

Executive Summary

Hiroshima Report 2018

Evaluation of Achievement in Nuclear Disarmament,
Non-Proliferation and Nuclear Security in 2017

March 2018

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. Non-nuclear-weapon states (NNWS) have increased their frustration over such a situation, and a majority of them decided to conclude the Treaty on the Prohibition of Nuclear Weapons (TPNW). However, nuclear-armed states and their allies refuse to sign it. Furthermore, the rift between proponents (a majority of NNWS) and opponents (nuclear-armed states and allies) of the treaty has been further widening. On nuclear non-proliferation, while the situation surrounding the Iranian nuclear issue has moved positively, North Korea has conducted six nuclear tests and many ballistic missile flight tests, and repeated nuclear provocations. The threat persists of a new proliferator emerging on the scene. The threat of nuclear terrorism also remains a high security concern in this globalized world. Growing worldwide interest in peaceful use of nuclear energy could entail the increasing risk of nuclear proliferation as well as terrorism. 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 2018*

| | |
|--------------------------------|---|
| 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 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 2017, 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, 14,935 nuclear weapons (estimated) remain on the earth, and nuclear-armed states continue to modernize their nuclear arsenals. While NNWS have explored promotion of nuclear disarmament through, among others, proactive proposals on disarmament measures, little major progress was made in 2017. Nuclear-armed states, including Russia and the United States, have yet to decide further reductions of their nuclear weapons. Russia was alleged to be in non-compliance with the Intermediate-Range Nuclear Forces (INF) Treaty. 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. Declaratory or employment policies of nuclear posture, as well as nuclear strategies, of nuclear-weapon/armed states remain almost unchanged.

On the other hand, a majority of NNWS—which have conviction that codifying a prohibition norm on nuclear weapons as a treaty represents the essential step toward eliminating nuclear weapons—successfully concluded the Treaty of the Prohibition of Nuclear Weapons (TPNW). However, nuclear-armed states and allies clearly state not to sign the treaty. This fact revealed that the rift between nuclear-armed states and allies, and other NNWS over nuclear disarmament has been deepening.

(1) The status of nuclear forces (estimates)

- Approximately 14,935 nuclear weapons (estimated) still exist on the earth. The pace of their reduction has been slowing down.

(2) Commitment to achieve a world without nuclear weapons

- On the Japan-led UNGA Resolution titled “United action towards the total elimination of nuclear weapons,” France, the United Kingdom and the United States voted in favor; but China and Russia voted against the resolution in 2017.

(3) TPNW

- The TPNW was adopted at the “United Nations Conference to Negotiate a Legally Binding Instrument to Prohibit Nuclear Weapons, Leading towards Their Elimination” on July 7, with 122 in favor. The treaty, stipulating prohibitions of, inter alia, possession and use of nuclear weapons, was opened for signature at the UN Headquarters on September 20. In the history of nuclear disarmament, it is a first treaty that legally bans nuclear weapons, and of which civil society proactively join a process of establishment.
- By the end of 2017, 56 countries signed the TPNW, and three among signatories have already ratified it.
- Nuclear-armed states and allies did neither participate in the negotiation conference of the TPNW (except the Netherlands), and nor sign it, arguing that the TPNW is less effective on nuclear disarmament.

(4) Reduction of nuclear weapons

- Russia and the U.S. keep implementing the New Strategic Arms Reduction Treaty (New START). However, they could not commence negotiation on further reduction of their nuclear arsenals.
- Russia was alleged to have violated the INF Treaty, while it denied.
- Nuclear-weapon/armed states continue to promote or contemplate modernization of their respective nuclear arsenals. In particular, North Korea continues nuclear and missile activities aggressively.

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

- 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 (except a French declaration); and extended deterrence. The United States is to submit a new Nuclear Posture Review report in 2018.

- North Korea repeated to threaten a first use of nuclear weapons vis-à-vis Japan, the United States and South Korea.

(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.
- The 10th Conference on Facilitating Entry into Force of the CTBT, or Article XIV Conference, was held in September, where participating countries urge an early entry into force of the treaty and maintenance of moratorium of nuclear testing.
- North Korea conducted the sixth nuclear test in September. Its explosive yield was 160 kt (estimated), the largest-ever of the North Korea’s nuclear tests.

