(FY 2013 Research Project Commissioned by Hiroshima Prefecture)

Hiroshima Report

Evaluation of Achievement in Nuclear Disarmament, Non-Proliferation and Nuclear Security: 2014

Center for the Promotion of Disarmament and Non-Proliferation
The Japan Institute of International Affairs

March 2014

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Preface and Acknowledgements

This report, *Hiroshima Report—Nuclear Disarmament, Nuclear Non-Proliferation and Nuclear Security: 2014* (hereinafter referred to as "*Hiroshima Report 2014*") is an outcome of a research project on Evaluating Performances of Selected Countries in the Fields of Nuclear Disarmament, Non-Proliferation and Nuclear Security, commissioned by the Hiroshima Prefecture to the Japan Institute of International Affairs (JIIA). It updates the inaugural report, *Hiroshima Report—Nuclear Disarmament, Nuclear Non-Proliferation and Nuclear Security: 2010-2012* (hereinafter referred to as "*Hiroshima Report 2013*"), issued in March 2013.

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—continue to perceive their nuclear weapons as one of the indispensable components for their national security, and have not made any definite move toward renouncing their nuclear arsenals. Instead, they have taken measures, such as modernization of nuclear forces and development of new delivery vehicles, with a view to sustaining nuclear deterrence for a longer period. India and Pakistan which are not parties to the NPT are also pursuing a buildup of their nuclear arsenals in the South Asian unstable security environment. Another non-state party to the NPT, Israel, is widely considered to have nuclear weapons, although it has maintained a policy of "nuclear ambiguity" by neither confirming nor denying possession of nuclear weapons.

The status and prospects regarding nuclear non-proliferation are also gloomy. North Korea is determined to pursue building up of its nuclear forces after declaring withdrawal from the NPT and conducted three nuclear tests. The international community was given a chance to solve the long-standing concern about the nuclear ambition of Iran by the Geneva Provisional Agreement in November 2013. Whether this can lead to a long-lasting solution of the Iranian nuclear issue is yet to be known. While the world falters in erecting a firm barrier against nuclear proliferation, the threat persists for a new proliferator to emerge on the scene. The threat of nuclear terrorism remains a high security concern in this globalized world. Growing worldwide interest in peaceful use of nuclear energy increase the 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, first, 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 the "Report" and the "Evaluation" 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.

The Research Committee was established to conduct this project, namely producing the "Report" and the "Evaluation." This Committee met twice within the Japanese Fiscal Year 2013 to discuss the contents. The members of the Research Committee are as follows:

Chairperson

Nobuyasu Abe (Director, CPDNP, JIIA)

Research Members

Nobumasa Akiyama (Professor, Hitotsubashi University)
Akira Kawasaki (Executive Committee Member, Peace Boat)
Masahiro Kikuchi (Board Member, Nuclear Material Control Center)
Mitsuru Kurosawa (Professor, Osaka Jogakuin College)
Kazuko Hamada (Senior Research Fellow, Japan Atomic Energy Agency)
Kazumi Mizumoto (Vice-President, Hiroshima Peace Institute, Hiroshima City University)
Miho Okada (Research Fellow, JIIA)

Research Member and Project Coordinator

Hirofumi Tosaki (Senior Research Fellow, CPDNP, JIIA)

The Research Committee appreciates the comments and advices to the "Report" given by the following experts.

Mr. Mark Fitzpatrick (Director of the Non-Proliferation and Disarmament Programme, International Institute for Strategic Studies)
The Hon. Professor Yoriko Kawaguchi (Meiji Institute for Global Affairs, Meiji University)
Professor John Simpson (Emeritus Professor of International Relations, University of Southampton)

Appreciation is also expressed to: leading experts on nuclear disarmament, non-proliferation and nuclear security, in particular, who contributed to the *Hiroshima Report Blog* (http://hiroshima-report.blogspot.jp/); Mr. Michiru Nishida (Ministry of Foreign Affairs, Japan) for valuable technical comments; and Mr. Gordon Wyn Jones (King's College London, Centre for Science and Security Studies) for editing the Hiroshima Report.

Views or opinions expressed in the "Report" and "Evaluation" are those of the members of the Research Committee and do not necessarily represent the view of the Hiroshima Prefecture, the JIIA or the organizations to which they belong. Not all of the members necessarily agree on all of the points discussed.

Introduction—Research Design

(1) Items

In the *Hiroshima Report 2013,* 61 items (28 for nuclear disarmament, 17 for nuclear non-proliferation and 16 for nuclear security) for study, analysis and evaluation of the selected countries' performance, were identified and built mainly upon the following documents that reflected widely supported views on the issues of nuclear disarmament, non-proliferation and nuclear security:

- The Action Plan and recommendations pertaining to the implementation of the 1995 Middle East resolution contained in the Final Document adopted in the 2010 Nuclear Non-Proliferation Treaty (NPT) Review Conference;
- Seventy-six recommendations contained in the 2009 International Commission on Nuclear Non-proliferation and Disarmament (ICNND) report titled *Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers*;
- Proposals sponsored or co-sponsored by Japan at the 2013 NPT Preparatory Committee (PrepCom); and
- "Resolution towards the Abolition of Nuclear Weapons" launched by the Mayors for Peace in 2011.

Items were also chosen with the aim of providing a certain degree of objective measurements for evaluation.

The *Hiroshima Report 2014* maintains the same structure adding three more items to the nuclear disarmament and non-proliferation fields bringing the total to 64 items (31 for nuclear disarmament, 17 for nuclear non-proliferation and 16 for nuclear security). [Note: items underlined are newly added items]

1. Nuclear Disarmament
    - (1) Status of Nuclear Forces (estimates)
    - (2) Commitment to Achieve a World without Nuclear Weapons
        - A) Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM
        - B) Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention
        - C) Announcement of significant policies and important activities
        - D) <u>Humanitarian consequences of nuclear weapons</u>
    - (3) Reduction of Nuclear Weapons
        - A) Reduction of nuclear weapons
        - B) A concrete plan for further reduction of nuclear weapons
        - C) Trends on strengthening/modernizing nuclear weapons capabilities
    - (4) Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies
        - A) The current status of the roles and significance of nuclear weapons
        - B) Commitment to the "sole purpose," no first use, and related doctrines

C) Negative security assurances
D) Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones
E) Relying on extended nuclear deterrence

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

(6) CTBT

A) Signing and ratifying the CTBT
B) The moratorium on nuclear test explosions pending CTBT's entry into force
C) Cooperation with the CTBTO Preparatory Commission
D) Contribution to the development of the CTBT verification systems
E) Nuclear testing

(7) FMCT

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

(9) Verifications of Nuclear Weapons Reductions

(10) Irreversibility

A) Implementing or planning dismantlement of nuclear warheads and their delivery vehicles
B) Decommissioning/conversion of nuclear weapons-related facilities
C) Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes

(11) Disarmament and Non-Proliferation Education and Cooperation with Civil Society

(12) Hiroshima Peace Memorial Ceremony

2. Nuclear Non-Proliferation

(1) Acceptance and Compliance with the Nuclear Non-Proliferation Obligations

A) Accession to the NPT
B) Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation
C) Nuclear-Weapon-Free Zones

(2) IAEA Safeguards Applied to the NPT NNWS

A) Conclusion of the IAEA Safeguards Agreements
B) Compliance with the IAEA Safeguards Agreements

(3) IAEA Safeguards Applied to NWS and Non-Parties to the NPT

(4) Cooperation with the IAEA

(5) Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies

A) Establishment and implementation of the national implementation systems
B) Requiring the conclusion of the Additional Protocol for nuclear export
C) Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues

D) Participation in the PSI

E) Civil nuclear cooperation with non-parties to the NPT

(6) Transparency in the Peaceful Use of Nuclear Energy

3. Nuclear Security

(1) The Amount of Fissile Material Usable for Weapons

(2) Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems

A) Accession status to nuclear security-related conventions

B) INFCIRC/225/Rev.5

(3) Efforts to Maintain and Improve the Highest Level of Nuclear Security

A) Minimization of HEU in civilian use

B) Prevention of illicit trafficking

C) Acceptance of international nuclear security review missions

D) Technology development –nuclear forensics

E) Capacity building and support activities

F) IAEA Nuclear Security Plan and Nuclear Security Fund

G) Participation in international efforts

(2) Countries Surveyed in This Project

In the 2013 report, the performances of 19 countries were surveyed, based on their nuclear significance and geographical distribution. The *Hiroshima Report 2014* added 12 countries—including members of the Non-Proliferation and Disarmament Initiative (NPDI), members of the NAC, participants of Joint Statements on the Humanitarian Consequences of Nuclear Weapons—bringing the total number of countries surveyed to 31, as follows: [Note: countries underlined are newly added ones]

- Five nuclear-weapon states under the NPT (China, France, Russia, the United Kingdom and the United States);
- Non-state parties to the NPT (India, Israel and Pakistan);
- Non-nuclear-weapon states under the NPT (Australia, Austria, Belgium, Brazil, Canada, Egypt, Germany, Indonesia, Iran, Japan, Kazakhstan, South Korea, Mexico, the Netherlands, New Zealand, Norway, South Africa, Sweden, Switzerland, Syria, Turkey and UAE); and
- Other (North Korea*)

(3) Approach

This project focuses on the time period in 2013. Reference documents are basically from open sources, such as speeches, remarks, votes and working papers delivered at disarmament fora (e.g., NPT Preparatory Committee, UN General Assembly, and Conference on Disarmament) and

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

official documents published by governments and international organizations.

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

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

The different numerical value within each category (i.e., nuclear disarmament, nuclear non-proliferation and nuclear security) reflects each activity's importance within that area, as determined through deliberation by the Research Committee of this project. However, the differences in the scoring arrangements within each of the three categories does not necessarily reflect its relative significance in comparison with others, as it has been driven by the differing number of items surveyed. Thus, the value assigned to nuclear disarmament (full points 94) does not mean that it is more than twice as important as nuclear non-proliferation (full points 61) or nuclear security (full points 41).

Regarding "the number of nuclear weapons" (in the nuclear disarmament section) and "the amount of fissile material usable for nuclear weapons" (in the nuclear security section), the assumption is that the more nuclear weapons or weapons-usable fissile material a country possesses, the greater the task of reducing them and ensuring their security. However, the Research Committee recognizes that "numbers" or "amounts" are not the sole decisive factors. It is definitely true that other factors—such as implications of missile defense, chemical and biological weapons, or conventional force imbalance and a psychological attachment to a minimum overt or covert nuclear weapon capability—would affect the issues and the process of nuclear disarmament, non-proliferation and nuclear security. However, they were not included in our criteria for evaluation because it was difficult to make objective scales of the significance of these factors. In addition, in view of the suggestions and comments made to the *Hiroshima Report 2013*, the Research Committee modified criteria of the following items: current status of the roles and significance of nuclear weapons in national security strategies and policies; relying on extended nuclear deterrence; and nuclear testing.

After all, there is no way to mathematically compare the different factors contained in the different areas of disarmament, non-proliferation and nuclear security. Therefore, the evaluation points should be taken as indicative of the performances in general but by no means as an exact representation or precise assessment of different countries' performances.

Part I
Report: Surveying Trends of Nuclear Disarmament, Non-Proliferation and Nuclear Security in 2013

1. Nuclear Disarmament*

(1) Status of Nuclear Forces (estimates)

As of December 2013, eight countries have declared that they have nuclear weapons. According to Article 9-3 of the Nuclear Non-Proliferation Treaty (NPT), "a nuclear-weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967." China, France, Russia, the United Kingdom, and the United States meet this requirement, and have acceded to the NPT as nuclear-weapon States (NWS) as defined by the treaty.

The three other countries that have tested nuclear weapons—after January 1, 1967—and declared having nuclear weapons are India, Pakistan and North Korea. India and Pakistan have never been parties to the NPT. North Korea declared it had withdrawn from the treaty in 2003. Israel, a non-NPT state, has maintained a policy of "nuclear ambiguity" by neither confirming nor denying having nuclear weapons, although it is widely considered that it has them (no evidence has yet been found that Israel has conducted a nuclear test). In this report these four states that have publicly declared or are believed to possess nuclear weapons are referred to as "nuclear-armed states."

None of the nuclear-weapon/armed states have declassified the exact number of nuclear weapons in its arsenal, although France and the United Kingdom have announced maximum numbers.[1] The status of nuclear forces shown in table 1-1 below is based on the estimates produced by the Stockholm International Peace Research Institute (SIPRI). According to the data, in spite of the reduction of 2,000 nuclear weapons from the previous year, approximately 17,000 nuclear weapons still exist on the earth, and the U.S. and Russian nuclear stockpiles together constitute more than 90 percent of them.

SIPRI estimates that China, India and Pakistan have added about 10 warheads each in the course of the past year. China's Foreign Ministry spokesman Hong Leiat challenged SIPRI's analysis at a daily news briefing: "China has never deployed nuclear weapons in other countries, and China does not participate in any form of the nuclear arms race and has always kept its nuclear capabilities at the minimum level required for national security."[2] While SIPRI and most

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* Chapter 1 is written by Hirofumi Tosaki.

[1] On this point, Bruno Tertrais explains the reasons as following: "Stockpiles include weapons which are not entirely functional (when exactly does an atomic device become a 'nuclear weapon'?), or which are used for non-destructive testing. As a result, giving an exact number can be difficult, misleading, and/or be accurate just for a given day." Bruno Tertrais, "Comments on Hiroshima Report of March 2013," *Hiroshima Report Blog: Nuclear Disarmament, Nonproliferation and Nuclear Security*, October 29, 2013, http://hiroshima-report.blogspot.jp/2013/10/op-ed-bruno-tertrais-comments-on.html.

[2] Zhou Wa, "China Defends Use of Nuclear Warheads," *China Daily*, 4 June 2013, http://www.asianewsnet.net/China-defends-use-of-nuclear-warheads-47524.html.

U.S. scholarly estimate that China has 250 nuclear warheads, one Russian scholar estimates that the arsenal comprises 800-900 warheads.[3] Such wide-ranging estimates are derived from China being the least transparent about nuclear weapons among the five NWS. Contrary to the other NWS, China has released no information on the past, current or future numbers of its nuclear weapons and delivery vehicles.

[3] Viktor Yesin, "China's Nuclear Capabilities," Aleksey Arbatov, Vladimir Dvorkin and Sergey Oznobishchev, eds., *Prospects of China's Participation in Nuclear Arms Limitation* (Moscow: Institute of World Economic and International Relations, Russian Academy of Sciences, 2012), chapter 3.

Table 1-1: The Status of Nuclear Forces (estimates, as of January 2013)

	Total nuclear stockpile	Breakdown					(Nuclear warheads)	(Delivery vehicles)
U.S.	～7,700	Retired/Awaiting dismantlement: ～3,000						
		Operational ～4,650	Non-deployed ～2,500					
			Deployed ～2,150	Non-strategic 200				
				Strategic ～1,950		ICBM	500	500
						SLBM	1,152	288
						Strategic bomber	300	60
Russia	～8,500	Retired/Awaiting dismantlement: ～4,000 (Non-strategic: 2,000)						
		Operational 4,500	Non-deployed 2,700	Non-strategic 2,000				
			Deployed ～1,800	Strategic ～1,800		ICBM	1,050	326
						SLBM	448	160
						Strategic bomber	60	72
U.K.	225		Deployed 160			SLBM	225	48
France	～300		Deployed 290			SLBM	240	48
						Attack aircraft (including carrier based aircraft)	50	50
China	～250					Land-based medium-and long-range ballistic missile	144	144
						SLBM	48	48
						Attack aircraft	40	20
						Cruise missile	n/a	150～350
India	90～110					Land-based ballistic missile		
						Attack aircraft		
Pakistan	100～120					Land-based ballistic missile		
						Attack aircraft		
Israel	～80					Ballistic missile		
						Attack aircraft		
N. Korea	6～8							
World	～17,270		(Deployed) 4,400					

Source) The table is based on data from Stockholm International Peace Research Institute, *SIPRI Yearbook 2013: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2013), chapter 7.

