

Executive Summary

Hiroshima Report 2019

Evaluation of Achievement in Nuclear Disarmament, Non-Proliferation and Nuclear Security in 2018

March 2019

The prospects of eliminating nuclear weapons are still distant at best. Even more worrying, the situation regarding nuclear weapons is becoming more and more complex. The five nuclear-weapon states (NWS) under the Nuclear Non-Proliferation Treaty (NPT)—China, France, Russia, the United Kingdom and the United States— and other nuclear-armed states—India, Israel and Pakistan—have not made any definite move toward renouncing their nuclear arsenals. Furthermore, all of them have continued reliance more on nuclear deterrence and modernizing their nuclear arsenals. The U.S. announcement of withdrawal from the Intermediate-Range Nuclear Forces (INF) Treaty in October 2018 made a significant impact on the international community. Non-nuclear-weapon states (NNWS) have increased their frustration over such a situation, and a majority of them had decided to conclude the Treaty on the Prohibition of Nuclear Weapons (TPNW). However, nuclear-armed states and their allies have refused to sign it. In addition, the rift between proponents (a majority of NNWS) and opponents (nuclear-armed states and allies) of the treaty has been further widening. On the other hand, the circumstance of the North Korean nuclear issue showed a huge shift by, inter alia, the convening of the U.S.-North Korean as well as inter-Korean summits, which heightened the expectation of a diplomatic solution. Still, whether North Korea has made a strategic decision on its complete denuclearization remains unknown. The threat persists of a new proliferator emerging on the scene, and the threat of nuclear terrorism also remains a high security concern in this globalized world. While problems facing nuclear disarmament, non-proliferation and nuclear security intensify, efforts toward solving them have progressed at a snail's pace.

This 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. By 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 in various fields towards the realization of a world without nuclear weapons.

Items and Countries Surveyed in the *Hiroshima Report 2019*

| | |
|--------------------------------|---|
| Items (65) | <ul style="list-style-type: none"> ● Nuclear Disarmament: 32 ● Nuclear Non-Proliferation: 17 ● Nuclear Security: 16 |
| Countries surveyed (36) | <ul style="list-style-type: none"> ● NWS: China, France, Russia, the U.K. and the U.S. ● Non-NPT parties: India, Israel and Pakistan ● NNWS: Australia, Austria, Belgium, Brazil, Canada, Chile, Egypt, Germany, Indonesia, Iran, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, New Zealand, Nigeria, Norway, the Philippines, Poland, Saudi Arabia, South Africa, Sweden, Switzerland, Syria, Turkey and the UAE ● Other: North Korea * |

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

The following is a summary of the results of surveying and evaluating countries' performances in 2018, which is also shown in graphic forms in accordance with evaluation criteria (see Part II of the *Hiroshima Report*).

1. Nuclear Disarmament

Since the end of the Cold War, the overall number of nuclear weapons has been decreasing. Still, 14,465 nuclear weapons (estimated) remain on the earth, and nuclear-armed states continue to modernize their nuclear arsenals. Nuclear-armed states, including Russia and the United States, have yet to decide further reductions of their nuclear weapons, and the United States announced to withdraw from the INF Treaty in October 2018. The entry into force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) and commencement of a Fissile Material Cut-Off Treaty (FMCT) negotiation have not yet been achieved. Little or no progress on efforts to reduce the roles of nuclear weapons has been made by nuclear-armed states and their allies; instead, their reliance on nuclear deterrence has been increased. This trend was also seen in the U.S. Nuclear Posture Review (NPR) published in February 2018.

On the other hand, the number of countries signing or ratifying the Treaty of the Prohibition of Nuclear Weapons (TPNW), which legally bans states from, among others, possessing and using nuclear weapons, has steadily increased. However, nuclear-armed states and their allies clearly state not to sign the treaty. This fact revealed that the rift between nuclear-armed states and their allies, and other NNWS over nuclear disarmament has been deepening.

(1) The status of nuclear forces (estimates)

- Approximately 14,465 nuclear weapons (estimated) still exist on the earth. The pace of their reduction has been slowing down.