(8) FMCT

- In the 2017 session of the Conference on Disarmament (CD), negotiation of an FMCT could not be commenced yet again, due to Pakistan’s strong objection. Pakistan continued to oppose even negotiating a treaty prohibiting just a 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 **(11) Irreversibility** nuclear disarmament.

(10) Verifications of nuclear weapons reductions

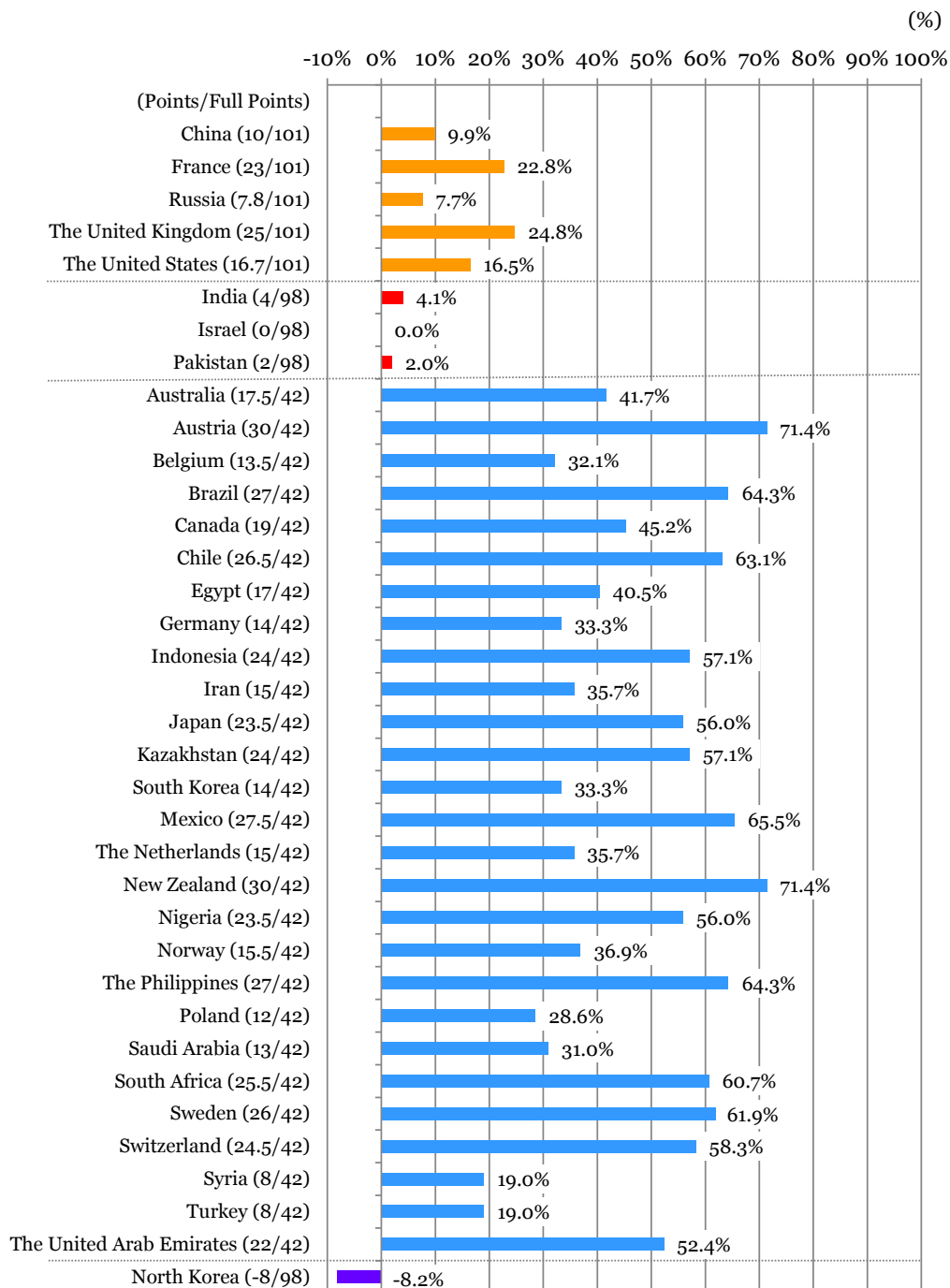
- The International Partnership for Nuclear Disarmament Verification (IPNDV), launched by the United States in 2016, completed the Phase I activities. Participating countries launched the Phase II, in which the IPNDV will deepen its understanding of effective and practical verification options to support future nuclear disarmament verification and demonstrate its work through tangible activities such as exercises and demonstrations.