(2) Commitment to Achieve a World without Nuclear Weapons

In 2013, no new, remarkable commitment toward a "total elimination of nuclear weapons" or a "world without nuclear weapons" was set out by NWS, non-nuclear-weapon states (NNWS) or nuclear-armed states. As mentioned in the *Hiroshima Report 2013*, no country, including the NWS, openly opposes the goal of the total elimination of nuclear weapons or the vision of a world without nuclear weapons.[4] The Chairman's Factual Summary of the 2013 NPT Preparatory Committee (PrepCom) also noted that the NPT parties "recalled their resolve…to achieve the peace and security of a world without nuclear weapons in accordance with the objectives of the Treaty."[5] However, it does not seem that nuclear-weapon/armed states actually set a goal of an early achievement of a world without nuclear weapons, or even consider their total elimination as a feasible, realistic goal. They have kept their position that their nuclear weapons continue to play important roles for their security policies at least in the foreseeable future. Deeper nuclear cuts in the short run cannot be expected.

To achieve a total elimination of nuclear weapons, massive reductions by the United States and Russia as the two nuclear superpowers are imperative. However, they are far from committing to reduce their arsenals to a level below 500 each, which was proposed, for example, by the International Commission on Nuclear Non-proliferation and Disarmament (ICNND) in 2009,[6] nor even to the level below 1,000 warheads each, a level which has been suggested as the point at which the other nuclear-weapon/armed states may contemplate joining a multilateral nuclear weapons reduction process. At the time of writing, no nuclear-weapon/armed state is proactive about starting such a process. For example, French President François Hollande stated that France would not be involved in the nuclear disarmament talks between Russia and the United States partly because France has "certain obligations within [North Atlantic Treaty Organization (NATO)], including nuclear containment" and partly because it "must provide independence of our territory, its security."[7] China also stated that "[c]ountries with the largest nuclear arsenals bear special and primary responsibility for nuclear disarmament,"[8] indicating that Russia and the United States should reduce their nuclear weapons significantly, prior to the other nuclear-weapon/armed states' participations in multilateral nuclear reductions.

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[4] North Korea stated that "[i]t is humankind's common will and desire to achieve a world free of nuclear weapons through its comprehensive and total elimination of nuclear weapons" at the UN General Assembly in September 2013. At the same time, it also argued that "if the denuclearization on the Korean Peninsula is to be accomplished, the U.S. nuclear threats against the DPRK should be removed once and for all." "Statement by DPRK," at the General Debate of the First Committee of the 68th session of the United Nations General Assembly, October 14, 2013.

[5] NPT/CONF.2015/PC.II/CRP.2, 2 May 2013.

[6] International Commission on Nuclear Non-proliferation and Disarmament, *Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers*, 2009, p. 187.

[7] "France Reluctant to be Involved in Russia-U.S. Nuclear Disarmament Talks," *Xinhua News Agency*, February 28, 2013, http://www.nzweek.com/world/france-reluctant-to-be-involved-in-russia-u-s-nuclear-disarmament-talks-51805/.

[8] China, "Statement," at the General Debate in the Second Session of the Preparatory Committee for the 2015 NPT Review Conference, April 22, 2013.

A) Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM

The United Nations General Assembly (UNGA) held in 2013 adopted the following resolutions: "United action towards the total elimination of nuclear weapons"[9] promoted by Japan; "Towards a nuclear-weapon-free world: accelerating the implementation of nuclear disarmament commitments"[10] proposed by the New Agenda Coalition (NAC); and "Nuclear disarmament"[11] of the Non-Aligned Movement (NAM) members. The voting behavior of the countries surveyed in this project on the three resolutions at the UNGA in 2013 is presented below.

- "United action towards the total elimination of nuclear weapons"
  - Proposing: Australia, Belgium, Canada, Japan, Mexico, the Netherlands, South Korea, Switzerland, Turkey, the U.S. and others
  - 169 in favor, 1 Against (North Korea), 14 Abstentions (Brazil, China, Egypt, India, Iran, Israel, Pakistan, Russia, Syria and others)
- "Towards a nuclear-weapon-free world: accelerating the implementation of nuclear disarmament commitments"
  - Proposing: Brazil, Egypt, Mexico, New Zealand, South Africa and others
  - 171 in favor, 7 Against (France, India, Israel, North Korea, Russia, the U.K. and the U.S.), 5 Abstentions (China, Pakistan and others)
- "Nuclear disarmament"
  - Proposing: Indonesia, Iran and others
  - 122 in favor, 44 Against (Australia, Belgium, Canada, France, Germany, Israel, the Netherlands, Norway, Switzerland, Turkey, the U.K., the U.S. and others), 17 Abstentions (Austria, India, Japan, New Zealand, Pakistan, Russia, South Africa, South Korea, Sweden and others)

B) Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention

The UNGA Resolution titled "Follow-up to the advisory opinion of the International Court of Justice on the Legality of the Threat or Use of Nuclear Weapons"[12] says "by commencing multilateral negotiations leading to an early conclusion of a nuclear weapons convention" all states should implement the obligation in Article 6 of the NPT. The voting behavior at the UNGA in 2013 is presented below.

- Proposing: Egypt, Indonesia, Iran, Mexico and others
- 133 in favor, 24 Against (Belgium, France, Germany, Israel, the Netherlands, Russia, Turkey, the U.K., the U.S. and others), 25 Abstentions (Australia, Canada, Japan, Norway, South Korea, Sweden and others)

The International Campaign to Abolish Nuclear Weapons (ICAN) has conducted a study on states'

[9] A/RES/68/51, 5 December 2013.

[10] A/RES/68/39, 5 December 2013.

[11] A/RES/68/47, 5 December 2013.

[12] A/RES/68/42, 5 December 2013.

responses to the proposal of negotiating a Nuclear Weapons Convention in 2012. According to the ICAN report, among the countries surveyed for this project, Belgium, France, Israel, the Netherlands, Russia, Turkey, the United Kingdom and the United States "don't support" the Nuclear Weapons Convention, while Australia, Canada, Germany, Japan, South Korea and Sweden are "on the fence" (undecided).[13]

C) Announcement of significant policies and important activities

Obama's Berlin Speech

The U.S. President Barack H. Obama addressed his second-term foreign and security policies, including nuclear disarmament, non-proliferation and nuclear security at the Brandenburg Gate, Berlin on June 19, 2013. He reaffirmed that "[p]eace with justice means pursuing the security of a world without nuclear weapons -- no matter how distant that dream may be." He also announced:

> After a comprehensive review, I've determined that we can ensure the security of America and our allies, and maintain a strong and credible strategic deterrent, while reducing our deployed strategic nuclear weapons by up to one-third. And I intend to seek negotiated cuts with Russia to move beyond Cold War nuclear postures. At the same time, we'll work with our NATO allies to seek bold reductions in U.S. and Russian tactical weapons in Europe.[14]

On the same day of this Berlin speech, the U.S. Department of Defense published a Report on U.S. Nuclear Employment Strategy,[15] which was written under the direction by the President "to conduct in-depth analysis as a follow-on to the 2010 Nuclear Posture Review (NPR)." According to the report, "[t]he purpose of this analysis was to conduct a detailed review of U.S. nuclear deterrence requirements in order to align U.S. nuclear planning to the current and projected security environment." The report addressed the following issues: the strategic environment; guidance for nuclear employment (guiding principles, nuclear employment planning guidance, reducing the role of nuclear weapons, and the U.S. nuclear hedge); implications for the U.S. nuclear posture (U.S. nuclear triad, non-strategic nuclear weapons, and strategic force levels) and nuclear stockpile; and additional implications, such as resilience and flexibility, nuclear deterrence, extended deterrence, assurance and defense, and increased reliance on conventional or non-nuclear-strike capabilities or missile defenses. Other than a reduction of the U.S. strategic nuclear arsenal, few new measures toward nuclear disarmament were included in the report.

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[13] Tim Wright, "Towards a Treaty Banning Nuclear Weapons: A Guide to Government Position on a Nuclear Weapons Convention," International Campaign to Abolish Nuclear Weapons, January 2012; "National Positions on a Ban," International Campaign to Abolish Nuclear Weapons, http://www.icanw.org/why-a-ban/positions/.

[14] "Remarks by President Obama at the Brandenburg Gate," Berlin, June 19, 2013, http://www.whitehouse.gov/the-press-office/2013/06/19/remarks-president-obama-brandenburg-gate-berlin-germany. In addition to the proposals on nuclear weapons reduction, President Obama called for forging a new international framework for peaceful nuclear power, rejecting the nuclear weaponization by North Korea and Iran, ratifying the Comprehensive Nuclear-Test Ban Treaty (CTBT), and beginning negotiations on a Fissile Material Cut-Off Treaty (FMCT). He also announced he would host a fourth Nuclear Security Summit in 2016.

[15] U.S. Department of Defense, "Report on Nuclear Employment Strategy of the United States: Specified in Section 491 of 10 U.S.C.," June 19, 2013.

Open-Ended Working Group

At the 2012 UNGA, member states adopted a resolution in which it "[decided] to establish an open-ended working group to develop proposals to take forward multilateral nuclear disarmament negotiations for the achievement and maintenance of a world without nuclear weapons."[16] The Open-Ended Working Group (OEWG) was convened between May 14-24, June 27-28, and August 19-30, 2013 in Geneva.

NWS did not participate in the OEWG. Ambassador Laura Kennedy, U.S. Permanent Representative to the Conference on Disarmament, said that the United States "[did] not support non-consensus based efforts to develop nuclear disarmament proposals through the open-ended working group and [did] not see how this mechanism fits into the existing consensus framework of the action plan [agreed at the 2010 NPT Review Conference]."[17]

At the meeting in May, speakers from research institutes and NGOs made various proposals on: nuclear weapons free area, and other initiatives and proposals; transparency, confidence building and verification; perspectives on the necessary framework to achieve and maintain a nuclear weapons free world; international law relevant to the use of nuclear weapons; approaching nuclear disarmament from different angles (humanitarian approach, economic arguments, legal arguments and military utility); roles and responsibilities for nuclear disarmament; and the role of parliamentarians in advancing nuclear disarmament. Prior to that, the NAC collectively (Ireland, Brazil, Egypt, Mexico, New Zealand, South Africa and Sweden) and Austria, Belgium, Canada, Egypt, Germany, India, Iran, Japan, the Netherlands, New Zealand, Norway, South Africa, Sweden, Switzerland, Mexico, Turkey and others individually expressed views on how to develop and promote nuclear disarmament.

Regarding the June meeting, "[t]he main goal…[was] to collect proposals and ideas on taking forward multilateral nuclear disarmament negotiations that would serve as a basis for the consultations in the Group during its meetings in 19-30 August 2013."[18] Austria, Iran, Mexico, Switzerland, Western countries collectively (including Australia, Belgium, Canada, Germany, Japan, the Netherlands, Sweden), the NAC collectively, and other countries submitted working papers for that purposes.

In August, the OEWG concluded with adopting a final report discussing:[19]

- Approaches on how to take forward multilateral nuclear disarmament negotiations for the

[16] A/RES/67/56, 4 January 2013. The resolution was proposed by Austria, Mexico and Norway. NWS except China were against. China, India, Israel, Kazakhstan, Pakistan, South Korea, Syria, Turkey and so on abstained.

[17] Diane Barnes, "Nuclear Powers Reaffirm Opposition to Special Disarmament Talks," *Global Security Newswire*, March 6, 2013, http://www.nti.org/gsn/article/nuclear-powers-reaffirm-opposition-special-disarmament-talks/.

[18] "Meetings in June," United Nations Office at Geneva, http://www.unog.ch/80256EE600585943/(httpPages)/6A28A0D36D0B4AE1C1257B94004F4046?OpenDocument.

[19] "Report of the Open-Ended Working Group to Develop Proposals to Take Forward Multilateral Nuclear Disarmament Negotiations for the Achievement and Maintenance of a World without Nuclear Weapons," 30 August 2013.

achievement and maintenance of a world without nuclear weapons;

- Elements to consider in taking forward multilateral nuclear disarmament negotiations for the achievement and maintenance of a world without nuclear weapons;
- Reviewing the role of nuclear weapons in the security context of the twenty first century in order to take forward multilateral nuclear disarmament negotiations for the achievement and maintenance of a world without nuclear weapons;
- The role of international law to take forward multilateral nuclear disarmament negotiations for the achievement and the maintenance of a world without nuclear weapons;
- The role of States and other actors in taking forward multilateral nuclear disarmament for the achievement and maintenance of a world without nuclear weapons; and
- Other practical actions that could contribute to take forward multilateral nuclear disarmament for the achievement and maintenance of a world without nuclear weapons.

Reaching Critical Will, an NGO with bases in Geneva and New York, argued that the final report contained several new and interesting proposals, such as: a prohibition of the possession, stockpiling, development, or transfer of nuclear weapons; and the idea of undertaking a study of the evolution of international law relevant to nuclear weapons, including international humanitarian law; human rights law; environmental law; and the findings of the International Criminal Court.[20]

High-Level Meeting on Nuclear Disarmament

At the UN General Assembly in 2012, member states adopted a resolution, in which the General Assembly "[decided] to convene a high-level meeting of the General Assembly on nuclear disarmament, that will be held as a one-day plenary meeting on 26 September 2013, to contribute to achieving the goal of nuclear disarmament."[21] The High-Level Meeting on Nuclear Disarmament was convened on September 26, 2013. At the opening session, Austria's President Heinz Fischer and Japan's Prime Minister Shinzo Abe were among the world leaders who made statements, following the opening remarks by the President of the 68th Session of the General Assembly and the UN Secretary-General. During the substantive session, the following countries and groups delivered statements, among others: Belgium, Brazil, Canada, China, France, Germany, India, Indonesia, Iran, Japan, Kazakhstan, South Korea, North Korea, Mexico, New Zealand, Norway, Pakistan, Russia, Switzerland, Turkey, the United States, the Arab Group, the NAC, and the NPDI [Note: states underlined made statements by ministerial-level representatives]. In addition, three NWS, namely France, the United Kingdom and the United States, made a joint statement.

Each country stated its position, approach and priorities on nuclear disarmament. Among these,

[20] Beatrice Fihn, "The Open-Ended Working Group Concludes," Reaching Critical Will, 6 September 2013, http://www.reachingcriticalwill.org/disarmament-fora/others/oewg/reports/8004-the-open-ended-working-group-concludes.

[21] A/RES/67/39, 4 January 2013. France, Israel, the United Kingdom and the United States abstained on the vote on this resolution proposed by the NAM countries.

the arguments by Japan and the three NWS are summarized below.

Japan's Prime Minister Abe stated that "[a]n essential element in the process of nuclear disarmament is for all states possessing nuclear weapons to reduce their nuclear arsenals and to enhance their transparency." He "emphasize[d] that the responsibilities that the non-nuclear-weapon states shoulder are equally important as those of the nuclear-weapons states. Building realistic and practical blocks [based] upon mutual trust between those two sides is the most definitive path to achieve 'a world free of nuclear weapons.'" He also "invite[d] all political leaders to visit Hiroshima and Nagasaki to witness first-hand the impact that could be inflicted by the use of such weapons."[22]

Fumio Kishida, Minister for Foreign Affairs of Japan, argued that dealing with nuclear disarmament issues should be based on "two fundamental beliefs": "a clear understanding of the humanitarian consequences caused by the use of nuclear weapons"; and "the reality of what today's international community is facing with the increasingly diversifying nuclear risks, such as North Korea and Iran's nuclear issues and the threat of nuclear terrorism." Then, he stated:

> Based on these ideas and aiming for a world free of nuclear weapons, I would like to tackle nuclear disarmament by focusing on "three reduction" areas that serve as a realistic and concrete approach towards "a world free of nuclear weapons." That is, (1) reduction of the number of nuclear weapons, (2) reduction of the role of nuclear weapons, and (3) reduction of the incentive for development and possession of the nuclear weapons.

He concluded his statement by informing that "preparation is on-going, with cooperation from the UN and the City of Hiroshima, to convene an annual UN Disarmament Conference in Hiroshima in 2015 when we will commemorate the 70th year since the atomic bombing."[23]

France, the United Kingdom and the United States, in their joint statement, reiterated their position that "a practical step-by-step process is the only way to make real progress in our disarmament efforts while upholding global security and stability—there is no shortcuts." They did not disguise their opposition to the High-Level Meeting on Nuclear Disarmament and other similar initiatives, and stated:[24]

> We believe that there are already sufficient forums, specified by the UN Special Session on Disarmament in 1978, for discussion on these issues, including: the UNGA First Committee, the UN Disarmament Commission, and the Conference on Disarmament. And while we are encouraged by the increased energy and enthusiasm around the

[22] "Statement by H.E. Mr. Shinzo Abe, Prime Minister of Japan at the Opening Session, High-Level Meeting of the General Assembly on Nuclear Disarmament," September 26, 2013, http://www.mofa.go.jp/policy/page3e_000092.html.