(2) Commitment to achieving a world without nuclear weapons

- On the Japan-led UNGA Resolution titled “United action towards the total elimination of nuclear weapons,” the United Kingdom voted in favor, but France and the United States abstained, and China and Russia voted against it.
- The voting result of UNGA Resolutions regarding nuclear disarmament demonstrated the rift between nuclear-armed states and their allies, and other NNWS.

(3) TPNW

- By the end of 2018, 69 countries have signed the TPNW, and 19 among the signatories have already ratified it.
- Nuclear-armed states and their allies neither participated in the negotiation conference of the TPNW (except the Netherlands), nor signed it. The five NWS criticized the treaty in the joint statement in October, arguing that it was TPNW that made the progress on disarmament more difficult.

(4) Reduction of nuclear weapons

- Russia and the United States keep implementing the New Strategic Arms Reduction Treaty (New START). However, they could not reach an agreement on the extension of New START, which will expire in 2021.
- The United States announced the withdrawal from the INF Treaty in October on the grounds of Russia’s non-compliance with it. Russia denied the U.S. allegation.
- Nuclear-weapon/armed states continue to promote or contemplate modernization of their respective nuclear arsenals. Particularly, the U.S. development of low-yield nuclear warheads for SLBMs and the Russian testing on hypersonic boost glide weapons both gained attention.

(5) Diminishing the role and significance of nuclear weapons in the national security strategies and policies

- The United States submitted the new NPR report in February. While most of the concrete postures and policies follow the former ones shown in the previous report, the NPR indicates that the United States relies more on the role of nuclear deterrence.
- The NPR explains that extreme circumstances when the United States would consider using nuclear weapons could include significant non-nuclear strategic attacks

against the United States and its allies.

- There have been few significant changes in nuclear policies regarding: the role and significance of nuclear weapons; a “sole purpose” or no first use; negative security assurances; and extended deterrence.

(6) De-alerting or measures for maximizing decision time to authorize the use of nuclear weapons

- There have been few significant changes in NWS’s policies on their alert status. Russian and U.S. strategic nuclear forces are considered to remain on high alert status.

(7) CTBT

- Among the 44 states listed in Annex 2 of the CTBT, whose ratification is a prerequisite for the treaty’s entry into force, five states (China, Egypt, Iran, Israel and the United States) have signed but not ratified, and three (India, North Korea and Pakistan) have not even signed.
- At the Ninth Ministerial Meeting of the Friends of the CTBT on September 27, participating countries reaffirmed their efforts for early entry into force of CTBT and for strengthening its verification system, and demanded North Korea’s signature and ratification of the CTBT.
- North Korea decided to shut down its nuclear test site and blew up some tunnels, but it is unclear whether the test site was irreversibly destroyed.
- The United States shortened the lead time for resuming a nuclear test.

(8) FMCT

- In the 2018 session of the Conference on Disarmament (CD), negotiation of an FMCT could not be commenced yet again. Pakistan continued to oppose even negotiating a treaty prohibiting just the production of fissile material for nuclear weapons.
- In accordance with the UNGA resolution in 2016, a high-level FMCT expert preparatory group in Geneva was convened.
- China, India, Israel, Pakistan and North Korea have yet to declare a moratorium on production of fissile material for nuclear weapons.

(9) Transparency in nuclear forces, fissile material for nuclear weapons, and nuclear strategy/doctrine

- NWS did not submit their respective reports on implementation of the NPT’s three pillars, including nuclear disarmament.

(10) Verifications of nuclear weapons reductions

- The International Partnership for Nuclear Disarmament Verification (IPNDV), launched by the United States in 2016, had completed the Phase I activities and moved into Phase II. Verification of nuclear reductions, including its technological problems, has been discussed.
- In accordance with the UNGA resolution in 2016, meetings of the Group of Governmental Experts to consider the role of verification in advancing nuclear disarmament was held.