- Russia and the U.S. continue to dismantle or convert, to some extent, their strategic delivery vehicles, nuclear warheads, and fissile material declared excess for military purposes.
- In the United States, debates continued on whether it should pursue a production of MOX fuel from, or dilute and dispose option of weapon-grade plutonium removed from its defense programs.

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

- Japan and other western countries proactively conducted disarmament and non-proliferation education, and cooperated with civil society.

Nuclear Disarmament

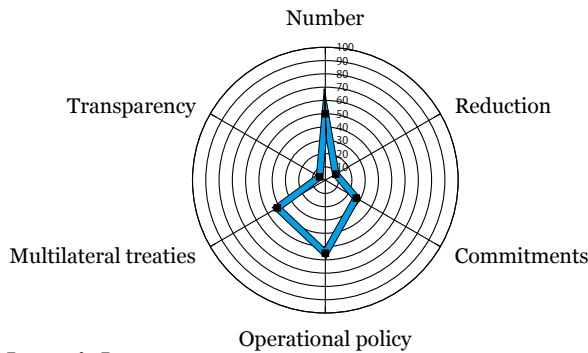


6-Point Nuclear Disarmament Radar Charts (NWS)

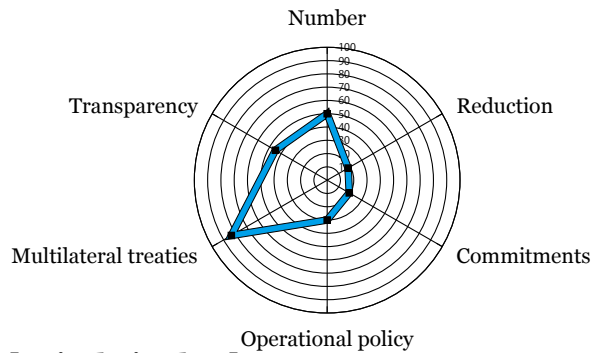
The following radar charts aim to illustrate where NWS stand in different aspects of nuclear disarmament. For this purpose, the 12 issues used for nuclear disarmament evaluation were grouped into six aspects. According to the radar charts, China is required to improve its efforts for nuclear weapons 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 Peace Memorial Ceremony |
| 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 |

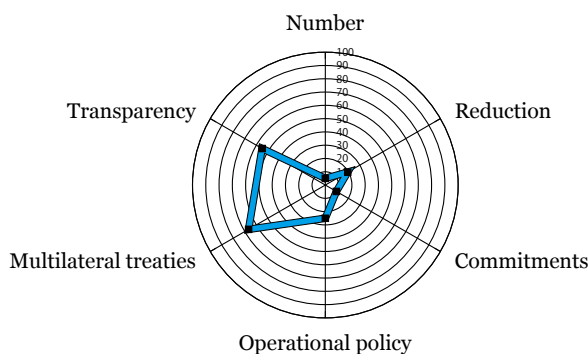
[China]



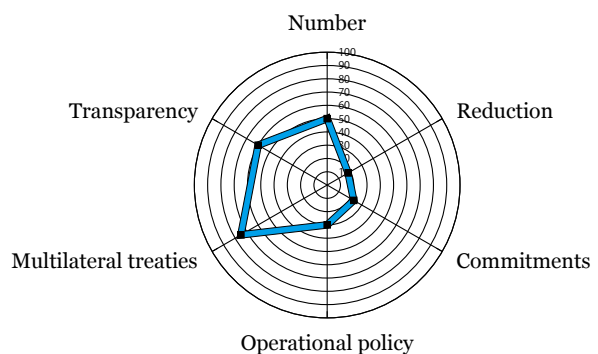
[France]