[23] "Statement by H.E. Mr. Fumio Kishida, Minister for Foreign Affairs of Japan, High-Level Meeting of the General Assembly on Nuclear Disarmament," September 26, 2013, http://www.mofa.go.jp/policy/page3e_000093.html.

[24] "Statement on Behalf of France, the United Kingdom and the United States by Minister Alistair Burt, Parliamentary Under Secretary of State, United Kingdom," United Nations General Assembly High-Level Meeting of the General Assembly on Nuclear Disarmament, September 26, 2013.

nuclear disarmament debate, we regret that this energy is being directed toward initiatives such as this High-Level Meeting, the humanitarian consequences campaign, the Open-Ended Working Group and the push for a Nuclear Weapons Convention.

We strongly believe that this energy would have much better effect if channeled toward existing processes, helping to tackle blockages and making progress in the practical, step-by-step approach that includes all states that possess nuclear weapons.

D) Humanitarian consequences of nuclear weapons

Since the joint statement delivered by 16 countries at the NPT PrepCom in 2012, debates on humanitarian consequences of nuclear weapons have received remarkable attention from the international community.

Oslo Conference

Norway hosted the Conference on the Humanitarian Impact of Nuclear Weapons in Oslo on March 4-5, 2013, with around 550 participants from 128 governments, international organizations, and NGOs.

The following countries surveyed in this Report participated in the Conference:

- NPT non-states parties: India and Pakistan
- NNWS: Australia, Austria, Belgium, Brazil, Canada, Egypt, Germany, Indonesia, Iran, Japan, Kazakhstan, Mexico, the Netherlands, New Zealand, Norway, South Africa, South Korea, Sweden, Switzerland, Turkey and UAE

Absentees were thus: NWS, Israel, North Korea and Syria.

According to the Chair's summary, "[t]he objective [of the Conference] has been to present a facts-based understanding of the humanitarian impacts of nuclear weapon detonations and to facilitate an informed discussion of these effects."[25] Experts from NGOs, research institutes and other relevant organizations made presentations, and participants discussed a number of issues under three working sessions on immediate humanitarian impact of a nuclear weapon detonation; wider impact and longer-term consequences; and humanitarian preparedness and response.

The main points of discussion were summarized by the Chair as follows.[26]

- It is unlikely that any state or international body could address the immediate humanitarian emergency caused by a nuclear weapon detonation in an adequate manner and provide sufficient assistance to those affected. Moreover, it might not be possible to establish such capacities, even if it were attempted.

[25] "Chair's Summary: Humanitarian Impact of Nuclear Weapons," Conference on the Humanitarian Impact of Nuclear Weapons, Oslo, March 5, 2013, http://www.regjeringen.no/nb/dokumentarkiv/stoltenberg-ii/ud/taler-og-artikler/2013/chair_oppsummering.html?id=716343.

[26] Ibid.

- The historical experience from the use and testing of nuclear weapons has demonstrated their devastating immediate and long-term effects. While political circumstances have changed, the destructive potential of nuclear weapons remains.
- The effects of a nuclear weapon detonation, irrespective of cause, will not be constrained by national borders, and will affect states and people in significant ways, regionally as well as globally.

At this Conference, Mexico announced its intention to convene a follow-up conference, the Second Conference on the Humanitarian Impact of Nuclear Weapons, which was held on February 13-14 in Nayarit, Mexico.[27]

Joint Statement at the NPT PrepCom

Following the statements delivered at the NPT PrepCom and the First Committee of the UNGA in 2012, the Joint Statement on the Humanitarian Impact of Nuclear Weapons[28] was issued at the 2013 NPT PrepCom. The number of participating countries increased from 16 at the 2012 PrepCom, and 34 at the 2012 UNGA to 80 at the 2013 PrepCom, including Austria, Brazil, Egypt, Indonesia, Iran, Kazakhstan, Mexico, New Zealand, Norway, South Africa and Switzerland.

In the joint statement, participating countries expressed their deep concerns "about the catastrophic humanitarian consequences of nuclear weapons," and argued that "[i]t is in the interest of the very survival of humanity that nuclear weapons are never used again, under any circumstances. …The only way to guarantee that nuclear weapons will never be used again is through their total elimination."

Among the non-participating countries, Japan explored the possibility to join the statement, and continued consultations with related countries until the last moment. However, it finally decided not to participate because the phrase "under any circumstances," which Japan would have liked to cut, remained in the joint statement. Most of the NATO countries, except Denmark, Iceland Luxembourg and Norway, also declined to endorse the joint statement because they saw it as "contradictory to their NATO obligations—an interesting position, given that it is not a perspective shared by several of their NATO allies that did sign the statement."[29]

Joint Statement at the First Committee

At the UN General Assembly on October 21, 2013, New Zealand, on behalf of 124 participating countries (including Austria, Brazil, Egypt, Indonesia, Japan, Kazakhstan, Mexico, New Zealand, Norway, South Africa, Switzerland and UAE), presented the Joint Statement on the

[27] On homepage of the Second Conference on the Humanitarian Impact of Nuclear Weapons, see http://www.sre.gob.mx/en/index.php/humanimpact-nayarit-2014.

[28] "Joint Statement on the Humanitarian Impact of Nuclear Weapons," Second Session of the Preparatory Committee for the 2015 NPT Review Conference, Geneva, 24 April 2013.

[29] Ray Acheson, "A Strategy for Nuclear Disarmament," *NPT News in Review*, Vol. 11, No. 11 (6 May 2013), p. 1.

Humanitarian Consequences of Nuclear Weapons.[30]

In the joint statement, participating countries made the following arguments.

- "Past experience from the use and testing of nuclear weapons has amply demonstrated the unacceptable humanitarian consequences caused by the immense, uncontrollable destructive capability and indiscriminate nature of these weapons."
- "A key message from experts and international organisations [participating in the Conference on the Humanitarian Impact of Nuclear weapons convened by Norway in March 2013] was that no State or international body could address the immediate humanitarian emergency caused by a nuclear weapon detonation or provide adequate assistance to victims."
- "[W]e firmly believe that awareness of the catastrophic consequences of nuclear weapons must underpin all approaches and efforts towards nuclear disarmament."
- "It is in the interest of the very survival of humanity that nuclear weapons are never used again, under any circumstances. The catastrophic effects of a nuclear weapon detonation, whether by accident, miscalculation or design, cannot be adequately addressed. All efforts must be exerted to eliminate the threat of these weapons of mass destruction."
- "The only way to guarantee that nuclear weapons will never be used again is through their total elimination. All States share the responsibility to prevent the use of nuclear weapons, to prevent their vertical and horizontal proliferation and to achieve nuclear disarmament, including through fulfilling the objectives of the NPT and achieving its universality."

On the other hand, Australia, on behalf of 17 countries (including Australia, Belgium, Canada, Germany, Japan, the Netherlands, Sweden and Turkey—mainly the U.S. allies), also issued the Joint Statement on the Humanitarian Consequences of Nuclear Weapons[31] on the same day of presenting the above statement. The Australia-version statement seems to be an alternative for those countries (except Japan as the only country to participate in both statements) which concur on the principle regarding the humanitarian consequences of nuclear weapons but cannot participate in the New Zealand-version statement due to their security policies.

In the Australia-version statement, participating countries expressed their concern about "[t]he devastating immediate and long-term humanitarian impacts of a nuclear weapon detonation, …[and] reaffirm[ed] a sense of urgency [in their] unwavering commitment to achieving and maintaining the shared goal of a world free of nuclear weapons." They also argued that "[b]anning nuclear weapons by itself will not guarantee their elimination without engaging substantively and constructively those states with nuclear weapons, and recognising both the security and humanitarian dimensions of the nuclear weapons debate."

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[30] "Joint Statement on the Humanitarian Consequences of Nuclear Weapons," Delivered by Ambassador Dell Higgie, New Zealand, at the United Nations, First Committee, 21 October 2013.

[31] "Joint Statement on the Humanitarian Consequences of Nuclear Weapons," Delivered by Ambassador Peter Woolcott, Australia, at the United Nations, First Committee, 21 October 2013.

Response from Nuclear-Weapon States

As noted in the *Hiroshima Report 2013*, NWS cautiously watch the debates regarding the humanitarian consequences of nuclear weapons. For example, in the joint statement issued by NWS at the conclusion of the Fourth P5 Conference, they "emphasized their shared understanding of the serious consequences of nuclear weapon use and that the P5 would continue to give the highest priority to avoiding such contingencies."[32] The United States also stated at the 2013 NPT PrepCom that it "share[s] concerns about the profound and serious consequences of nuclear weapons use and have articulated our deep and abiding interest in extending forever the 68-year record of non-use."[33]

However, the attitudes of NWS on this issue remain negative. Five NWS, in unity, decided not to participate in the Conference on the Humanitarian Impact of Nuclear Weapons in Oslo in March. The reasons they argued was that "[NWS remained] concerned that the Oslo Conference [would] divert discussion away from practical steps to concrete conditions for further nuclear weapons reductions," while they do "understand the serious consequences of nuclear weapon use."[34] A report suggests that the United Kingdom did consider attending the conference, but was persuaded against this by the other NWS.[35]

In the Nuclear Employment Strategy Report issued in June, the United States clearly stated:

> The new guidance makes clear that all plans must…be consistent with the fundamental principles of the Law of Armed Conflict. Accordingly, plans will, for example, apply the principles of distinction and proportionality and seek to minimize collateral damage to civilian populations and civilian objects. The United States will not intentionally target civilian populations or civilian objects.[36]

This sentence may reflect the U.S. consciousness about the "humanitarian dimension of nuclear weapons" in some sense. However, it could also be argued that the United States uses this debate to justify its counterforce strategy, arguing that countervalue or minimum deterrence may be contrary to the principle of the humanitarian dimension of nuclear weapons.

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[32] "Joint statement issued by China, France, Great Britain, Russia, and the United States at the Conclusion of the Fourth P5 Conference," Geneva, April 19, 2013, http://www.state.gov/r/pa/prs/ps/2013/04/207768.htm.

[33] "Statement by Thomas Countryman, Assistant Secretary for International Security and Nonproliferation, Department of State, United States of America," General Debate, Second Session of the Preparatory Committee, 2015 Review Conference of the States Parties to the Treaty on the Non-proliferation of Nuclear Weapons, April 22, 2013.

[34] "P5 Announcement not to Attend the Oslo Conference," http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/oslo-2013/P5_Oslo.pdf. U.S. Acting Under Secretary Rose Gottemoeller and U.K. Parliamentary Under Secretary of State at the Foreign and Commonwealth Office Alistair Burt respectively reiterated the similar explanations written in the "P5 Announcement" as the reasons not to participate in the Oslo Conference. See "UK Parliament," 11 March 2013, http://www.publications.parliament.uk/pa/cm201213/cmhansrd/cm130311/text/130311w0002.htm#130311w0002.htm_spnew66; Rose Gottemoeller, "The Obama Administration's Second Term Priorities for Arms Control and Nonproliferation," Remarks, Geneva Centre for Security Policy, Geneva, March 20, 2013, http://www.state.gov/t/us/206454.htm.

[35] "Documents Suggest UK Boycott of Key Nuclear Weapons Meeting Was Driven by P5 Partners," *Article 36*, June 4, 2013, http://www.article36.org/nuclear-weapons/documents-suggest-uk-boycott-of-key-nuclear-weapons-meeting-was-driven-by-p5-partners/.

[36] U.S. Department of Defense, "Report on Nuclear Employment Strategy," pp. 4-5.

(3) Reduction of Nuclear Weapons

A) Reduction of nuclear weapons

Russia and the United States continue to undertake reductions of their strategic nuclear weapons under the New Strategic Arms Reduction Treaty (New START). The status of their strategic (nuclear) delivery vehicles and warheads under the Treaty has been periodically updated in the U.S. State Department homepage (see table 1-2 below).

Due to the Treaty's counting rules the number of warheads cited above does not accurately reflect the actual situation of nuclear forces in both countries.[37] For example, the aggregate numbers for the United States, including a breakdown by individual nuclear weapon systems and delivery vehicles reported as of September 2013[38] was slightly higher than the numbers reported six month earlier in March 2013.[39]

Table 1-2: Russian and U.S. strategic (nuclear) delivery vehicles and warheads under the New START

	Aggre-gate limits	U.S.						Russia					
		Feb 2011	Sep 2011	Mar 2012	Sep 2012	Mar 2013	Sep 2013	Feb 2011	Sep 2011	Mar 2012	Sep 2012	Mar 2013	Sep 2013
Deployed strategic (nuclear) warheads	1,550	1,800	1,790	1,737	1,722	1,654	1,688	1,537	1,566	1,492	1,499	1,480	1,400
Deployed strategic delivery vehicles	700	882	822	812	806	792	809	521	516	494	491	492	473
Deployed/non-deployed strategic delivery vehicles	800	1,124	1,043	1,040	1,034	1028	1015	865	871	881	884	900	894

Source) U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Fact Sheet, October 25, 2011, http://www.state.gov/t/avc/rls/176096.htm; U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Fact Sheet, April 6, 2012, http://www.state.gov/t/avc/rls/178058.htm; U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Fact Sheet, October 3, 2012, http://www.state.gov/t/avc/rls/198582.htm; U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Fact Sheet, April 3, 2013, http://www.state.gov/t/avc/rls/207020.htm; U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Fact Sheet, October 1, 2013, http://www.state.gov/t/avc/rls/215000.htm.

One U.S. expert analyzed this issue as follows:

> We will have to wait a few months for the full aggregate data set to be declassified to see the details of what has happened. But it probably reflects fluctuations mainly in the number of missiles onboard ballistic missile submarines at the time of the count. …The increase in counted deployed forces does not mean that the United States has begun to build up [its] nuclear forces.[40]

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[37] The New START Treaty counts a heavy bomber as one delivery system and one nuclear warhead, despite the fact that the bombers can actually load 6-20 warheads. Also, according to its counting rule, "for ICBMs and SLBMs, the number of warheads shall be the number of reentry vehicles emplaced on deployed ICBMs and on deployed SLBMs."

[38] U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Fact Sheet, October 1, 2013, http://www.state.gov/t/avc/rls/215000.htm.

[39] U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Fact Sheet, U.S. Department of States, July 1, 2013, http://www.state.gov/t/avc/rls/211454.htm.

[40] Hans M. Kristensen, "New START Data Shows Russia Reducing, US Increasing Nuclear Forces," *FAS Strategic*

He also pointed out that "the United States has still not begun reducing its operational nuclear forces. Instead, it has worked on reducing so-called phantom weapons that have been retired from the nuclear mission but are still counted under the treaty."[41]

Since the entry into force of the New START, neither side has alleged noncompliance. In January 2013, the U.S. State Department stated in the annual report that "[b]ased on the information available as of December 31, 2012, the United States certifies the Russian Federation to be in compliance with the terms of the New START Treaty."[42]

In May 2010, the United States disclosed the number of nuclear warheads it had possessed as of September 30, 2009 (not including several thousand retired warheads awaiting dismantlement). Since then, neither the United States nor Russia has declared the number of nuclear weapons possessed, except the status of their strategic (nuclear) delivery vehicles and warheads under the New START mentioned above. The U.S. expert estimates that the U.S. nuclear stockpiles in 2013 consisted of 4,650 warheads and 800 delivery vehicles, reflecting a reduction of 560 nuclear warheads since September 2009, including 260 W80-0 warheads for the Tomahawk Land-Attack Missile-Nuclear (TLAM/N), which was retired in 2013.[43]

Russia, for its part, reiterated the status of its non-strategic nuclear weapons at the 2013 NPT PrepCom as follows:

> [T]he Russian Federation has reduced by 3/4 the number of its non-strategic nuclear weapons. Today, the non-strategic nuclear potential of Russia does not exceed 25% of that the USSR had in 1991. At the same time, all Russia's non-strategic nuclear weapons were undeployed; they are located exclusively within the national territory, and are stored in centralized highly secure storage facilities.[44]

As for other nuclear-weapon/armed states, while there is little significant reported progress on nuclear weapons reductions in 2013, France stated at the 2013 NPT PrepCom that it "met the target of reducing the air component of [its] deterrence force by one third" in the previous year.[45]

B) A concrete plan for further reduction of nuclear weapons

As mentioned above, U.S. President Obama announced in his Berlin speech on June 19, 2013: "After a comprehensive review, I've determined that we can ensure the security of America and

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Security Blog, October 2, 2013, http://blogs.fas.org/security/2013/10/newstartsep2013/.