(11) Irreversibility

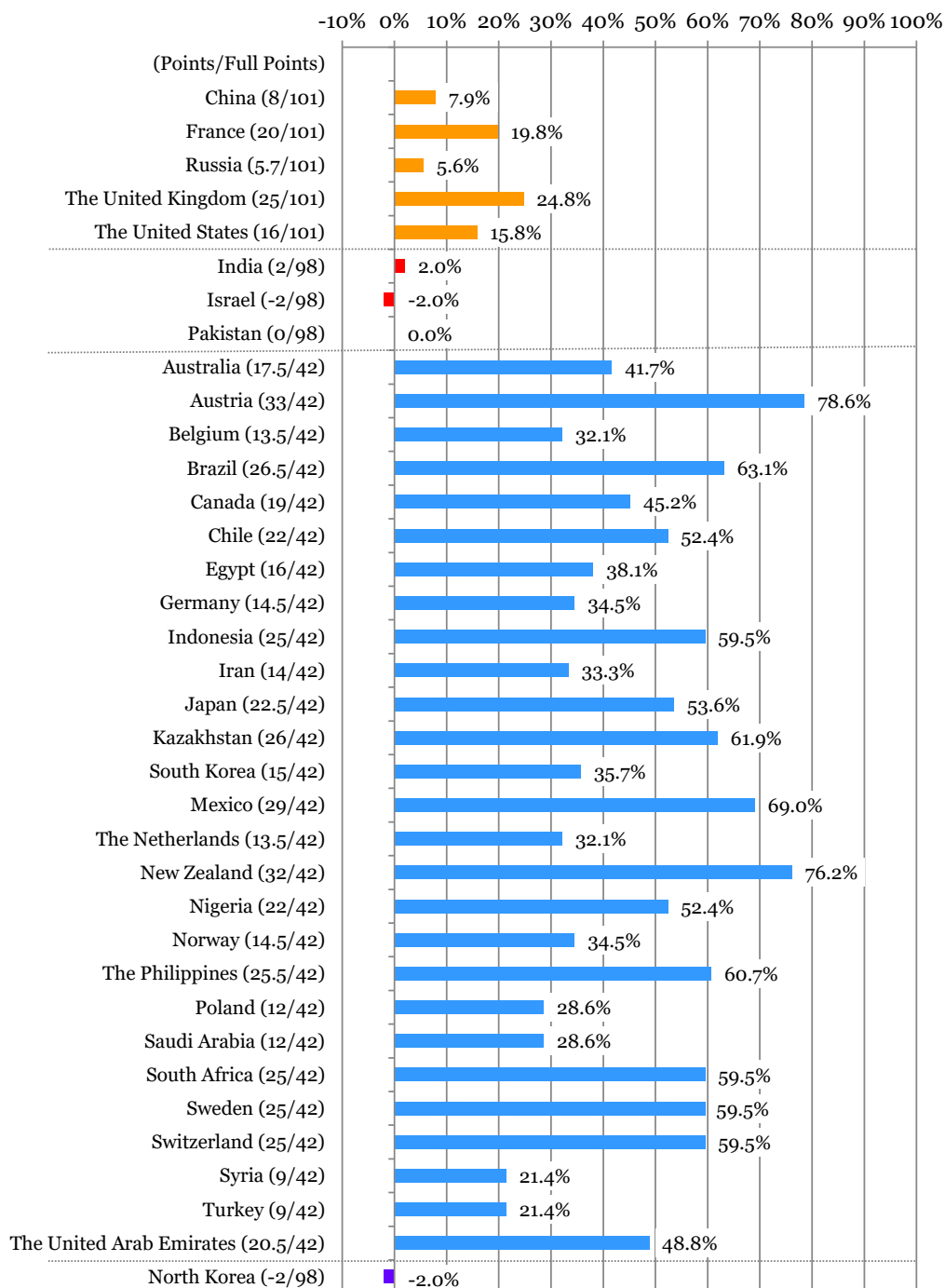
- Russia and the United States continue to dismantle or convert, to some extent, their strategic delivery vehicles, nuclear warheads, and fissile material declared excess for military purposes.

- The U. S. administration pursued the dilution and disposal approach to plutonium, and formally terminated the construction of the mixed-oxide (MOX) fuel fabrication Facility (MFFF).