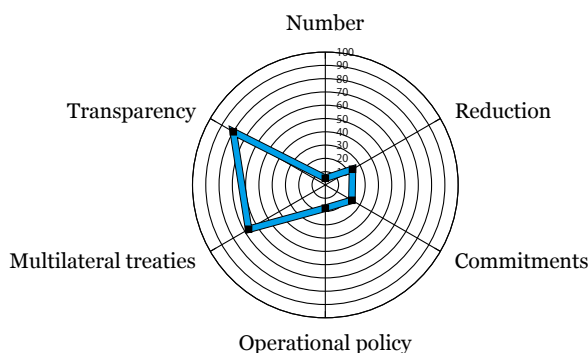
[Russia]



[United Kingdom]



[United States]



2. Nuclear Non-Proliferation

As of December 2017, 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 declared its withdrawal from the NPT twice, announced its possession of nuclear weapons, and conducted nuclear test explosions six times. One of the most significant developments was that Iran continued to implement the Joint Comprehensive Plan of Action (JCPOA).

The number of countries that accept the IAEA safeguards under the IAEA Additional Protocols has increased steadily. In addition, Iran applied provisional application of the Additional Protocol. 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 and Iran are continuing illicit trafficking and procurement activities for nuclear- and missile-related developments.

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

- North Korea has failed to respond to the UN Security Council's decisions; rather, it conducted the sixth nuclear test on September 3, whose explosive yield was 160 kt (estimated). North Korea announced that it succeeded a test of hydrogen bomb for an inter-continental ballistic missile (ICBM). It also repeated flight tests of ballistic missiles, including ICBMs.
- Iran 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.