[41] Ibid.

[42] U.S. Department of State, "Annual Report on Implementation of the New START Treaty," January 2013, http://www.state.gov/t/avc/rls/rpt/197087.htm.

[43] Hans M. Krintensen and Robert S. Norris, "US Nuclear Forces, 2013," *Bulletin of the Atomic Scientists*, Vol. 69, No. 2 (2013), pp. 77-86.

[44] "Statement by the Russian Federation," Second Session of the Preparatory Committee for the 2015 NPT Review Conference, Cluster I, Geneva, April 25, 2013.

[45] "Statement by the H.E. Mr. Jean-Hugues Simon-Michel, Ambassador, Permanent Representative of France to the Conference on Disarmament," Second Session of the Preparatory Committee for the 2015 NPT Review Conference, General Debate, Geneva, 22 April 2013.

our allies, and maintain a strong and credible strategic deterrent, while reducing our deployed strategic nuclear weapons by up to one-third. And I intend to seek negotiated cuts with Russia to move beyond Cold War nuclear postures." He also stated that the United States would "work with [its] NATO allies to seek bold reductions in U.S. and Russian tactical weapons in Europe."[46] According to his speech, the United States envisages reducing U.S. and Russian deployed strategic nuclear warheads to the level of 1,000-1,100 respectively.

In the Berlin speech, President Obama did not mention pursuing any new bilateral arms control treaty; nor did he suggest unilateral nuclear cuts. Instead, the Obama administration seems to seek parallel, reciprocal reductions of strategic nuclear arsenals with Russia without codifying a legally-binding treaty due to the difficulty of obtaining the two-thirds approval that would be required for U.S. Senate ratification. Many Senate Republicans, in particular, have insisted that the administration should not reduce the U.S. nuclear arsenals through unilateral or non-binding bilateral measures that do not require Senate deliberation or consent.[47]

It should be pointed out that the Nuclear Employment Strategy Report released the day of Obama's Berlin speech includes some measures and guidance that may have an effect on limiting actual cuts. For example, the Report indicates that:[48]

- "The United States will maintain a sufficient number of non-deployed weapons to hedge against the technical failure of any single weapon type or delivery system at a time, …[and] provide intra-led hedge options—i.e., uploading another warhead type from within a leg of the Triad in the event that a particular warhead fails."
- The U.S. Defense Department "should maintain legacy weapons to hedge against the failure of weapons undergoing life-extension only until confidence in each Life-Extension Program (LEP) is attained."
- "A non-deployed hedge…will also provide the United States the credibility to upload additional weapons in response to geopolitical developments that alter our assessment of U.S. deployed force requirements."

Furthermore, the Report mentions that the United States will "maintain significant counterforce capabilities against potential adversaries."[49] Generally speaking, counterforce strategy, which necessitates setting more targets than countervalue strategy, tends to inhibit reductions of nuclear warheads and their delivery systems.

Russia has expressed its reluctance to accept the Obama proposal on further nuclear cuts. Soon after the Berlin speech, Russian Foreign Minister Sergei Lavrov and Deputy Foreign Minister Sergei Ryabkov reiterated the Russian position that Russia and the United States needed to take into consideration various factors affecting strategic stability—such as development of missile

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[46] "Remarks by President Obama at the Brandenburg Gate."

[47] See, for example, Amy F. Woolf, "Next Steps in Nuclear Arms Control with Russia: Issues for Congress," *CRS Report for Congress*, June 19, 2013.

[48] U.S. Department of Defense, "Report on Nuclear Employment Strategy," p. 7.

[49] Ibid., p. 4.

defenses, weaponization of outer space and imbalance of conventional forces—when they engage in further nuclear weapons reductions. Deputy Foreign Minister Ryabkov also argued that Russia could not "indefinitely and bilaterally talk with the United States about cuts and restrictions on nuclear weapons in a situation where a whole number of other countries are expanding their nuclear and missile potentials," – in short, that further reduction of nuclear weapons should be reviewed in a multilateral context.[50]

On reduction of non-strategic nuclear weapons (NSNWs), the Obama administration has not made any concrete proposal beyond expressing its intention to promote their reduction made in the Berlin speech. In the Nuclear Employment Strategy Report, the United States indicated that its NSNWs—dual-capable aircraft—remain to play a certain role for "extended deterrence and assurance of U.S. Allies and partners," and that the United States should maintain a forward-based posture in Europe.[51]

NATO has also not made any concrete proposal or direction regarding a reduction of NSNWs. However, in the Deterrence and Defense Posture Review (DDPR) issued in May 2012, NATO showed its readiness to discuss major cuts in forward-based NSNWs stationed in NATO on a mutual basis with Russia.[52] In February 2013, NATO agreed on the mandate of its new arms control body, the "Special Advisory and Consultative Arms Control, Disarmament and Non-Proliferation Committee," for preparing a dialogue with Russia on confidence building and transparency measures regarding tactical weapons.[53]

Russia has not shown a willingness to reduce its NSNWs, which are considered an important instrument to complement Russian conventional forces that are inferior to those of the United States and NATO. Rather, Russia has suggested that other countries undertake arms control measures consistent with Russia's step. For example, Russia stated in the 2013 NPT PrepCom as following:

> We have repeatedly called on other countries possessing non-strategic nuclear weapons to follow the example of the Russian Federation and transfer those weapons to their territories, eliminate all infrastructures that allows their prompt deployment abroad and cease preparations for their use with engagement of the military from non-nuclear States. We are convinced that such steps would promote strengthening of international security and stability. We have to state that our calls still remain unanswered.[54]

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[50] "Nuclear Arms Reduction Deals to Become Multilateral—Lavrov," *RIA Novosti*, 22 June 2013, http://en.rian.ru/world/20130622/181811968/Nuclear-Arms-Reduction-Deals-to-Become-Multilateral--Lavrov.html; Kathleen Hennessey and Paul Richter, "Obama Seeks Further Cuts to U.S., Russia Nuclear Arsenals," *Los Angeles Times*, June 19, 2013, http://articles.latimes.com/2013/jun/19/world/la-fg-obama-nukes-20130620.

[51] U.S. Department of Defense, "Report on Nuclear Employment Strategy," p. 6.

[52] North Atlantic Treaty Organization, "Deterrence and Defense Posture Review," May 20, 2012, http://www.nato.int/cps/en/natolive/official_texts_87597.htm?mode=pressrelease.

[53] Oliver Meier, "NATO Agrees on New Arms Control Body," *Arms Control Now*, February 26, 2013, http://armscontrolnow.org/2013/02/26/nato-agrees-on-new-arms-control-body/.

[54] "Statement by the Russian Federation," Second Session of the Preparatory Committee for the 2015 NPT Review Conference, Cluster I, Geneva, April 25, 2013.

Furthermore, Russia proposed to make the bilateral Intermediate-Range Nuclear Forces (INF) Treaty "universal and come to a legally binding arrangement on complete elimination of such weapons."[55]

The NPDI called for taking the following measures on NSNWs reductions in the working paper issued at the NPT PrepCom:[56]

- reviewing promptly deployment posture of non-strategic nuclear weapons in the context of their declaratory policies;
- providing information; and
- as a first step on the way to the elimination of non-strategic nuclear weapons, ensuring and increasing transparency with respect to the current status of the implementation of the 1991 and 1992 presidential nuclear initiatives and possible verification of such implementation.

C) Trends on strengthening/modernizing nuclear weapons capabilities

It could be argued that most of nuclear-weapon/armed states continue to modernize and/or strengthen their nuclear weapons capabilities.

Russia continues to develop new strategic nuclear delivery systems for replacing its aging intercontinental ballistic missiles (ICBMs) and submarine launched ballistic missiles (SLBMs). In May 2011, Commander of the Russian Strategic Rocket Force, Sergey Karakayev, "affirmed the strategic missile force would be 98% modernized by 2021."[57] In 2013, he "announced that by the end of the year, his service [would] add 15 RS-24 Yars missiles to the divisions in Novosibirsk and Nizhniy Tagil."[58] Russia also plans to begin construction of a prototype of a new heavy liquid-fuel ICBM in 2014,[59] which it is expected to deploy in 2018-2010, according to Commander Karakayev.[60] Furthermore, Deputy Prime Minister Dmitry Rogozin said that Russia was developing an additional new ICBM, called a "missile defense killer," that is able to penetrate missile defense (MD) systems.[61] In December, the Russian Defense Ministry disclosed deployment of Iskander short-range ballistic missiles (SRBMs) in the Kaliningrad region.[62] However, President Putin contradicted this two days later, saying: "One of the possible responses

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[55] Ibid.

[56] NPT/CONF.2015/PC.II/WP.3, 6 March 2013.

[57] Mark B. Schneider, "Russian Nuclear Modernization," Talking Points from Remarks Made to an Air Force Association, National Defense Industrial Association and Reserve Officers Association Seminar, June 20, 2012, p. 7.

[58] "15 RS-24 Yars Missiles to be Deployed by the End of 2013," *Russian Strategic Nuclear Forces*, December 17, 2013, http://russianforces.org/blog/2013/12/15_rs-24_yars_missiles_to_be_d.shtml.

[59] "Russia to Start Building Prototype of New Heavy ICBM in 2014," *RIA Novosti*, 18 June 2013, http://en.ria.ru/military_news/20130618/181738737/Russia-to-Start-Building-Prototype-of-New-Heavy-ICBM-in-2014.html.

[60] "Sarmat Heavy ICBM Expected to be Ready in 2018-2020," *Russian Strategic Nuclear Forces*, December 17, 2013, http://russianforces.org/blog/2013/12/sarmat_heavy_icbm_expected_to.shtml.

[61] "Russia Tests 'Missile Defense Killer,'" *RIA Novosti*, 7 June 2013, http://en.rian.ru/military_news/20130607/181558509/Russia-Tests-Missile-Defense-Killer.html.

[62] "Russia is Fielding Nuclear-Capable Missiles in Territory Bordering NATO," *Global Security Newswire*, December 17, 2013, http://www.nti.org/gsn/article/russia-reveals-fielding-nuclear-capable-missiles-territory-bordering-nato/.

[to a U.S. deployment of MD system in Europe] is to deploy Iskander complexes in Kaliningrad ... but I want to draw your attention to the fact that we have not yet made this decision."[63] Russia's possession and deployment of Iskander with range of 400 km, which is capable of carrying conventional or nuclear warheads, is not prohibited under the INF Treaty. As for its sea-based deterrent, Russia is proceeding with the plan to construct eight Borei-class nuclear-powered ballistic missile submarines (SSBNs) by 2020. It is reported that construction of a fifth submarine would begin in late 2014.[64] In October 2013, Russia put forward a federal budget proposal "to increase annual spending on nuclear weapons by more than 50 percent in the next three years."[65]

The United States has stated its commitment "not to develop new nuclear warheads or pursue new military missions for nuclear weapons."[66] The U.S. National Nuclear Security Administration (NNSA) is planning to consolidate four variations of the existing B61 nuclear gravity bombs into a single version, named B61 mod 12, incorporating technology for improving safety and reliability, and equipping tail kits for increased accuracy. The NNSA denies that a new capability or mission will be added for the B61-12.[67] The U.S. government has also been studying to develop follow-on ICBMs, SLBMs, Long Range Strike-Bombers and Long-Range Stand-off weapons for replacing the existing U.S. strategic delivery systems that entered service in the Cold War era,[68] although these remain studies only.

China is widely believed to continue aggressive modernization of its nuclear forces, although it has released very little information on its efforts. According to the Annual Report on China's Military, published by the U.S. Defense Department, "China may…be developing a new road-mobile ICBM, possibly capable of carrying a multiple independently targetable re-entry vehicle (MIRV)."[69] In July and December 2013, China was reported to have conducted the first and the second flight tests, respectively, of a new road-mobile, MIRVed ICBM Dong Feng-41 (DF-41), which is estimated to have a range of 11,000-12,000 km and capable to mount up to 10 warheads per a missile.[70]

China's three JIN-class SSBNs (Type 094) are considered to be operational. Two more JIN-class

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[63] "Putin Says Missiles not yet Deployed to Kaliningrad Region," *Reuters*, December 19, 2013, http://news.yahoo.com/putin-says-missiles-not-yet-deployed-kaliningrad-region-085601922.html

[64] "Russia to Start Building 5th Borey Nuclear Sub in 2014," *RIA Novosti*, November 13, 2013, http://en.ria.ru/military_news/20131113/184691368/Russia-to-Start-Building-5th-Borey-Nuclear-Sub-in-2014.html.

[65] "Russia to Up Nuclear Weapons Spending 50% by 2016," *RIA Novosti*, 8 October 2013, http://en.ria.ru/military_news/20131008/184004336/Russia-to-Up-Nuclear-Weapons-Spending-50-by-2016.html.

[66] "Statement by Thomas Countryman, Assistant Secretary for International Security and Nonproliferation Department of State, United States of America," Second Session of the Preparatory Committee for the 2015 NPT Review Conference, General Debate, Geneva, April 22, 2013.

[67] On the other hand, it is also argued that the capabilities of the B61-12 appear to be increasing.

[68] On the U.S. modernization of nuclear weapons capabilities, see, for example, testimonies and debates at the Senate Armed Services Committee, Strategic Forces Subcommittee, United States Senate, April 17, 2013.

[69] U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013*, p. 31.

[70] Bill Gertz, "China Conducts Second Flight Test of New Long-Range Missile," *Washinton Free Beacon*, December 17, 2013, http://freebeacon.com/china-conducts-second-flight-test-of-new-long-range-missile/.

SSBNs are to be constructed and operational before proceeding to a next generation SSBN. The JIN-class SSBNs will carry JL-2 SLBMs with an estimated range of 7,400 km. The United States assessed that the JL-2 would reach initial operational capability in 2013.[71] However, its actual status is not clear. China is considered to have a plan for strengthening its nuclear deterrent through the introduction of new generation nuclear-powered cruise missile submarines (SSGNs, Type 095) and SSBNs (Type 096, Tang-class).

France introduced new M-51 SLBMs with an estimated range of 8,000 km, which are loaded the fourth Le Triomphant-class SSBN. The previous three Le Triomphant-class SSBNs are currently equipped with M-45 SLBMs that have a range of 6,000 km. France plans to replace those M-45 with M-51 by 2017-2018.[72]

The United Kingdom published the Trident Alternative Review report in July 2013, which examined alternative options for a replacement of Vanguard-class SSBNs—nuclear-armed SLBMs, nuclear-armed cruise missiles, aircraft, maritime surface vessel, nuclear-powered attack submarines (SSNs), SSBNs and SSGNs. Although the review did not recommend any particular option, the report seemed to imply that a like-for-like replacement—replacing Trident with new SSBNs—would be preferable in order to maintain the U.K. independent nuclear deterrence from viewpoints of, among others, value of deterrence and cost for research and development. The report also pointed out the possibility that the existing Continuous At-Sea Deterrence (CASD) would not be sustained if the number of U.K. SSBNs were to be reduced from four to three.[73]

Two nuclear-armed states in South Asia also continue to develop ballistic missiles, but their focuses are different. Concerned about China, India conducted a flight test of Agni-5, land-based ballistic missiles with a range of 5,000 km, in September 2013. It also plans to develop a MIRVed ICBM Agni-6 with a range of 6,000 km.[74] On the other hand, Pakistan seems to prioritize development and deployment of short- and medium-range missiles for ensuring deterrence vis-à-vis India. In February and November 2013, Pakistan succeeded in testing Hatf-IX (Nasr) SRBMs with range of 60 km.[75] Pakistan also conducted a flight test of the nuclear-capable Hatf-II with range of 180 km.[76] Both India and Pakistan are assessed to be increasing their nuclear

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[71] U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013*, p. 31.