(12) Disarmament and non-proliferation education and cooperation with civil society

- Some countries have started to legislate “divestment” against, or prohibit lending to organizations and companies which are involved in producing and developing nuclear weapons.

Nuclear Disarmament

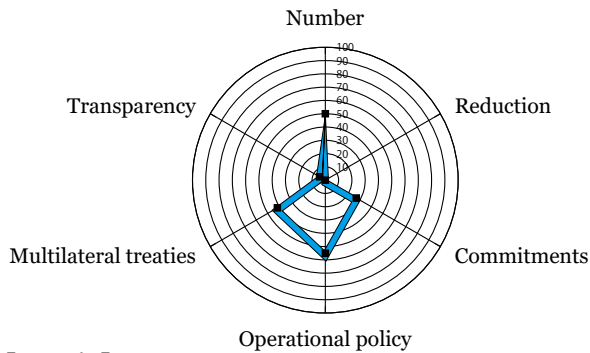


6-Point Nuclear Disarmament Radar Charts (NWS)

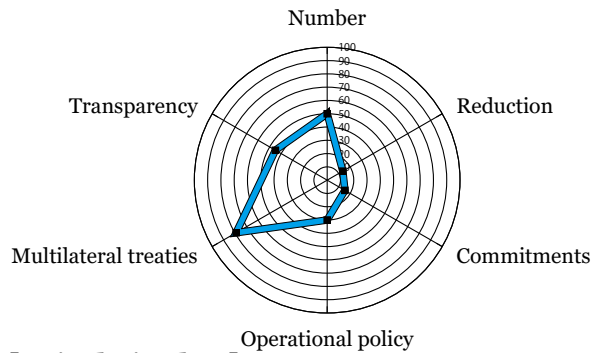
The following radar charts aim to illustrate where NWS stand in different aspects of nuclear disarmament. For this purpose, the 12 issues used for nuclear disarmament evaluation were grouped into six aspects. According to the radar charts, China is required to improve its efforts for nuclear weapons reduction and transparency. To a lesser extent, France could be more transparent regarding its nuclear weapons-related issues. Russia and the United States are urged toward further reductions of their nuclear arsenals. The performances of the United Kingdom are relatively well balanced.

| Aspects | Issues |
|-----------------------|--|
| Number | Number of Nuclear weapons |
| Reduction | Reduction of Nuclear weapons |
| Commitments | Treaty on the Prohibition of Nuclear Weapons (TPNW) |
| | Commitments to achieving a world without nuclear weapons |
| | Disarmament and non-proliferation education and cooperation with the civil society |
| | Hiroshima and Nagasaki Peace Memorial Ceremonies |
| Operational policy | 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 | Comprehensive Nuclear-Test-Ban Treaty (CTBT) |
| | Fissile Material Cut-Off Treaty (FMCT) |
| Transparency | Transparency regarding nuclear forces, fissile material for nuclear weapons, and nuclear strategy/doctrine |
| | Verifications of nuclear weapons reductions |
| | Irreversibility |

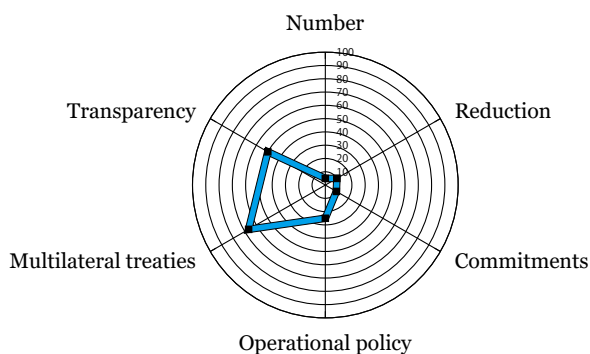
[China]



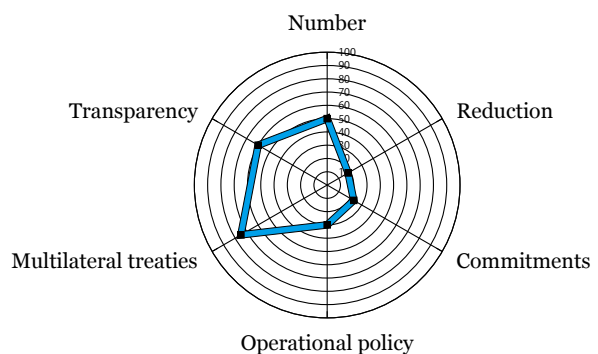
[France]