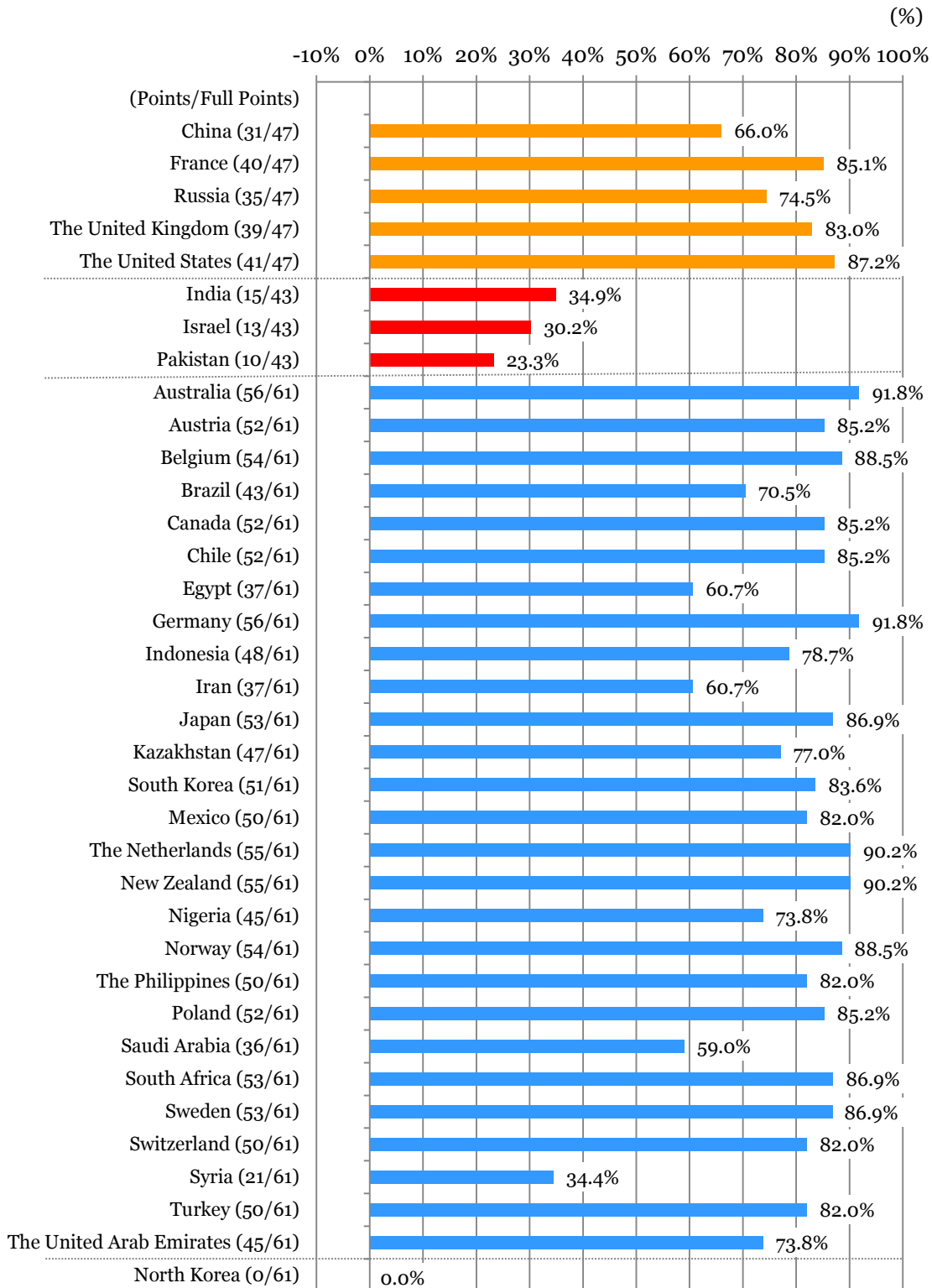
(2) IAEA safeguards

- As of 2017, 126 NPT NNWS have ratified the IAEA Additional Protocols.
- Some countries argue that the conclusion of an Additional Protocol should be voluntary, not obligatory.
- Iran has accepted verification and monitoring by the IAEA. Iran also continues to provisionally apply the Additional Protocol.
- The IAEA continued to contemplate a state-level concept (SLC) for its safeguards. It applied integrated safeguards to 69 NNWS by the end of 2016.

(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.
- Japan ratified the bilateral Nuclear Cooperation Agreement with India in June. 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

Throughout the year of 2017, the international community focused on how to inherit the outcomes and lessons of the nuclear security summit process that ended in 2016 and to look into the future of the international framework on nuclear security. In fact in 2017, the “Nuclear Security Plan 2018 - 2021” was submitted at the IAEA General Conference, which indicated the direction for strengthening nuclear security in the near future, and large-scale international conferences related to nuclear security organized by the IAEA, such as the International Ministerial Conference on “Nuclear Power in the 21st Century” and the International Conference on Nuclear Materials and Nuclear Facilities, etc., were held one after another. In addition, numerous regional workshops, training courses and multilateral cooperation were also conducted. As a result, despite the fact that the amount of information from each surveyed country has decreased compared to before the year 2016, it was observed that there is a continuing trend towards strengthening the nuclear security system in some concerned countries. While steady nuclear security efforts have been successful and regions where HEU and plutonium are not present are increasing, the importance of nuclear security will not decline as long as “attractive” nuclear materials exist for terrorists. In some cases such as countries where nuclear proliferation is concerned, information on domestic efforts to strengthen nuclear security has hardly been mentioned even in national statements of the major international conferences. Therefore, there is concern that attention to nuclear security will decline in these countries.

(1) Physical Protection of Nuclear Materials and Facilities

- In one third or more of the surveyed countries, it is speculated that possession of 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.