[72] See, for example, "France Submarine Capabilities," Nuclear Threat Initiative, August 15, 2013, http://www.nti.org/analysis/articles/france-submarine-capabilities/.

[73] United Kingdom, *Trident Alternative Review*, 16 July 2013.

[74] "Agni-VI All Set to Take Shape," *The Hindu*, February 4, 2013, http://www.thehindu.com/news/national/agnivi-all-set-to-take-shape/article4379416.ece; "Advanced Agni-6 Missile with Multiple Warheads Likely by 2017," *Business Standard*, May 8, 2013, http://www.business-standard.com/article/economy-policy/advanced-agni-6-missile-with-multiple-warheads-likely-by-2017-113050800034_1.html.

[75] "Pakistan Successfully Test Fires Nuclear-Capable Hatf-IX Missile," *The Indian Express*, February 11, 2013, http://www.indianexpress.com/news/pakistan-successfully-test-fires-nuclearcapable-hatfix-missile/1072588/0; "Pakistan Successfully Test Fires Hatf IX," *Dawn*, November 5, 2013, http://dawn.com/news/1054272/pakistan-successfully-test-fires-hatf-ix.

[76] "Pakistan Successfully Tests Nuclear-Capable Hatf-II Missile."

arsenal by about ten a year.[77]

North Korea maintains nuclear- and missile-related activities despite the adoption of the UN Security Council Resolution 2094 in March 2013, in which the Security Council reinforced international censure of these activities. On March 31, North Korean leader Kim Jong Un declared at the Supreme People's Assembly that the nation would bolster nuclear weapons development concurrently with enhancing economic development.[78]

In March 2013, Vice Defense Minister Kang Pyo Yong stated that North Korea's "intercontinental ballistic missiles and other missiles are on standby, loaded with lighter, smaller and diversified nuclear warheads,"[79] while it is not confirmed whether the North actually possesses such capabilities. The U.S. Defense Intelligence Agency (DIA) concluded with "moderate confidence" that North Korea might have nuclear warheads miniaturized for loading ballistic missiles whose reliability would be low.[80] In addition, South Korean Defense Minister Kim Kwan-jin gave estimation, at the National Assembly on November 20, that North Korea could build a nuclear weapon using uranium.[81] As for ballistic missile-related activities, according to analyses by a U.S. expert, North Korea "has embarked on a major construction program at the Sohae Satellite Launching Station (commonly referred to at "Tongchang-ri")…since mid-2013,"[82] and "probably tested a long-range rocket engine"[83] there in 2013. A development of a new long-range ballistic missile KN-08 is also likely to proceed.[84] Samuel Locklear, the commander of the U.S. Pacific Command, stated:

> For our military planning perspective, when I see KN-08 road-mobile missiles that appear in a North Korean military parade, I am bound to take that serious, both for not only the peninsula but also the region, as well as my own homeland should we speculate that those missiles potentially have the technology to reach out. …Whether they are real or not, or whether they have the capability or not, [the] North Korean regime wants us to think they do and so we plan for that.[85]

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[77] Stockholm International Peace Research Institute, *SIPRI Yearbook 2013: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2013), chapter 7.

[78] "North Korea Declares 'State of War' With South," *Global Security Newswire*, April 1, 2013, http://www.nti.org/gsn/article/north-korea-declares-state-war-south/.

[79] "N. Korea Unable to Reach U.S. with Missiles, but Asia Allies Vulnerable," *Global Security Newswire*, March 8, 2013, http://www.nti.org/gsn/article/north-korea-unable-reach-us-missiles-regional-states-are-vulnerable/.

[80] "North Korea Can Put a Nuke on a Missile, U.S. Intelligence Agency Believes," *ABC News*, April 11, 2013, http://abcnews.go.com/Politics/north-korea-put-nuke-missile-us-intelligence-agency/story?id=18935588.

[81] "N. Korea Can Produce Uranium-Based Nuclear Bomb: Seoul's Defense Chief," *Yonhap News Agency*, November 20, 2013, http://english.yonhapnews.co.kr/national/2013/11/20/66/0301000000AEN20131120008200315F.html.

[82] Nick Hansen, "Major Construction at the Sohae Rocket Test Site," *38 North*, 30 August 2013, http://38north.org/2013/08/sohae083013/.

[83] Nick Hansen, "Probable Rocket Engine Test Conducted at Sohae," *38 North*, 23 September 2013, http://38north.org/2013/09/sohae092313/.

[84] Jeffrey Lewis and John Schilling, "Real Fake Missiles: North Korea's ICBM Mockups Are Getting Scary Good," *38 North*, November 4, 2013, http://38north.org/2013/11/lewis-schilling110513/.

[85] "U.S. Admiral Taking Threat of North Korean ICBMs Seriously," *Global Security Newswire*, November 6, 2013, http://www.nti.org/gsn/article/us-admiral-says-he-taking-threat-north-korean-icbms-seriously/.

(4) Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies

The *Hiroshima Report 2013* attempted to analyze the role and significance of nuclear weapons in the national security strategies and policies, mainly based on the declaratory policies of the nuclear-weapon/armed states. In 2013, there have been few significant changes in their nuclear policies.

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

The U.S. Defense Department published the Nuclear Employment Strategy Report in June 2013, which contains: guidance for nuclear employment (guiding principles, nuclear employment planning guidance, reducing the role of nuclear weapons, and the U.S. nuclear hedge); implications for the U.S. nuclear posture and nuclear stockpile, including nuclear force posture (U.S. nuclear triad, non-strategic nuclear weapons, and strategic force levels), the U.S. nuclear stockpile; and additional implications, such as resilience and flexibility, nuclear deterrence, extended deterrence, assurance and defense, and increased reliance on conventional or non-nuclear-strike capabilities or missile defenses.[86] The Report was based on in-depth analysis as a follow-on to the 2010 Nuclear Posture Review, and directs few new measures or guidance for reducing roles and significance of U.S. nuclear weapons, except a reduction of the U.S. strategic nuclear arsenal.

In the Nuclear Employment Strategy Report, the United States reiterated its intention of continuing "to address the more familiar challenge of ensuring strategic stability with Russia and China." On Russia, the only peer to the U.S. in nuclear weapons capability, the Report states that "[a]lthough the need for numerical parity between two countries is no longer as compelling as it was during the Cold War, large disparities in nuclear capabilities could raise concerns on both sides and among U.S. Allies and partners, and may not be conducive to maintaining stable, long-term strategic relationships, especially as nuclear forces are significantly reduced." The Report also notes that "[t]he United States remains committed to maintaining strategic stability in U.S.-China relations and supports initiation of a dialogue on nuclear affairs aimed at fostering a more stable, resilient, and transparent security relationship with China," while indicating the U.S. concerns about China's military modernization and the lack of transparency surrounding its nuclear program.[87]

Regarding U.S. nuclear targeting, according the Report, "[t]he new guidance requires the United States to maintain significant counterforce capabilities against potential adversaries. The new guidance does not rely on a "counter-value" or 'minimum deterrence' strategy."[88] Despite the adoption of the Assured Destruction Strategy—based on counter-value targeting—as a declaratory policy in 1960s, the U.S. actual nuclear employment policy has continued to be

[86] U.S. Department of Defense, "Report on Nuclear Employment Strategy."

[87] Ibid., p. 3.

[88] Ibid., p. 4.

centered on counterforce vis-à-vis opponent's nuclear forces, military facilities and so on. The current U.S. nuclear war plan, known as OPLAN 8010, is also considered to contain counterforce targeting against, among others, adversaries' weapons of mass destruction (WMD) infrastructure, military and national leadership, and war supporting infrastructure.[89]

On Russia's nuclear policy, there are few remarkable changes from the previous year. One potentially interesting news item reported that Russia plans to gradually expand areas of nuclear submarine patrols, and to resume them in the southern seas after a hiatus of more than 20 years since the demise of the Soviet Union, according to an unnamed official in the Russian military General Staff.[90]

The United Kingdom examined "five possible operating postures for nuclear weapons," as part of the Trident Alternative Review in July 2013. These postures include: (1) Continuous deterrence—maintaining deterrent presence, (2) Focused nuclear deterrence—maintaining a high readiness posture for a specific period, (3) Sustained nuclear deterrence—a visible deployment of some deterrent capability, but not at high readiness, (4) Responsive nuclear deterrence—irregularly deployment in frequency and length in order not to be predicted by a potential adversary, and (5) Preserved nuclear deterrence—no regularly deployed deterrent platforms but maintaining the ability.[91] While stating no recommendation, the report seemed to imply that continuing the existing deterrence posture, CASD, is preferable for the U.K. security.

B) Commitment to the "sole purpose," no first use, and related doctrines

NWS except China have yet to declare a no-first-use (NFU) of nuclear weapons. The United States reiterated in the Nuclear Employment Strategy that "[t]he fundamental role of U.S. nuclear weapons remains to deter nuclear attack on the United States and its Allies and partners,"[92] but neither adopted a NFU policy nor declared a "sole purpose" of U.S. nuclear weapons as deterring nuclear attack on the United States and its allies.

In 2013, the China's NFU policy received attention, due to the fact that it was not mentioned for the first time in the National Defense White Paper published in April.[93] The White Paper stated:

> If China comes under a nuclear threat, the nuclear missile force will act upon the orders of the [Central Military Commission (CMC)], go into a higher level of readiness, and get ready for a nuclear counterattack to deter the enemy from using nuclear weapons

[89] Hans M. Kristensen, "Obama and the Nuclear War Plan," *Federation of the American Scientists Issue Brief*, February 2010, p. 6.

[90] "Russia to Send Nuclear Submarines to Southern Seas," *Reuters*, June 1, 2013, http://www.reuters.com/article/2013/06/01/us-russia-submarines-patrol-idUSBRE95007V20130601.

[91] United Kingdom, *Trident Alternative Review*, pp. 22-23.

[92] U.S. Department of Defense, "Report on Nuclear Employment Strategy," June 19, 2013, p. 4.

[93] See, for example, James M. Acton, "Is China Changing Its Position on Nuclear Weapons?" *New York Times*, April 18, 2013, http://www.nytimes.com/2013/04/19/opinion/is-china-changing-its-position-on-nuclear-weapons.html?_r=0; James M. Acton, "Debating China's No-First-Use Commitment: James Acton Responds," *Proliferation Analysis*, April 22, 2013, http://carnegieendowment.org/2013/04/22/debating-china-s-no-first-use-commitment-james-acton-responds/g0lx.

> against China. If China comes under a nuclear attack, the nuclear missile force of the [People's Liberation Army Second Artillery Force (PLASAF)] will use nuclear missiles to launch a resolute counterattack either independently or together with the nuclear forces of other services.[94]

Yang Yujun, a spokesman of China's Ministry of Defense, stated that China has not changed its NFU policy, and explained that the National Defense White Paper in 2013 "adopted a 'thematic' model (*zhuanti xing*) and focuses specifically on 'Diversified Employment of China Armed Forces,' the title of the new white paper, and does not address nuclear policy in detail."[95] At the 2013 NPT PrepCom, China stated that it "has adhered to the policy of no-first use of nuclear weapons at any time or under any circumstances."[96]

Few significant changes in nuclear policies were announced by the nuclear-armed states in 2013, either. India maintains a NFU policy despite reserving an option of nuclear retaliation vis-à-vis a major biological or chemical attack against it. Pakistan, whose conventional military power is inferior to India's, has not declared a NFU policy. Israel, which has maintained an "opaque nuclear posture," has not clearly mentioned the role of nuclear weapons in its security strategy and policies.

North Korea's actual nuclear strategy or policies are not clear. Following the adoption of the UN Security Council Resolution (UNSCR) 2094, condemning the North Korean nuclear test in February 2013 and bolstering non-military sanction measures, North Korea intensified its threats of military attacks, including use of nuclear weapons, against Japan, South Korea and the United States. North Korea threatened to withdraw from the 60-year armistice agreement in March, and informed the United States in April that "the ever-escalating U.S. hostile policy toward the DPRK and its reckless nuclear threat will be smashed by the strong will of all the united service personnel and people and cutting-edge smaller, lighter and diversified nuclear strike means of the DPRK and that the merciless operation of its revolutionary armed forces in this regard has been finally examined and ratified."[97]

C) Negative security assurances

No new development was found regarding negative security assurances (NSAs) in 2013. China is the only NWS that has declared an unconditional NSA for NNWS and has supported the request of some NNWS, mainly the NAM countries,[98] that the NWS provide legally-binding NSAs. The

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[94] The People's Republic of China, "The Diversified Employment of China's Armed Forces," April 2013, http://news.xinhuanet.com/english/china/2013-04/16/c_132312681.htm.

[95] Hui Zhang, "China's Nuclear Policy: Changing or Not?" *Power and Policy*, May 31, 2013, http://www.powerandpolicy.com/2013/05/31/chinas-nuclear-policy-changing-or-not/.

[96] "Statement by China," Cluster I, Second Session of the Preparatory Committee for the 2015 NPT Review Conference, Geneva, April 25, 2013.

[97] "U.S. Should Ponder over Grave Situation: Spokesman," *KCNA*, April 4, 2013, http://www.kcna.co.jp/item/2013/201304/news04/20130404-03ee.html.

[98] The NAM countries called for effective, universal, unconditional, non-discriminatory and irrevocable legally binding security assurances against the use or threat of use of nuclear weapons again in the 2013 NPT PrepCom. NPT/CONF.2015/PC.II/WP.15, 21 March 2013.

United Kingdom and the United States have declared not to use or threaten to use nuclear weapons against NNWS that are parties to the NPT and in compliance with their non-proliferation obligations. France and Russia maintain their respective unilateral NSAs made in 1995, pledging that they will not use or threaten to use nuclear weapons against the NNWS parties to the NPT unless they or their allies are invaded or attacked by a NNWS in cooperation with a NWS.

As written in the *Hiroshima Report 2013*, while one of the purposes of the NSAs provided by NWS to NNWS is to alleviate the imbalance of rights and obligations between NWS and NNWS under the NPT, India, Pakistan and North Korea also declare NSAs. India declared that it would not use nuclear weapons against NNWS, except "in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons." Pakistan has declared its unconditional NSA. In addition, North Korea has declared NSA as long as NNWS do not join nuclear weapons states in invading or attacking it.

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

The protocols to the nuclear-weapon-free zone (NWFZ) treaties include the provision of legally-binding NSAs. At the time of writing, only the Protocol of the Treaty for the Prohibition of Nuclear Weapons in Latin America and Caribbean (the Treaty of Tlatelolco) has been ratified by all NWS, as shown in table 1-3 below. In 2013, no NWS ratified protocols additionally.

Table 1-3: The Status of the Signature and the Ratification of Protocols to NWFZ Treaties on NSAs

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

[○ : Ratified　　△ : Signed]

At the 2013 NPT PrepCom, France stated that the NWS were "ready to sign"[99] the Protocol to the Southeast Asian NWFZ Treaty, and Russia mentioned that it "has completed all internal procedures necessary to accede to" it.[100] Regarding the Protocol to the Central Asian NWFZ

[99] "Statement by France," Second Session of the Preparatory Committee for the 2015 NPT Review Conference, Cluster I, Geneva, April 24, 2013.

[100] "Statement by Mikhail Ulyanov, Head of the Delegation of the Russian Federation Director of the Department for Security Affairs and Disarmament Ministry of Foreign Affairs of the Russian Federation at the Second Session of the Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons," Geneva, 22 April 2013.

Treaty, France announced that NWS and Central Asian countries had resumed dialogues,[101] and Russia told that it was "ready to work both with [other NWS] and with the countries of the region to finalize its legal status. This can and must be done before the end of this year."[102] However, no actual progress was made with either of the protocols during 2013.

Some NWS stated reservations or added interpretations to protocols of the NWFZ treaties when signing or ratifying them. At the 2013 NPT PrepCom, the NPDI "call[ed] upon all nuclear-weapon States to withdraw any reservations or interpretative declarations made to the nuclear-weapon-free zone treaties and their protocols contrary to the object and purpose of such treaties."[103] NAM and NAC has made similar proposals.

