due to its support of the invasion, were invited. Furthermore, the city of Nagasaki chose not to invite Israel, which sparked a backlash from G7 countries (except Japan) and the EU, who did not send ambassadors to the Nagasaki ceremony.

## **2. Nuclear Non-Proliferation**

As of December 2024, 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. Russia expanded its cooperation with North Korea and received North Korean troops and missiles. Russia also vetoed the extension of the expert panel’s mandate for the UN Security Council’s North Korea sanctions committee.

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

The number of countries that have accepted the International Atomic Energy Agency (IAEA) safeguards under the Additional Protocols has steadily increased. However, more than 30 countries have yet to sign them.

### *Acceptance and Compliance with the Nuclear Non-Proliferation Obligations*

- No progress has been achieved in addressing the North Korean nuclear issue. Pyongyang has insisted that it would never relinquish its status as a nuclear-armed state, and that it must rather strengthen it. 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. After the adoption of the IAEA Board of Governor resolution in November, Iran has begun increasing its production of 60% HEU.
- Israel and the United States did not participate in the fifth Conference on Establishing a Middle East Region Free of Nuclear Weapons and Other Weapons of Mass Destruction (WMD).

### *IAEA Safeguards*

- As of 2024, 143 NPT NNWS have concluded the IAEA Additional Protocols. Some non-aligned countries as well as Brazil argue that the conclusion of an Additional Protocol should be voluntary, not obligatory under the NPT.
- The IAEA had applied integrated safeguards to 70 NNWS by the end of 2024. In addition, as of June 2024, the Agency had developed and approved state-level safeguards approaches (SLAs) for 137 countries.
- Iran has continued to suspend verification and monitoring measures under the JCPOA, including the application of the Additional Protocol to the IAEA Safeguards Agreement. The IAEA reported that, due to its inability to carry out JCPOA-related verification and monitoring activities for over three and a half years, it has lost continuity of knowledge regarding the production and inventory of centrifuges and other equipment.
- The IAEA reported that it could not resolve the issues regarding the accuracy and completeness of declarations for four sites related to Iran's alleged past

clandestine nuclear program. The IAEA 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. Saudi Arabia and the IAEA have agreed that the agreement will come into force on December 31, 2024.
- Australia, the United Kingdom, and the United States (AUKUS) and the IAEA started technical discussions on implementing IAEA safeguards for the nuclear fuel used in Australia's nuclear-powered submarines. Some countries, including China, expressed criticism and concerns on this issue.
- Russia's attack and occupation of nuclear facilities in Ukraine have compelled the IAEA to undertake challenging safeguard verification activities within Ukraine.

### *Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies*

- Most members of the Nuclear Suppliers Group (NSG) implement solid export controls, including the establishment of legislative measures and other relevant national implementation systems. On the other hand, many countries, 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 has also procured missiles and received troops from North Korea. Such transactions constitute a



clear violation of the UN Security Council resolutions.

- The UN Security Council's Panel of Experts on North Korea sanctions was suspended due to Russia's veto of a resolution to extend its mandate.
- 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 its reports based on the Guidelines for the Management of Plutonium. While the United Kingdom and the United States had submitted their report yearly, they did not publish them in 2024.

## 3. Nuclear Security

Russia's occupation of the Zaporizhzhia Nuclear Power Plant continues, and there have been multiple attacks on the power grid that connects to other nuclear power plants in Ukraine. As a result of these incidents, nuclear safety and security in those facilities are at risk.

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

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

South Africa ratified the Amendment to the Convention on the Physical Protection of Nuclear Material (A/CPPNM.)

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

### *Physical Protection of Nuclear Material and Facilities*

- Regarding the global inventory of weapons-usable nuclear material, while stocks of civilian-use separated plutonium have decreased in Japan and the United Kingdom, those for military-use in India and Israel have increased. As for the HEU, although the total amount of the global inventory has increased due to a change in the calculation approach from the previous year, there are still ongoing efforts to minimize HEU in several countries surveyed.
- 20 out of the 27 countries surveyed still

possess weapons-usable nuclear material that could be attractive to terrorists.