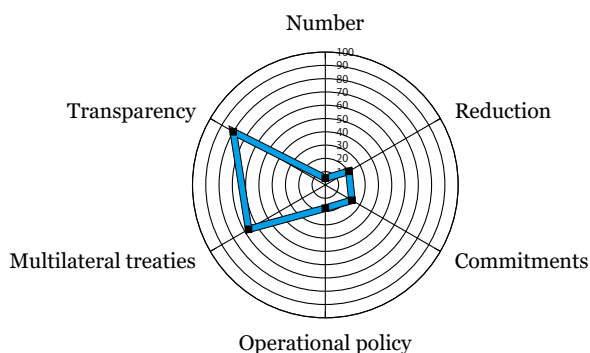
[Russia]



[United Kingdom]



[United States]



2. Nuclear Non-Proliferation

As of December 2018, 191 countries (including the Holy See and Palestine) have acceded to the Nuclear Non-Proliferation Treaty (NPT). However, three nuclear-armed states—India, Israel and Pakistan—remain outside and are less likely to join the Treaty in the near future. North Korea made a commitment to “denuclearization of the Korean Peninsula” at the inter-Korean summits as well as the U.S.-North Korean summit. However, it remains to be seen whether North Korea made a strategic decision on renouncing its nuclear weapons. Meanwhile, Iran has continued so far to implement the Joint Comprehensive Plan of Action (JCPOA), despite the U.S. withdrawal from it.

The number of countries that accept the IAEA safeguards under the IAEA Additional Protocols has increased steadily. Still, more than 40 countries have not yet signed them. Iran applied provisional application of the Additional Protocol based on the JCPOA. On export controls, most members of the Nuclear Suppliers Group (NSG) have solid export controls in place. On the other hand, there are concerns that North Korea is continuing illicit trafficking and procurement activities for nuclear- and missile-related developments.

(1) Acceptance and compliance with the nuclear non-proliferation obligations

- North Korea, in 2018, undertook a diplomatic offensive and, through the three inter-Korean summits and the U.S.-North Korean summit, has made a commitment to halting nuclear and missile testing, and denuclearization of the Korean Peninsula. However, it has refused to return to the NPT despite UN Security Council resolutions (UNSCRs) demanding that it do so at an early date, and has yet conducted no concrete measures for renouncing its nuclear weapons. Iran has continued to implement the JCPOA, concluded with E3/EU+3 in July 2015. The IAEA, assigned to verify and monitor in accordance with the JCPOA, has confirmed Iran’s compliance.
- The United States in May decided to withdraw from the JCPOA and to reimpose sanctions against Iran.