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

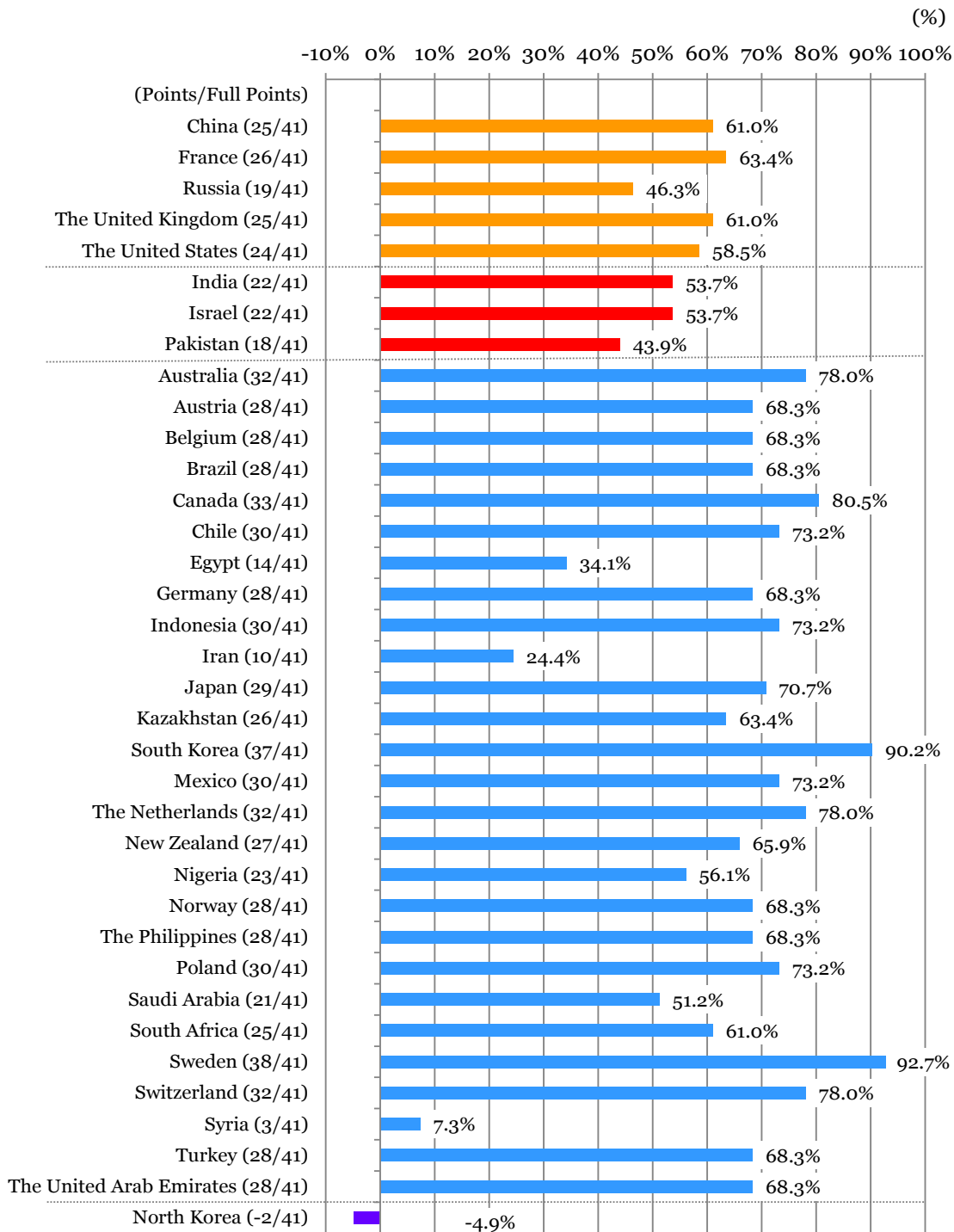
- Most of the surveyed countries have already joined treaties and conventions related to nuclear security and safety, but some countries such as Iran and North Korea still have failed to achieve substantive progress on joining those treaties and conventions. In 2017 Syria made a step forward by ratifying the Nuclear Safety Convention, however, there was no other progress.
- The Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM Amendment) came into effect in 2016, and the number of ratifying countries has also increased. In parallel therewith, discussions are underway concerning the implementation of the Convention in each country and the way of utilizing the convention’s review conference mechanism.
- Seven 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 decreased. However, as it was seen in some cases that an indirect way of referring to the introduction of measures related to the recommendation of INFCIRC/225/Rev.5, it is inferred that some of the surveyed countries are still continuing to introduce these measures.
- Countries of proliferation concern have neither joined the several treaties and conventions on nuclear security and safety nor applied INFCIRC/225/Rev.5 to their national nuclear security systems. In some cases, there are negative trends on disclosing relevant information

and transparency improvement. With the end of Nuclear Security Summit Process, concerns are rising over the issue of transparency of those countries.

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

- Efforts for minimizing HEU and plutonium stockpile in civilian use have achieved some positive results and continued to be further promoted under, among others, the Global Threat Reduction Initiative (GTRI). In addition, efforts to prevent illicit transfer by INTERPOL also advanced in various fields.
- 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 increased.
- 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. These efforts have led to support for the development of nuclear security relevant capability of member countries.
- 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 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 Network), has been assuming a key role in facilitating further exchange of information and best practices between those COEs.

Nuclear Security



About Hiroshima Report—*Hiroshima Report 2018: Evaluation of Achievement of Nuclear Disarmament, Non-Proliferation and Nuclear Security in 2017* 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 2018* 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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