E) Relying on extended nuclear deterrence

In 2013, the United States and its allies, including NATO countries, Australia, Japan and South Korea, maintained their respective policies on extended nuclear deterrence. Currently, the United States deploys from 150 to 200 B-61 nuclear gravity bombs in five NATO countries (Belgium, Germany, Italy, the Netherlands and Turkey), and thus maintains nuclear sharing arrangements with them. While no U.S. nuclear force is deployed outside of its territory except the European NATO countries mentioned above, the United States (and perhaps its allies) recognized the importance of showing a U.S. presence when needed. Facing North Korea's provocations vis-à-vis Japan, South Korea and the United States after the North's nuclear test in February 2013, the United States sent B-2 strategic bombers from Guam to South Korea to participate in annual military exercises there, aiming to show its will to defend South Korea, and to ensure the credibility of extended deterrence.

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

According to one U.S. expert, about 1,800 nuclear weapons possessed by Russia and the United States are considered to be on high alert status, either Launch On Warning (LOW) or Launch Under Attack (LUA). 48 U.K. nuclear warheads and 80 French ones are also kept on alert under their continuous SSBN patrols, albeit at lower readiness levels than those of the two nuclear superpowers.[104]

While the United States has yet to alter its alert posture, the Nuclear Employment Strategy Report implied that it would take measures to reduce alert status or maximize decision time to authorize the use of nuclear weapons in the future, stating that "[r]ecognizing the significantly diminishing possibility of a disarming surprise nuclear attack, the guidance directs [Department

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[101] "Statement by France," Second Session of the Preparatory Committee for the 2015 NPT Review Conference, Cluster I, Geneva, April 24, 2013.

[102] "Statement by Mikhail Ulyanov."

[103] NPT/CONF.2015/PC.II/WP.24, 11 April 2013.

[104] Hans M. Kristensen, "Reducing Alert Rates of Nuclear Weapons," Presentation to NPT PrepCom Side Event, Geneva, April 24, 2013; Hans M. Kristensen and Matthew McKinzie, "Reducing Alert Rates of Nuclear Weapons," United Nations Institute for Disarmament Research, 2012.

of Defense] to examine further options to reduce the role of Launch Under Attack plays in U.S. planning, while retaining the ability to Launch Under Attack if directed."[105]

It is assumed that because China keeps nuclear warheads de-mated from delivery vehicles, its nuclear forces are not on a hair-trigger alert posture. The key question, however, would be whether Chinese nuclear warheads will be de-mated from the new SLBM JL-2 loaded onto the deployed Type 094 SSBNs.

(6) CTBT

A) Signing and ratifying the CTBT

As of November 2013, 161 countries among 183 signatories have deposited their instruments of ratification of the Comprehensive Nuclear-Test-Ban Treaty (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. Syria, among the countries surveyed, has also not signed the CTBT. U.S. President Obama again pledged to make efforts for ratifying the treaty in his Berlin speech, but the Obama administration has yet to submit it to the Senate for ratification. No significant progress or remarkable movement by other non-signatories/ ratifiers surveyed in this Report was found in 2013, either.

On September 27, the Conference on Facilitating Entry into Force of the CTBT was convened, at which participating countries discussed the importance of early entry into force of the Treaty, and the significance of further strengthening the verification regime, including the international monitoring system (IMS). In the Final Declaration adopted at the Conference, participating countries "urge[d] all remaining States, especially those whose signatures and ratifications are necessary for the entry into force of the Treaty, to take individual initiatives to sign and ratify the Treaty without delay in order to achieve its earliest entry into force."[106] They also pointed out:

> [W]e appreciated the effectiveness of the CTBT verification regime demonstrated in response to the nuclear test explosion announced by [North Korea] on 12 February 2013. On this occasion, the [IMS] of this verification regime successfully detected unusual seismic waveforms and infrasound signals, providing relevant and useful physical data to States Signatories promptly. Further measurements of radioactive noble gases later in April 2013 also confirmed the sensitivity and specificity of the monitoring network.[107]

China, Israel and the United States stated the following regarding the issues of ratification at the Conference:

- China—"The Chinese government has submitted the Treaty to the National People's

[105] U.S. Department of Defense, "Report on Nuclear Employment Strategy," p. 5.

[106] "Final Declaration and Measures to Promote the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty," Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty, New York, September 27, 2013.

[107] Ibid.

Congress for its deliberation and will continue to push forward the deliberation process. I am confident that China will never become the obstacle for the Treaty's entry-into-force."[108]

- Israel—"Israel's stance on the CTBT's entry into force will be based on the overall regional situation, the completion of the treaty's verification regime, as mandated by the Treaty, and Israel's sovereign equality status in the policy making organs of the Treaty."[109]
- The United States—"With advancements in verification and the U.S. Stockpile Stewardship Program in mind, we have begun the process of engaging the American public. We know that the Treaty is not at the forefront of people's minds these days and that it is very technical in nature. We want people to take their time and absorb and understand the rationale behind it. There are no set timeframes to bring the Treaty to a vote, and we are going to be patient, but we also will be persistent in our outreach efforts."[110]

On the same day of the Conference, the CTBT Organization (CTBTO) launched the Group of Eminent Persons (GEM), comprising 18 eminent personalities and internationally recognized experts, for the purpose of supporting and complementing efforts to promote the CTBT's entry into force.

As for outreach activities for promoting the Treaty's entry into force, a document, "Activities Undertaken by Signatory and Ratifying States under Measure (I) of the Final Declaration of the 2009 Conference on Facilitating the Entry into Force of the Treaty in the Period September 2011-August 2013," distributed at the Conference, summarized activities conducted by ratifying and signatory states. It highlighted the bilateral activities related to the Annex 2 states (conducted by Australia, Austria, Belgium, Brazil, Japan, Mexico, the Netherlands, New Zealand, Norway, Russia, Turkey, the U.K., the U.S., and others), those pertaining to the non-Annex 2 states (conducted by Australia, Austria, Belgium, Brazil, Canada, France, Mexico, the Netherlands, New Zealand, Norway, Russia, Turkey, the U.K., the U.S., and others), the global-level activities (conducted by Australia, Austria, Belgium, Brazil, Canada, France, Japan, Mexico, the Netherlands, New Zealand, Norway, South Korea, Russia, Switzerland, Turkey, UAE, the U.K., the U.S., and others), and the regional-level activities (Australia, Austria, Belgium, Brazil, France, Japan, Mexico, the Netherlands, New Zealand, South Korea, Turkey, UAE, the U.K., the U.S., and others) [111].

On the effort to ban a nuclear test, a project named the ATOM (Abolish Testing. Our Mission) was established in August 2012 through the initiative of Kazakhstan, where the Semipalatinsk Test Site (closed in 1991) is located. The ATOM Project is "an international campaign designed to do more than create awareness surrounding the human and environmental devastation caused by

[108] "Statement by China," 2013 Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty, New York, 27 September 2013.

[109] "Statement by Israel," 2013 Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty, New York, 27 September 2013.

[110] "Statement by the United States of America," 2013 Conference on Facilitating the Entry into Force of the Comprehensive Nuclear-Test-Ban Treaty, New York, 27 September 2013.

[111] CTBT-Art.XIV/2013/4, 6 September 2013.

nuclear weapons testing," and aiming to achieve a "world without nuclear testing." The Project held an exhibition at the Vienna International Center as a part of activities of the International Day against Nuclear Tests in August 2013.[112]

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

Five NWS, India and Pakistan maintain a moratorium on nuclear test explosions. Israel, which has kept its nuclear policy opaque, has not disclosed the possibility of conducting nuclear tests. North Korea conducted a third nuclear test explosion in February 2013. The UN Security Council "decide[d] that the DPRK shall not conduct any further launches that use ballistic missile technology, nuclear tests or any other provocation" in the Resolution 2094 adopted in March. However, North Korea has yet to declare a moratorium.

C) Cooperation with the CTBTO Preparatory Commission

Regarding the countries surveyed in this study, the status of payments of contributions to the Preparatory Commission for the CTBTO for 2012 is as follows.[113]

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

The United States has pledged a voluntary contribution of US$ 3.45 million to the CTBTO for bolstering the CTBT verification regime, especially to preparations for the next Integrated Field Exercise (IFE14) in Jordan in November-December 2014.[114]

D) Contribution to the development of the CTBT verification systems

As mentioned at the Conference on Facilitating Entry into Force of the CTBT in September 2013, the fact that the IMS successfully detected the unusual event at the time of the North Korean nuclear tests demonstrated the effectiveness of the CTBT verification systems. The pace of establishing the IMS stations in China, Egypt and Iran has been lagging behind, compared to that in the other signatory countries. Among them, the CTBTO announced the important progress that "China has agreed to begin sharing data from 10 stations on its territory,"[115] followed by the announcement of the CTBTO on January 6, 2014 that it has started receiving data from key IMS stations hosted by China.[116]

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[112] On the ATOM Project, see its homepage (http://theatomproject.org/en/).

[113] "CTBTO Member States' Payment as at 31-Dec-2012," http://www.ctbto.org/fileadmin/user_upload/treasury/31Dec2012_Member_States__payments.pdf.

[114] Preparatory Commission for the Comprehensive-Nuclear-Test Ban Treaty Organization, "Voluntary Contribution by the United States," 6 September 2013, http://www.ctbto.org/press-centre/highlights/2013/voluntary-contribution-by-the-united-states/.

[115] "China Promises to Ante Up Nuclear-Monitoring Data," *Science Insider*, August 8, 2013, http://news.sciencemag.org/2013/08/china-promises-ante-nuclear-monitoring-data.

[116] Preparatory Commission for the Comprehensive-Nuclear-Test Ban Treaty Organization, "Chinese Monitoring Stations Now Sending Data," 6 January 2014, http://www.ctbto.org/press-centre/press-releases/2014/chinese-

Another significant contribution was that a new system for Atmospheric Transport Modelling (ATM), which is used to backtrack the travelling of airborne radioactive material or to simulate the travel path of the radionuclides from a nuclear explosion, once its location has been determined, was installed at the headquarters of the CTBTO Preparatory Commission with a voluntary contribution by Japan of around US$ 737,000.[117] The new system could enhance the resolution of ATM calculations significantly.[118]

Regarding on-site inspection, an exercise was undertaken in Hungary from May-June 2013, with the participation of nearly 150 experts from the State Signatories and the CTBTO. In addition, the next Integrated Field Exercise (IFE14) will be conducted in Jordan during November-December 2014, as mentioned above. The United Kingdom hosted a Technical Experts Meeting by NWS in March 2013 to discuss the technical collaborative work for the upcoming exercise, based on their experience with past nuclear explosive tests.[119]

E) Nuclear Testing

North Korea announced that it "succeeded in the third underground nuclear test at the site for underground nuclear test" at the Punggye-ri Nuclear Test Site in February 2013. The size of this nuclear test was estimated to have a magnitude of 4.9, whose detonation yield was approximately twice as large as the prior test conducted in May 2009.[120] The testing was detected by 94 seismic stations and two infrasound stations of the CTBTO's IMS. Although radionuclide was not initially detected, the CTBTO announced in April that its "radionuclide network [had] made a significant detection of radioactive noble gases [Xe-133 and Xe-131m] that could be attributed to the nuclear test," at the radionuclide stations in Takasaki (Japan) and Ussuriysk (Russia) approximately two months after the North's test.[121] It remains unclear whether North Korea used highly-enriched uranium or plutonium for the testing as the nuclear explosive device.

Soon after the nuclear test, North Korean Foreign Ministry spokesman issued a statement: "The current nuclear test is the primary countermeasure taken by the DPRK in which it exercised its maximum self-restraint. If the U.S. takes a hostile approach toward the DPRK to the last,

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monitoring-stations-now-sending-data/.

[117] "Japan's Intense Cooperation with the CTBTO," Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization, November 26, 2013, http://www.ctbto.org/press-centre/highlights/2013/japans-intense-cooperation-with-the-ctbto/.

[118] "Detecting a Site of Nuclear Test: A New System Introduced by the CTBTO," *Sankei Shimbun*, November 27, 2013. (in Japanese)

[119] "Statement by the United Kingdom," Second Session of the Preparatory Committee for the 2015 NPT Review Conference, Cluster I, Geneva, April 24, 2013; "Statement by Rose E. Gottemoellar," 68th UNGA First Committee General Debate, October 9, 2013, http://usun.state.gov/briefing/statements/215254.htm.

[120] Rachel Oswald, "North Korean Nuclear Test More Than Twice as Powerful as Last Blast," *Global Security Newswire*, February 19, 2013, http://www.nti.org/gsn/article/north-korea-nuke-test-estimated-25-times-more-powerful-2009-blast/.

[121] Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization, "CTBTO Detects Radioactivity Consistent with 12 February Announced North Korean Nuclear Test," Press Release, 23 April 2013, http://www.ctbto.org/index.php?id=4032.

rendering the situation complicated, it will be left with no option but to take the second and third stronger steps in succession."[122] At the end of 2013, North Korea conducted neither a subsequent nuclear test nor a further launch test of any long-range ballistic missiles. However, the U.S. expert analyzed that North Korea continued to excavate at the Punggye-ri nuclear test site and upgrade the site's supporting areas, although there were "no signs that Pyongyang plans to conduct a nuclear test in the immediate future."[123]

Other nuclear-weapon/armed states did not conduct any nuclear explosive tests in 2013. On the other hand, the United States continues to develop and conduct various non-explosive tests and experiments under the Stockpile Stewardship Program (SSP) in order to sustain and assess the nuclear weapons stockpile without the use of underground nuclear tests. The U.S. NNSA, which is part of the U.S. Department of Energy, has released quarterly reports on such experiments. Based on its press release, the NNSA conducted two experiments using the Z machine during April and June, and during July and September at the Sandia National Laboratories. The Z machine generates X-rays by fast discharge of capacitors, thus allowing for exploring the properties of plutonium materials under extreme pressures and temperatures.[124] The status of the other nuclear-weapon/armed states' non-explosive testing activities in this respect is not well-known since they do not release any information.

(7) FMCT

In the 2013 session of the Conference on Disarmament (CD), its program of work, including the establishment of an Ad Hoc Committee on an Fissile Material Cut-Off Treaty (FMCT) negotiation, could not be adopted again, due to Pakistan's strong objection, as was the case in the previous years. Pakistan continues to insist that the mandate of the FMCT negotiation must not only prohibit fissile material production for nuclear weapons but also cover the existing stockpiles, and that it could not accept the adoption of the program of work in which the issues on existing stockpile were not included. In January, CD President András Dékány (Hungarian Ambassador to the CD) proposed an unofficial draft of a program of work to "establish a working group…entitled 'Cessation of the nuclear arms race and nuclear disarmament,' to consider proposals to take forward nuclear disarmament negotiations with the ultimate goal of the elimination of nuclear weapons by progressive and systematic efforts, and, as a first step thereof, to begin substantive work towards a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices on the basis of document CD/1299 and the mandate contained therein."[125] He presented a draft program of work as CD/1948 on February 11, but Pakistan reiterated its arguments on a FMCT and blocked its adoption. After that, two drafts of a

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[122] "Spokesman for DPRK Foreign Ministry Urges U.S. to Choose Between Two Options," *KCNA*, February 12, 2013, http://www.kcna.co.jp/item/2013/201302/news12/20130212-19ee.html.

[123] Nick Hansen, "Two New Tunnel Entrances Spotted at North Korea's Punggye Nuclear Test Site," *38 North*, 23 October 2013, http://38north.org/2013/10/punggye102313/.

[124] See NNSA, "Stockpile Stewardship Program Quarterly Experiments," http://nnsa.energy.gov/ourmission/managingthestockpile/sspquarterly.

[125] "Draft Decision on a Programme of Work for the 2013 Session: Submitted by the President," Conference on Disarmament, January 29, 2013.

program of work—CD/1952 of June 21 and CD/1995 of August 13—were presented but could not be adopted due to the failure to achieve a consensus among the CD member states.