(2) IAEA safeguards

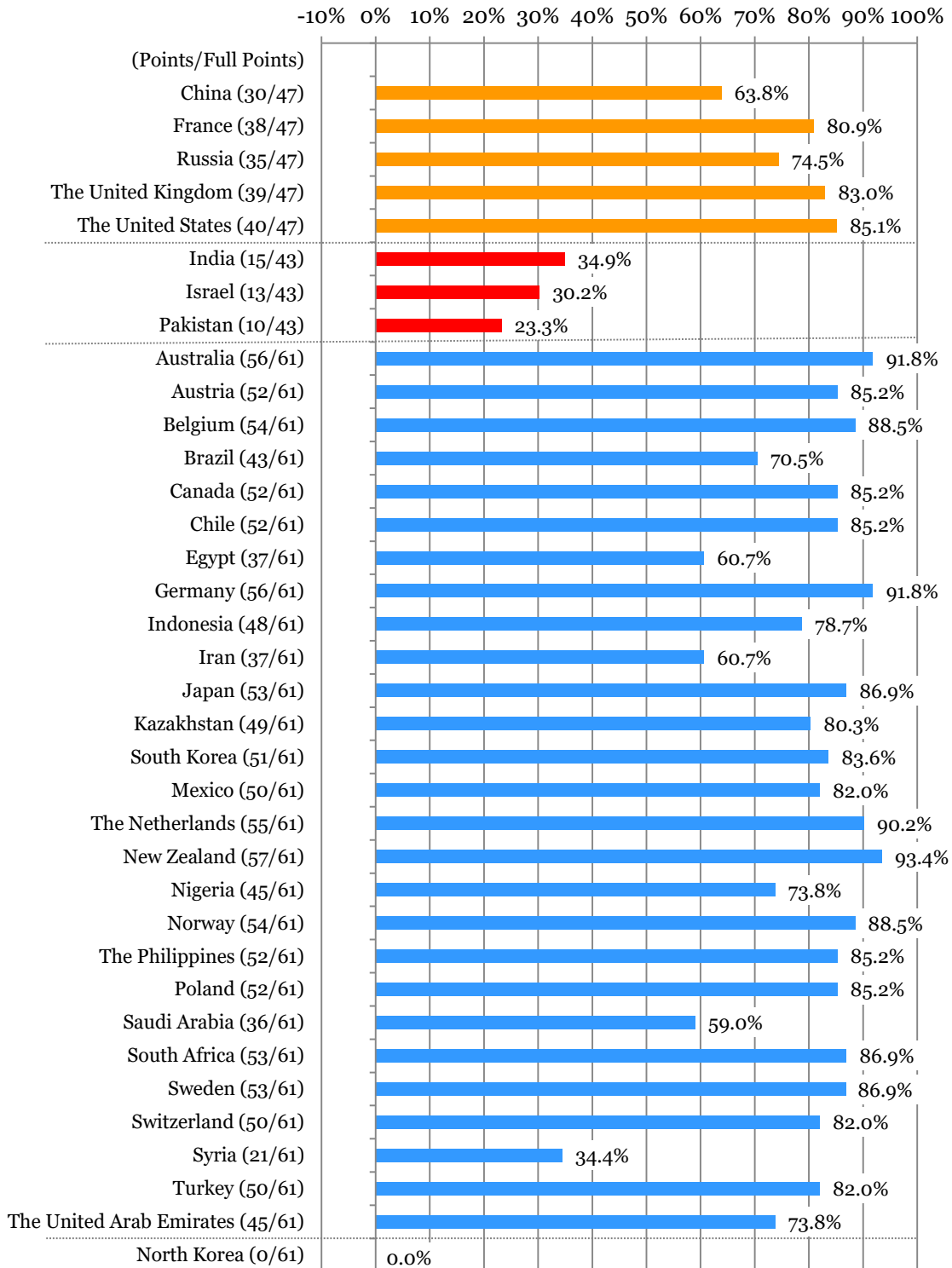
- As of 2018, 128 NPT NNWS have ratified the IAEA Additional Protocols.
- Some countries such as Brazil argue that the conclusion of an Additional Protocol should be voluntary, not obligatory under the NPT.
- Iran has accepted verification and monitoring by the IAEA. Iran also continues to provisionally apply the Additional Protocol.
- The IAEA has continued to contemplate a state-level concept (SLC) for its safeguards. It applied integrated safeguards to 65 NNWS by the end of 2017.

- The United Kingdom, which will withdraw from the EURATOM with “Brexit” in March 2019, signed a new Safeguards Agreement and its Additional Protocol with the IAEA in June 2018.

(3) 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.
- North Korea is a concern in terms of continued illicit trafficking and procurement of nuclear-related items.
- The discussion over India becoming a member of the NSG has continued, but no agreement has been reached yet. On civil nuclear cooperation with India as a non-party to the NPT, some countries seek to promote proactively while others contemplate cooperation, subject to implementing additional nuclear disarmament and non-proliferation measures.
- China has been criticized because its export of nuclear power reactors to Pakistan may constitute a violation of the NSG guidelines.