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

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

### *Efforts to Maintain and Improve the Highest Level of Nuclear Security*

- On HEU minimization for civilian use, Belgium has completed the conversion of fuel for the production of medical radioisotopes to low-enriched uranium. Japan has removed HEU from its multiple facilities. Kazakhstan and Norway have continued their respective technology development cooperation with the United States.
- Japan and the United States have hosted IPPAS missions in 2024. Belgium and France have announced plans to accept IPPAS missions. Switzerland has published new parts of its past IPPAS mission report.
- The IAEA International Conference on Nuclear Security was held in 2024, but unlike previous conferences, a ministerial declaration was not adopted this time. Regarding multilateral initiatives, activities were carried out by the G7, such as the Non-Proliferation Directors’

Group. Meanwhile, the Global Initiative to Combat Nuclear Terrorism (GICNT), co-chaired by the United States and Russia, remained temporarily suspended from all activities since 2022. Initiatives derived from the Nuclear Security Summit Process were also inactive, except for those related to insider threats.

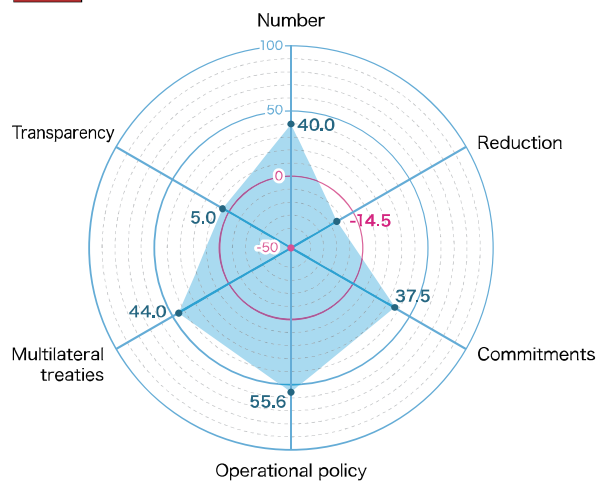
## 6-Point Nuclear Disarmament Radar Charts (NWS)

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.

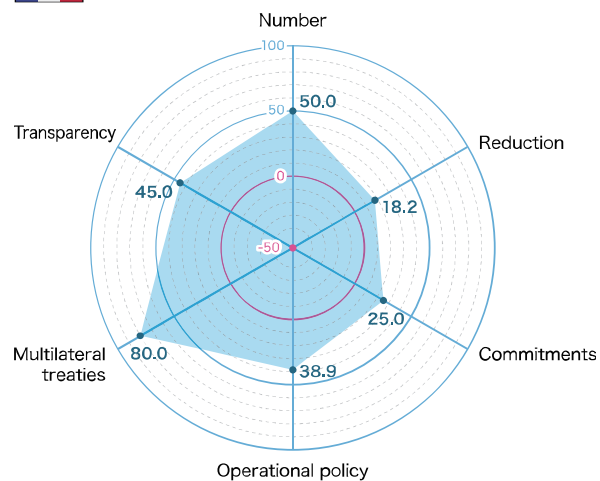
Aspects	Issues
Number	<ul style="list-style-type: none"> <li>• Number of nuclear weapons</li> </ul>
Reduction	<ul style="list-style-type: none"> <li>• Reduction of nuclear weapons</li> </ul>
Commitments	<ul style="list-style-type: none"> <li>• Treaty on the Prohibition of Nuclear Weapons (TPNW)</li> <li>• Commitments to achieving a world without nuclear weapons</li> <li>• Humanitarian consequence of nuclear weapons</li> <li>• Disarmament and non-proliferation education and cooperation with the civil society</li> <li>• Hiroshima and Nagasaki Peace Memorial Ceremonies</li> </ul>
Operational policy	<ul style="list-style-type: none"> <li>• Diminishing roles and significance of nuclear weapons in the national security strategies and policies</li> <li>• De-alerting, or measures for maximizing decision time to authorize the use of nuclear weapons</li> </ul>
Multilateral treaties	<ul style="list-style-type: none"> <li>• Comprehensive Nuclear-Test-Ban Treaty (CTBT)</li> <li>• Fissile Material Cut-Off Treaty (FMCT)</li> </ul>
Transparency	<ul style="list-style-type: none"> <li>• Transparency regarding nuclear forces, fissile material for nuclear weapons, and nuclear strategy/doctrine</li> <li>• Verifications</li> <li>• Irreversibility</li> </ul>