The UN General Assembly in 2012 adopted the resolution to request "the Secretary-General to seek the views of Member States on a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices, including possible aspects thereof, and to submit a report on the subject to the General Assembly."[126] In accordance with this resolution, the UN Secretary-General submitted a report to the General Assembly, in which he summarized the main points of the views of UN member states, including Australia, Austria, Brazil, Canada, China, France, Germany, India, Iran, Japan, Mexico, Norway, Pakistan, South Korea, South Africa, Sweden, Switzerland, Syria, the United Kingdom and the United States.[127] The whole text of the original report submitted by each country is also posted on the UN homepage.[128] According to its report, Pakistan explained its position on the FMCT negotiations as follows:[129]

- "[W]hen the idea of a FMCT was introduced in the CD in 1995, our security interests required that such a treaty should not only ban future production of fissile material but also address the serious asymmetry in fissile material stockpiles of countries, especially in South Asia."
- "Our concerns regarding asymmetry in stocks have been further accentuated as a result of the discriminatory policies relating to selective 'civilian nuclear cooperation,' guided by strategic and commercial interests of some states, which would enhance the production of fissile material for military purposes by our neighbor. This has further worsened the asymmetry of stocks in our region. In such circumstances, Pakistan has been compelled to oppose negotiations for a treaty on fissile material that would permanently freeze its disadvantage and as such fundamentally compromise its security interests by undermining its deterrent capability."
- "Therefore, from our perspective, an equitable and balanced treaty on fissile material must negotiate not only a ban on future production but also reduce the asymmetry in stockpiles."

Along with Pakistan, Iran insists that the existing stockpile of fissile material for nuclear weapons should be covered in the scope of the FMCT, although Iran has not sought to block adoption of the program of work. Brazil and South Africa argue that the treaty should cover past and future production of fissile material for weapons, but propose that concluding a treaty prohibiting future production of fissile material for weapons should be treated as a matter of priority. China and Israel support the commencement of negotiations on a FMCT prohibiting the

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126 A/RES/67/53, 4 January 2013.

127 A/68/154, 16 July 2013.

128 "Member States' Views," United Nations Office at Geneva, http://www.unog.ch/unog/website/disarmament.nsf/%28httpPages%29/384E4AAF5A1D7189C1257B7C003140CA?OpenDocument&unid=B8A3B48A3FB7185EC1257B280045DBE3.

129 "Pakistan's View Pursuant to Resolution 67/53 Entitled: 'Treaty Banning the Production of Fissile Material for Nuclear Weapons and Other Nuclear Explosive Devices,' Adopted by the UN General Assembly on 3 December 2012," http://www.unog.ch/80256EDD006B8954/(httpAssets)/82A4BC6F7AE836EEC1257B98005B4203/$file/Pakistan.pdf.

future production of fissile material for nuclear weapons, but they do so less actively than the other NWS.

During the 2012 session of the UN General Assembly, a resolution proposed by Canada was adopted, in which the establishment of a group of governmental experts (GGE) on a FMCT was requested.[130] The GGE will be convened for eight weeks during 2014-2015. At the 2013 NPT PrepCom, Canada and Spain in their working paper summarized viewpoints regarding the duration of the treaty, a mechanism for its entry into force and clauses for withdrawal as being important issues, though receiving less attention when the negotiation of the treaty started.[131]

Among nuclear-weapon/armed states, China, India, Israel, Pakistan and North Korea have not declared a moratorium on the production of fissile material for weapons use. India is reported to be constructing a second gas centrifuge facility at the Rare Materials Plant (RMP), near Mysore, which "could significantly increase India's ability to produce highly enriched uranium for military purposes."[132] Pakistan continues to construct one or two more reprocessing plants, and North Korea appears to be expanding its uranium enrichment capability.

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

In the Final Document of the 2010 NPT Review Conference (RevCon), the NWS were called upon to report on actions taken towards "accelerat[ion of] concrete progress on the steps leading to nuclear disarmament" to the 2014 PrepCom (Action 5). Analysts have pointed out, however, that the "prospect of achieving concrete progress against the Action Plan before the 2014 reporting deadline is low."[133] On the other hand, at the fourth P5 Conference held in April 2013, the five NWS "reaffirmed their objective to submit a P5 glossary [of definitions] of key nuclear terms to the 2015 NPT Review Conference."[134] China reported at the 2013 NPT PrepCom that NWS "experts have reached a preliminary agreement on a list of key nuclear terms." China also indicated the prospect that the "[w]ork on the compilation and translation of the Glossary is scheduled to be concluded in [the] next 2 years, [and its] outcome [would] be reported to the 2015 NPT Review Conference."[135]

In 2013, no nuclear-weapon/armed states took additional, significant transparency measures regarding nuclear forces, fissile material for nuclear weapons, or nuclear strategy/doctrine. The

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130 A/RES/67/53, 4 January 2013.

131 NPT/CONF.2015/PC.II/WP.13/Rev.1, 24 April 2013.

132 David Albright and Serena Kelleher-Vergantini, "Construction Finishing of Likely New Indian Centrifuge Facility at Rare Material Plant," *ISIS Imagery Brief*, December 4, 2013.

133 Andrea Berger and Malcolm Chalmers, "Great Expectations: The P5 Process and the Non-Proliferation Treaty," *Whitehall Report*, No. 3-13 (August 2013), p. 33.

134 "Fourth P5 Conference: On the Way to the 2015 NPT Review Conference," Washington, DC, April 19, 2013, http://www.state.gov/r/pa/prs/ps/2013/04/207768.htm.

135 "Statement by Mr. Pang Sen, Head of the Chinese Delegation, Director-General of the Department of Arms Control and Disarmament of MFA of the People's Republic of China at the General Debate in the Second Session of the Preparatory Committee for the 2015 NPT Review Conference," Geneva, April 22, 2013.

NPDI submitted a working paper "Transparency of Nuclear Weapons" to the 2012 PrepCom, which included a draft form for standard nuclear disarmament reporting on nuclear warheads, delivery vehicles, fissile material for nuclear weapons, and nuclear strategy/policies.[136] Using the draft form, the following table summarizes the degree of transparency taken by the nuclear-weapon/armed states.

Table 1-4: Transparency in nuclear disarmament

	CHN	FRA	RUS	UK	US	IND	ISR	PAK	PRK
Nuclear warheads									
Total number of nuclear warheads (including those awaiting dismantlement)		○							
Aggregate number of nuclear warheads in stockpile		○		○	○				
Number of strategic or non-strategic nuclear warheads		○	△	○	△				
Number of strategic or non-strategic deployed nuclear warheads			△	○	△				
Number of strategic or non-strategic non-deployed nuclear warheads				○					
Reductions (in numbers) of nuclear warheads in 2013		○	○	○	○				
Aggregate number of nuclear warheads dismantled in 2013									
Delivery vehicles									
Number of nuclear warhead delivery systems by type (missiles, aircraft, submarines, artillery, other)		○	△	○	○				
Reduction (in numbers) of delivery systems in 2013			○		○				
Aggregate number of delivery systems dismantled in 2013									
Nuclear disarmament since 1995									
1995-2000		○	○	○	○				
2000-2005		○	○	○	○				
2005-2010		○	○	○	○				
Nuclear doctrine									
Measures taken or in process to diminish the role and significance of nuclear weapons in military and security concepts, doctrines and policies	○	○	○	○	○	○		○	
Measures taken or in process to reduce the operational readiness of the reporting State's nuclear arsenal	○	△	△	△	△	○		○	
Measures taken or in process to reduce the risk of accidental or unauthorized use of nuclear weapons									
Description of negative security assurances (including status and definition) by reporting States	○	○	○	○	○	○		○	○
Current status and future prospect of the ratification of the relevant protocols to nuclear-weapon-free-zone treaties	△	△	△	△	△	-	-	-	-
Current status of consultations and cooperation on entry into force of the relevant protocols of nuclear-weapon-free-zone treaties	△	△	△	△	△	-	-	-	-
Current status of review of any related reservations about the relevant protocols of nuclear-weapon-free-zone treaties by concerned States						-	-	-	-
	CHN	FRA	RUS	UK	US	IND	ISR	PAK	PRK

[136] NPT/CONF.2015/PC.I/WP.12, 20 April 2012.

Nuclear testing									
Current status of ratification of the Comprehensive Nuclear-Test-Ban Treaty	△	○	○	○	△		△		
Current status of the reporting State's policy on continued adherence to the moratorium on nuclear-weapon test explosions	○	○	○	○	○	○		○	
Activities to promote the entry into force of the Comprehensive Nuclear-Test-Ban Treaty at the national, regional and global levels		○		○	○				
Scheduled policy reviews									
Scope and focus of policy reviews, scheduled or under way, relating to nuclear weapon stocks, nuclear doctrine or nuclear posture				○	○				
Fissile material									
Aggregate amount of plutonium produced for national security purposes (in metric tons)				○	○				
Aggregate amount of highly enriched uranium produced for national security purposes (in metric tons)				○	○				
Amount of fissile material declared excess for national security purposes (in metric tons)			△		△				
Current status (and any future plan), including the amount and year, of declarations to the International Atomic Energy Agency of all fissile material designated by the reporting State as no longer required for military purposes and placement of such material under Agency or other relevant international verification and arrangements for the disposition of such material for peaceful purposes									
Current status of the development of appropriate legally binding verification arrangements to ensure the irreversible removal of such fissile material			△	△	△				
Current status (and any future plan) of the dismantlement or conversion for peaceful uses of facilities for the production of fissile material for use in nuclear weapons		○							
Other measures in support of nuclear disarmament									
Any cooperation among Governments, the United Nations and civil society aimed at increasing confidence, improving transparency and developing efficient verification capabilities		○		○	○				
Year and official document symbol of regular reports on the implementation of Article 6, paragraph 4(c), of the 1995 decision entitled "Principles and objectives for nuclear non-proliferation and disarmament", and the practical steps agreed to in the Final Document of the 2000 Review Conference									
Activities to promote disarmament and non-proliferation education									

(9) Verifications of Nuclear Weapons Reductions

In the *Hiroshima Report 2013*, the following issues were surveyed: acceptance and implementation of verification for nuclear weapons reduction; engagement in research and development of verification measures of nuclear weapons reduction; and acceptance of the IAEA verification to fissile material declared as no longer required for military purposes. In 2013, no significant progress was seen on these issues. Russia and the United States have implemented verifications under the New START. Both countries have also discussed verification measures for their fissile material surplus to the defense program with the International Atomic Energy

Agency (IAEA), but have not concluded.[137]

(10) Irreversibility

A) Implementing or planning dismantlement of nuclear warheads and their delivery vehicles

Just like their previous nuclear arms control agreements, the New START requires Russia and the United States to dismantle or convert strategic (nuclear) delivery vehicles beyond the limits set in the Treaty, in a verifiable way. The New START does not oblige them to dismantle nuclear warheads, but the two states have partially dismantled retired nuclear warheads as unilateral measures.

Neither country has provided comprehensive information regarding the dismantlement of nuclear warheads, including the exact numbers of dismantled warheads. However, the United States has publicized some information. According to the U.S. NNSA fact sheet in February 2013, it "has dismantled weapons at a rate faster than its own goals, reaching a 112 percent dismantlement rate in 2012. All weapons retired by 2009 will be permanently eliminated by 2022. …NNSA successfully dismantled a number of B61 and B83-0/1 bombs and W76-0, W80-0, W84 and W78 warheads" for the last three years.[138] The United States also continues to dismantle the W69 warhead, and the B53 and B83 bombs at Y-12 National Security Complex.[139] However, due to the sequestration of the U.S. budget, the pace of their dismantlement may encounter delay.[140]

Regarding the Russian efforts, no official information on dismantlement of nuclear warheads is available.

The Russian and U.S. Agreement on Cooperative Threat Reduction (CTR) concluded in 1992 was due to expire in June 2013. Russia informed that it would not reject "continued cooperation with the United States on the secure elimination of Soviet-era unconventional weapons so long as it takes place under a modernized bilateral agreement."[141] At the same time, Russia expressed concerns and complaints about U.S. excessive access to the Russian defense complex as well as classified information. However, after their work to update the legal framework for the CTR activities,[142] Russia and the United States signed the new agreement[143] on June 14, when the old

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[137] Tom Clements, Edwin Lyman and Frank von Hippel, "The Future of Plutonium Disposition," *Arms Control Today*, Vol. 43, No. 6 (July/August 2013), p. 11.

[138] NNSA, "Dismantlement Fact Sheet," February 11, 2013, http://nnsa.energy.gov/mediaroom/factsheets/dismantlement-0.

[139] "Y-12 Dismantlements," *Knoxnews.com*, February 28, 2013, http://blogs.knoxnews.com/munger/2013/02/y-12-dismantlements.html.

[140] Diane Barnes, "DOD Nonproliferation Work to Suffer Under Budget Cuts," *Glonal Security Newswire*, March 4, 2013, http://www.nti.org/gsn/article/nuclear-nonproliferation-activities-suffer-under-budget-cuts-hagel/.

[141] "Threat Reduction Program Must be Updated, Russia Says," *Global Security Newswire*, February 6, 2013, http://www.nti.org/gsn/article/ctr-program-must-be-updated-russia-says/.

[142] Rose Gottemoeller, "Remarks," American Bar Association Spring Meeting, International Law Section, Washington, SC, April 25, 2013, http://www.state.gov/t/us/208078.htm.

[143] U.S. White House, "United States and the Russian Federation Sign New Bilateral Framework on Threat Reduction," Fact Sheet, June 17, 2013, http://www.whitehouse.gov/the-press-office/2013/06/17/fact-sheet-united-states-and-russian-federation-sign-new-bilateral-frame.

agreement expired. During their efforts to renew the agreement, legislation titled the Next Generation Cooperative Threat Reduction Act of 2013, was introduced in May at the U.S. Senate.

The United Kingdom, according to a document obtained under the freedom of information act, "has been decommissioning and breaking down Trident nuclear warheads at a rate of three per year, with a goal of reducing domestic stocks to 'no more than 180' by the mid-2020s," at Burghfield in Berkshire. "[I]n 2012 five warheads were sent by road to Burghfield, …[and two] were refurbished and returned north…while three stayed at Burghfield to be dismantled."[144] The U.K. Ministry of Defense also revealed that the "Atomic Weapons Establishment (AWE) has been running a Stockpile Reduction Programme to disassemble Trident warheads and reduce stockpile numbers" since 2002, and "[t]he warheads that have been identified as no longer required for service but are yet to be disassembled are stored at the Royal Naval Armaments Depot Coulport or as work in progress at AWE Burghfield."[145]

B) Decommissioning/conversion of nuclear weapons-related facilities

The *Hiroshima Report 2013* referenced that: all of the U.K. plutonium production facilities for military purposes were shut down; French facilities for producing fissile material for nuclear weapons—Marcoule for plutonium and Pierrelatte for uranium—were decommissioned and dismantled; and French nuclear test sites were dismantled irreversibly in 1996. In 2013, no countries announced to conduct additional efforts on decommissioning or conversion of nuclear weapons-related facilities.

C) Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes

Under the joint Russia-U.S. "Megatons to Megawatts" Program, Russia has reduced its stockpile of highly enriched uranium (HEU) extracted from nuclear weapons and designated as no longer required for military purposes, by conversion to low enriched uranium (LEU) and sale to the United States. In November 2013, Russia shipped the last batch of LEU under this program, which arrived at the U.S. Baltimore Port.[146] The 20-year Program was concluded, with total conversion of 500 metric tons of Russian HEU.

The United States, for its part, reported at the IAEA General Assembly in 2013 that it has "disposed of excess, weapons-origin fissile material by downblending approximately 140 Metric Tons of HEU, …[and] remain[ed] firmly committed to eliminating 34 Metric Tons of weapons-origin plutonium under the Plutonium Management and Disposition Agreement under

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144 Rob Edwards, "UK's Nuclear Weapons being Dismantled Under Disarmament Obligations," *Guardian*, 11 August 2013, http://www.theguardian.com/uk-news/2013/aug/11/uk-nuclear-weapons-dismantled-trident.

145 "The UK Ministry of Defense's Response to a Freedom of Information Act request Filed by Journalist Rob Edwards," 25 July 2013, http://robedwards.typepad.com/files/mod-foi-response-on-dismantling-nuclear-weapons.pdf.

146 Pavel Podvig, "Last HEU-LEU Program Shipment to Leave Russia," *IPFM Blog*, November 14, 2013, http://fissilematerials.org/blog/2013/11/last_shipment_of_heu-leu_.html.