Nuclear Non-Proliferation



3. Nuclear Security

In 2018, no large-scale international conference on nuclear security was held at all and information about each country's efforts toward strengthening nuclear security tended to decrease compared with the previous year. There have been calls for continuing focused consideration on nuclear security at multilateral fora. It has been argued that the relationship between the three pillars of the NPT (nuclear non-proliferation, nuclear disarmament and peaceful use of nuclear power) and nuclear security should be reviewed. While a new perspective on nuclear security was argued in this way, another thing in the spotlight was the Amendment of the Convention on the Physical Protection of Nuclear Material (CPPNM Amendment) that came into force in 2016, and the new utilization of its framework. In particular, it is noteworthy that there was an argument that the CPPNM Amendment should be effectively utilized in the context of strengthening global nuclear security as a means of regularly calling for high-level political attention. Overall, the role that the IAEA plays in strengthening the level of nuclear security has expanded remarkably. As a result of various relevant regional workshops and meetings organized by the IAEA, many concerned countries participated in this and significant results were observed in advancing sustainable nuclear security efforts. On the other hand, various cases and arguments highlighted the need for each country to prioritize continuously and tackle with recent nuclear security relevant concerns such as sabotage acts to nuclear facilities exploiting drones, cyber-attacks and internal threats. Regions where highly enriched uranium (HEU) and plutonium no longer exist are gradually increasing, and steady results can be seen in accession of nuclear security-related conventions. Meanwhile, in some surveyed countries, there is no public disclosure of information on efforts to strengthen nuclear security, and there is concern that interest in nuclear security has declined in these countries.

(1) Physical Protection of Nuclear Materials and Facilities

- In one third or more of the surveyed countries, it is speculated that there is possession of a certain level of fissile material that would be attractive for terrorists. On the other hand, South America, Central European countries and Southeast Asia have become areas where there are no risky nuclear materials. Countries participating in these efforts are gradually increasing.

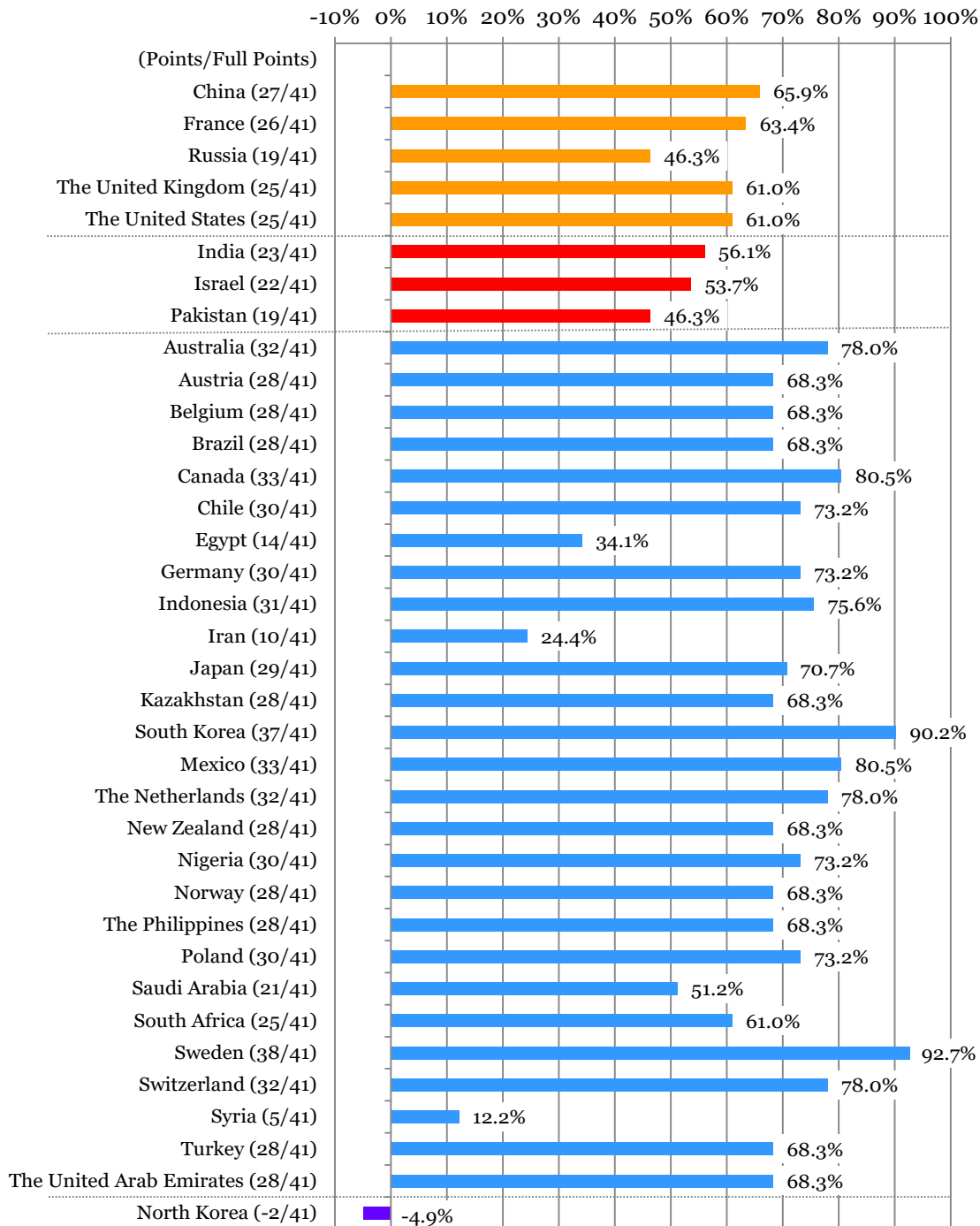
(2) Status of accession to nuclear security- and safety-related conventions, participation in nuclear security-related initiatives, and application to domestic systems