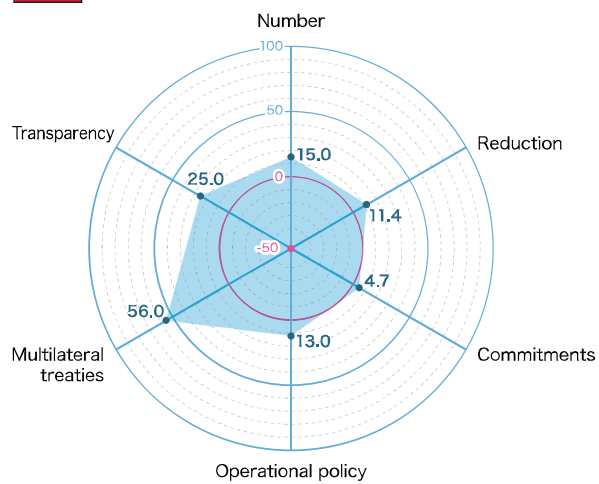
## China



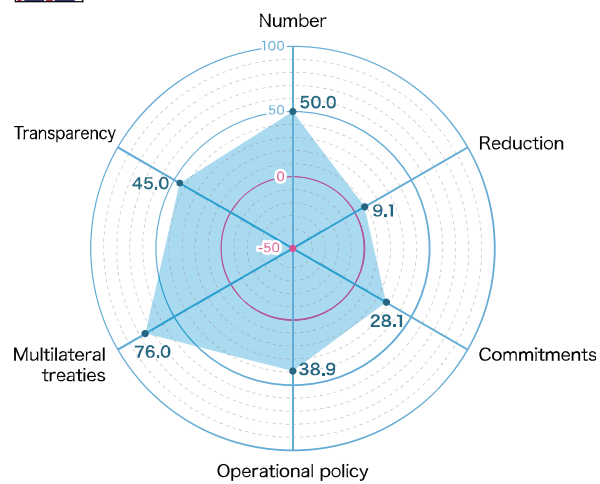
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