- Most of the surveyed countries have already joined conventions related to nuclear security and nuclear safety, and in 2018 the results of ratification of the conventions were seen in Syria and Mexico, but some countries such as Iran and North Korea still have failed to achieve substantive progress on joining those treaties and conventions.
- Expectations and attention gathered around the CPPNM Amendment, entered into force in 2016, and its framework, in particular how to utilize the Review Conference of the Convention in 2021.
- Eight years have already passed since INFCIRC/225/Rev.5 was published, and cases where the surveyed country directly mentioned the introduction of the recommendation measures have decreased. However, in the field of development of legal instruments, there were new statements on the introduction of recommendation-related measures in several surveyed countries.

(3) Efforts to maintain and improve the highest level of nuclear security

- Efforts for minimizing HEU and plutonium stockpile in civilian use, conversion of HEU research reactors, removal of surplus HEU and high-level radiation sources which are no longer used, have achieved some positive results and continued to be further promoted under, among others, the Global Threat Reduction Initiative (GTRI).
- The number of countries with advanced civil nuclear programs, which have accepted, or are scheduled to accept, the IAEA's advisory services, such as International Physical Protection Advisory Service (IPPAS) reviewing and recommending nuclear security of the recipients, has steadily increased.
- In addition to the IAEA's efforts, the Nuclear Forensics International Technical Working Group (ITWG) on illegal transfer of nuclear materials and the Global Initiative to Combat Nuclear Terrorism (GICNT) have conducted numerous workshops and tabletop exercises. In particular, joint exercises in the field of nuclear forensics and launching of multilateral cooperation projects attracted attention.
- In response to increased awareness about the importance of nuclear security capacity building and international cooperation in this area, many states with advanced civil nuclear programs have established Centers of Excellence (COE) for nuclear security training. Cooperation is promoted continuously among the COEs in the same region and the International Network for Nuclear Security Training and Support Centres (NSSC Network) and International Nuclear Security Education Network (INSEN), have been assuming a key role in facilitating further exchange of information and best practices between those COEs.

Nuclear Security



About Hiroshima Report—*Hiroshima Report 2019: Evaluation of Achievement of Nuclear Disarmament, Non-Proliferation and Nuclear Security in 2018* is an outcome of the “Hiroshima Report Publication Project,” commissioned by Hiroshima Prefecture to the Japan Institute of International Affairs (JIJA). As produced annually since 2013, *Hiroshima Report 2019* 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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