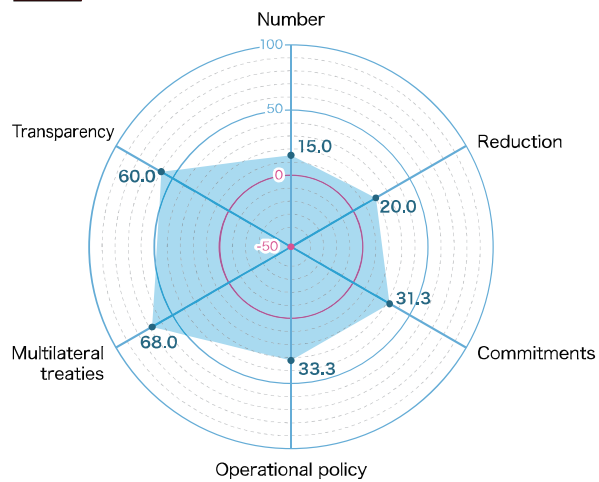
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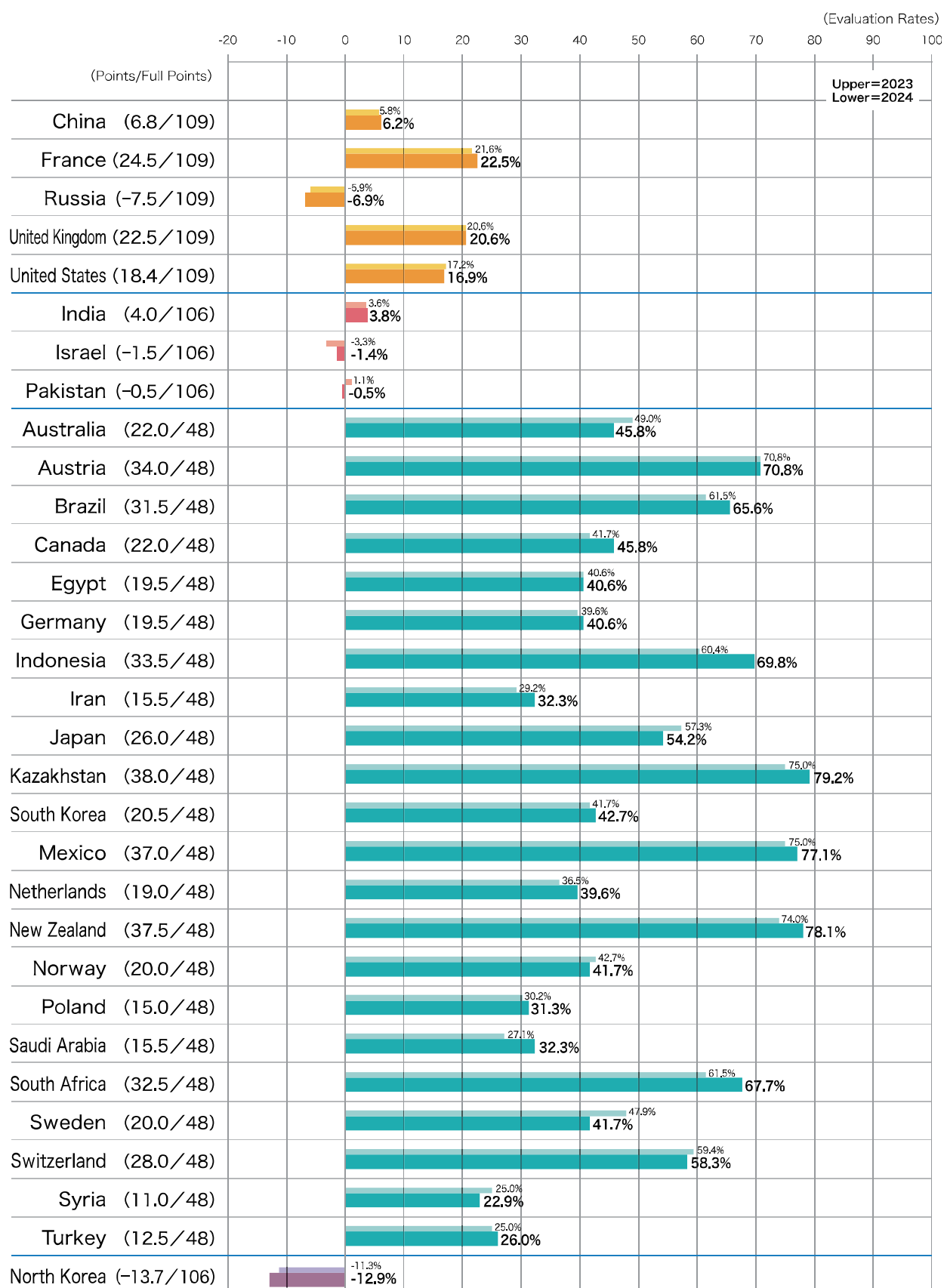
## United Kingdom



## United States

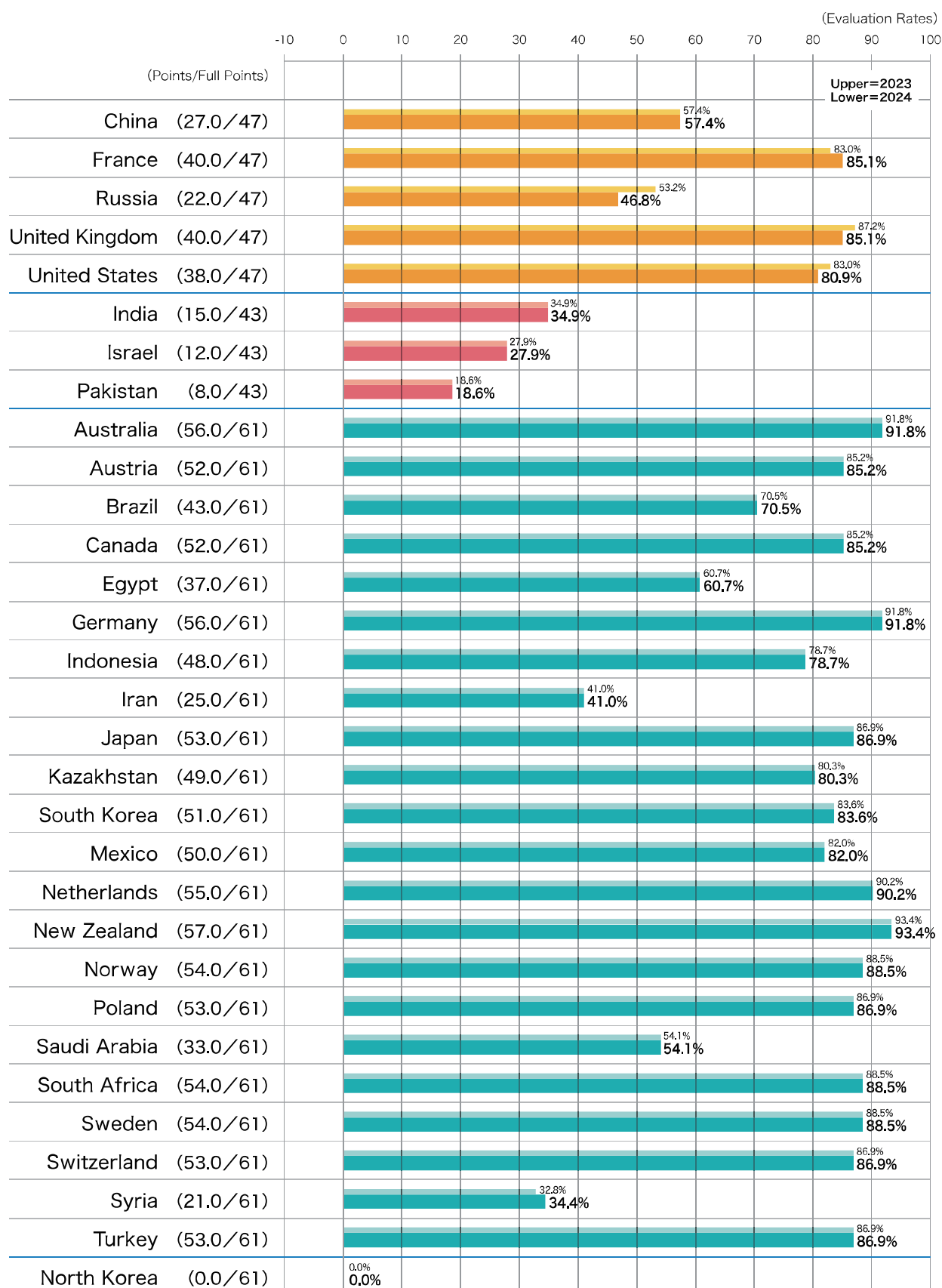


# Nuclear Disarmament





## Nuclear Non-Proliferation



## Nuclear Security