IAEA verification."[147] The United States declared 210 metric tons of HEU as no longer required for military purposes.[148] However, there is some concern about the slowing down of U.S. efforts, due to the increasing cost of constructing the Mixed Oxide (MOX) Fuel Fabrication Facility at the Savannah River Site in South Carolina, for converting surplus nuclear-weapon plutonium into MOX fuel.[149] In June 2013, the NNSA acknowledged that "unanticipated cost increases for the MOX project and plutonium disposition program have prompted the Department to slow down the MOX project and other activities associated with the current plutonium disposition strategy."[150] Furthermore, the NNSA indicated that "an assessment of its options for disposing of surplus weapons-grade plutonium would not be complete until the spring of 2014" due to delaying the construction of the facility.[151] The difficulties of promoting the project are pointed out as following.

> A fundamental question is whether the rising cost estimates for [Mixed Oxide Fuel Fabrication Facility (MFFF)] are sustainable in the current budget environment. And if the MFFF is not sustainable, what should replace it? However, any delay or major change to the program could affect the planned disposition of Russian weapons plutonium.[152]

Russia plans not to permanently dismantle surplus weapon-grade plutonium, but rather to dispose of it through use as fuel in BN-600 and BN-800 fast breeder reactors, which produce more fuel than they fission.[153]

(11) Disarmament and Non-Proliferation Education and Cooperation with Civil Society

As surveyed in the *Hiroshima Report 2013*, most countries have not made available information on their activities undertaken with respect to disarmament and non-proliferation education, including cooperation with civil society, or the outcome of these efforts. During the 67th session of the UN General Assembly in July 2012, Secretary-General Ban Ki-moon issued a report stating that only nine countries, including Austria, Japan, Mexico and New Zealand, had informed the UN on their implementation of his recommendations.[154]

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147 "Statement by the United States of America," 2013 IAEA General Conference, September 16, 2013. http://www.iaea.org/About/Policy/GC/GC57/Statements/usa.pdf

148 The United States declares 374 metric tons of HEU as excess to nuclear weapons. Most of them will be downblended or used as fuel in naval or research reactor. Frank A. Rose, "Sixtieth Pugwash Conference on Science and World Security," Istanbul, November 1, 2013, http://www.state.gov/t/avc/rls/2013/216242.htm.

149 Douglas P. Guarino, "NNSA Acknowledges 'Considerable Cost Increase' For MOX Facility," *Global Security Newswire*, February 27, 2013, http://www.nti.org/gsn/article/nnsa-acknowledges-considerable-cost-increase-mox-facility/.

150 "NNSA, Plutonium Disposition Program," Press Release, June 26, 2013, http://www.nnsa.energy.gov/mediaroom/factsheets/pudisposition.

151 Douglas P. Guarino, "Administration Revises Timeline for Plutonium Disposition Review," *Global Security Newswire*, October 11, 2013, http://www.nti.org/gsn/article/administration-revises-timeline-plutonium-disposition-review/.

152 Mark Holt and Mary Beth Nikitin, "Mixed-Oxide Fuel Fabrication Plant and Plutonium Disposition: Management and Policy Issues," *CRS Report for Congress*, June 25, 2013.

153 Tom Clements, Edwin Lyman and Frank von Hippel, "The Future of Plutonium Disposition," *Arms Control Today*, Vol. 43, No. 6 (July/August 2013), pp. 9-10.

154 A/67/138, 12 July 2012.

At the 2013 NPT PrepCom, the NPDI submitted a working paper highlighting the member countries' commitment to actively promote disarmament and non-proliferation education, including that: Japan co-hosted the Global Forum on Disarmament and Non-Proliferation Education in Nagasaki with the United Nations University in August 2012; and Mexico supported a resolution[155], adopted at the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) General Conference, to establish an open-ended working group for nuclear disarmament and non-proliferation education.[156] The NPDI's working paper also highlighted the disarmament and non-proliferation education activities by Canada, Japan, the Netherlands and Poland as good practices.[157] At the 2013 PrepCom, Japan also reported that:

> Japan initiated the "Special Communicators for a World without Nuclear Weapons" program in 2010. Under the program more than 90 Hibakushas, or atomic bomb survivors, to date have shared their experiences with international audiences. …[And] Foreign Minister Kishida took the initiative in establishing a "Youth Communicators for a World without Nuclear Weapons" program. Under this new program, younger generations are expected to share with the world what they themselves have learned about the harm inflicted by nuclear weapons and what they have themselves thought about what they can do to achieve their elimination.[158]

Foreign Minister Kishida appointed 15 high school peace ambassadors as the "Youth Special Communicators for a World without Nuclear Weapons" on July 29.

Side events held during the NPT RevCon and PrepCom, and the First Committee of the UN General Assembly, where NGOs can participate, are also important elements of the efforts toward civil society cooperation. In 2013, among the states surveyed in this report: Canada, Egypt, Switzerland, the United Kingdom, the United States, the NPDI, the European Union (EU) and the European Atomic Energy Community (EURATOM) held side events at the PrepCom; and Canada, Egypt, Japan, Kazakhstan, the Netherlands, New Zealand, Switzerland and the United States hosted such events at the UN General Assembly First Committee.[159]

Regarding cooperation with civil society, one of the important efforts for governments is to provide more information on nuclear disarmament and non-proliferation matters. Among the countries surveyed in this report, the following set up a section or sections on disarmament and

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155 CG/E/Res.547, 13 November 2012.

156 NPT/CONF.2015/PC.II/WP.12, 18 March 2013.

157 NPT/CONF.2015/PC.I/WP.14, 20 April 2012.

158 "Statement by H.E. Mr. Mitsuru Kitano, Ambassador, Director-General of the Disarmament, Non-Proliferation and Science Department, Ministry of Foreign Affairs of Japan," Second Session of the Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), General Debate, Geneva, 22 April 2013. "Special Communicators for a World without Nuclear Weapons" have passed on their experience about the real consequence of the use of nuclear weapons to the cities of, among others, Austria, Canada, Egypt, France, Germany, India, Israel, Kazakhstan, Russia, Switzerland, Turkey, the United Kingdom and the United States.

159 See the following reports issued by the Reaching Critical Will: *NPT News in Review* (2013); *NPT News in Review* (2013); *First Committee Monitor* (2012).

non-proliferation on their official homepages (in English) and post enlightening information: Australia, Austria, Belgium, Canada, China, France, Germany, Japan, New Zealand, Sweden, Switzerland, the United Kingdom and the United States.

Finally, a few countries started to legislate against organizations or companies involved in producing nuclear weapons. Switzerland and Luxembourg enacted national laws, which restrict financing for nuclear weapons production. Some banks and investment funds also have policies against investing in such organizations or companies.[160]

(12) Hiroshima Peace Memorial Ceremony

On August 6, 2013, the Hiroshima Peace Memorial Ceremony was held in Hiroshima. Japan's Prime Minister Shinzo Abe and Foreign Minister Fumio Kishida attended the Ceremony, along with representatives from 70 countries and the EU, including:

- Ambassadorial-level—Brazil, France, Germany, Iran, Israel, Kazakhstan, Mexico, Pakistan, the United Kingdom and the United States
- Non-Ambassadorial-level—Australia, Belgium, Canada, Egypt, India, Indonesia, the Netherland, Norway, Russia, South Korea and Syria (Note: underline added to denote countries whose ambassadorial-level representatives have attended the Ceremony in the past three years)
- Not attending—Austria, China, New Zealand, South Africa, Sweden, Switzerland, Turkey, UAE, North Korea (Note: underline added to denote countries whose representatives have attended the Ceremony at least once in the past three years)

[160] See "Don't Bank on the Bomb: A Global Report on the Financing of Nuclear Weapons Producers," IKV Pax Christi and ICAN, October 2013.

2. Nuclear Non-Proliferation*

(1) Acceptance and Compliance with the Nuclear Non-Proliferation Obligations

A) Accession to the NPT

Among the current 194 UN Member States, those remaining outside the Nuclear Non-Proliferation Treaty (NPT) are: India and Pakistan, both of which tested and declared having nuclear weapons in 1998; Israel, which is widely believed to possess them; and South Sudan, which declared its independence and joined the United Nations in July 2011, and does not have any nuclear weapons. North Korea declared its withdrawal from the NPT twice, in 1993 and 2003, and has refused to return to the Treaty despite the UN Security Council resolutions demanding that it do so at an early date.

B) Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation

Since the NPT entered into force, no case of non-compliance with Articles 1 and 2 of the Treaty has been officially reported by the United Nations (UN) or the rest of the international community. However, if North Korea's withdrawal is not interpreted as legally valid or if it acquired nuclear weapons before announcing its withdrawal from the NPT, such acquisition of nuclear weapons would constitute a non-compliance with Article 2. As for Iran, Director of National Intelligence James R. Clapper testified at the U.S. Senate hearing that the U.S. intelligence community "[does] not know if Iran will eventually decide to build nuclear weapons." At the same time, he stated that: "Tehran has developed technical expertise in a number of areas—including uranium enrichment, nuclear reactors, and ballistic missiles—from which it could draw if it decided to build missile-deliverable nuclear weapons. These technical advancements strengthen our assessment that Iran has the scientific, technical, and industrial capacity to eventually produce nuclear weapons."[161]

UN Security Council Resolution (UNSCR) 1787[162] in October 2006 stipulates the following:

> [T]he DPRK shall abandon all nuclear weapons and existing nuclear programmes in a complete, verifiable and irreversible manner, shall act strictly in accordance with the obligations applicable to parties under the Treaty on the Non-Proliferation of Nuclear Weapons and the terms and conditions of its International Atomic Energy Agency (IAEA) Safeguards Agreement (IAEA INFCIRC/403) and shall provide the IAEA transparency measures extending beyond these requirements, including such access to individuals, documentation, equipments and facilities as may be required and deemed necessary by the IAEA.

The Security Council also decided that North Korea "shall abandon all other existing weapons of mass destruction and ballistic missile programme in a complete, verifiable and irreversible

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* This chapter is written by Hirofumi Tosaki.

[161] James R. Clapper, "Statement for the Record: Worldwide Threat Assessment of the US Intelligence Community," Senate Select Committee on Intelligence, March 12, 2013.

[162] S/RES/1718, 14 October 2006. The UN Security Council Resolution 1874 in June 2009 also demanded that North Korea "immediately comply fully with its obligations under relevant Security Council resolutions, in particular resolution 1718 (2006)."

manner."

However, North Korea has failed to respond to the UN Security Council's decisions. Immediately after the adoption of UNSCR 2087 on January 23, 2013, condemning the North's test launch of the long-range ballistic missiles—which North Korea insisted was a satellite rocket as part of its peaceful space program—in December 2012, North Korean National Defense Commission (NDC) issued a statement that North Korea "totally reject[ed] all the illegal resolutions on the DPRK adopted by the UNSC."[163] Then, North Korea conducted the third nuclear test in February 2013. Furthermore, in responding to the adoption of the UNSCR 2094 in March, intended to bolster the non-military sanctions against North Korea, the latter declared it was not bound by agreements concluded in the Six-Party Talks. North Korea is suspected to have restarted the 5MW graphite reactor, capable of producing weapon-grade plutonium, the operation of which had been suspended under the Initial Actions for the Implementation of the Joint Statement in February 2007.[164] IAEA Director-General Yukiya Amano stated at the IAEA Board of Governors in November 2013: "The Agency continues to monitor developments at the Yongbyon site, mainly through satellite imagery. Activities have been observed at the site, that are consistent with an effort to restart the 5MW(e) reactor. However, as the Agency has no access to the site, it is not possible for us to conclusively determine whether the reactor has been re-started."[165] Furthermore, the U.S. think tank Institute for Science and International Security (ISIS) analyzed that North Korea may have expanded its uranium enrichment capacity at Yongbyon.[166] The ISIS also reported in December that: North Korea's Yongbyon nuclear center appeared to be increasingly active; steam was present at the fuel fabrication complex where the North produced fuel for the 5MW reactor; and that one possible explanation for the steam could be re-activation in order to produce additional fuel for the reactor.[167]

Regarding the Iranian nuclear issue, the UN Security Council has called for Iran to suspend, inter alia: all enrichment-related and reprocessing activities, including research and development; and work on all heavy water-related projects, including the construction of a research reactor moderated by heavy water.[168] Iran, however, has not complied with the subsequent UNSCRs; rather, it continued to produce enriched uranium, to install further

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[163] "DPRK NDC Issues Statement Refuting UNSC Resolution," *KCNA*, January 24, 2013, http://www.kcna.co.jp/item/2013/201301/news24/20130124-10ee.html.

[164] Jeffery Lewis and Nick Hansen, "Start-Up of North Korean Experimental Light Water Reactor Could Begin by Mid-2013 if Fuel is Available," *38 North*, 1 May 2013, http://38north.org/2013/05/yongbyon050113/; Nick Hansen and Jeffrey Lewis, "North Korea Restarting Its 5 MW Reactor," *38 North*, 11 September 2013, http://38north.org/2013/09/yongbyon091113/.

[165] Yukiya Amano, IAEA Director General, "Introductory Statement to Board of Governors," November 28, 2013, http://www.iaea.org/newscenter/statements/2013/amsp2013n26.html.

[166] David Albright and Robert Avagyan, "Recent Doubling of Floor Space at North Korean Gas Centrifuge Plant: Is North Korea Doubling Its Enrichment Capacity at Yongbyon?" *ISIS Imagery Brief*, August 7, 2013, http://isis-online.org/isis-reports/detail/recent-doubling-of-floor-space-at-north-korean-gas-centrifuge-plant/10.

[167] David Albright and Serena Kelleher-Vergantini, "Increased Activity at the Yongbyon Nuclear Site," *ISIS Imagery Brief*, December 5, 2013.

[168] UNSCR 1737, 23 December 2006. Similar demands were made in the UNSC Resolutions 1747 (2007), 1803 (2008), 1835 (2008), and 1929 (2010) adopted in response to Iran's nuclear issue.

cascades in its centrifuge enrichment plants, and to construct the heavy water reactor, according to the IAEA reports on Iran.[169]

However, after Hassan Rouhani won the Iranian presidential election in June 2013, the situation surrounding the Iranian nuclear issues has improved. The Iranian and the U.S. presidents spoke by telephone in September, the first such exchange since the 1979 Iranian Revolution. It was also reported that Iran proposed to suspend a production of 20% enriched uranium and to ratify the IAEA Additional Protocol during the meeting between Iran and the EU3+3 (China, France, Germany, Russia, the United Kingdom, the United States and the European Union (EU)) in October. The IAEA reported in November that Iran had installed or operated few new centrifuges, including more sophisticated IR-2m, during the proceeding three-month monitoring period, while "[t]he rate of production of UF6 enriched up to 5% U-235 and up to 20% remain[ed] similar to that indicated in the previous report."[170]

On November 24, the Joint Plan of Action was agreed between EU3+3 and Iran in Geneva,[171] in which they affirmed "[t]he goal for [their] negotiations is to reach a mutually-agreed long-term comprehensive solution that would ensure Iran's nuclear programme will be exclusively peaceful," and listed the specific elements of a six-month, first step implementation plan, as well as the broader elements of a final, comprehensive solution, with negotiations to be concluded and implementation commenced within one year.

As the elements of a first step, they agreed, inter alia, the following measures.

- Iran
  - From the existing uranium enriched to 20%, retaining half as working stock of 20% oxide for fabrication of fuel for the Tehran Research Reactor (TRR), and diluting the remaining 20% UF6 to no more than 5%
  - Not enriching uranium over 5% for the duration of the 6 months
  - Not making any further advances of its activities at the Natanz and Forsow enrichment plants, and the heavy water reactor at Arak (IR-40)
  - No new locations for enrichment activities
  - No reprocessing or construction of a facility capable of reprocessing
  - Enhancing monitoring by the IAEA (mentioned later)
- EU3+3
  - Pausing efforts to reduce Iran's crude oil sales, enabling Iran's current customers to purchase their current average amount of crude oil, and suspending the EU and U.S. sanctions on associated insurance and transportation services
  - Suspending U.S. and EU sanctions on Iran's petrochemical exports, and on Gold and precious material

[169] See, for example, GOV/2012/37, 30 August 2012.

[170] GOV/2013/56, 14 November 2013.

[171] "Joint Plan of Action," Geneva, 24 November 2013, http://www.theguardian.com/world/interactive/2013/nov/24/iran-nuclear-deal-joint-plan-action.

- ✧ Suspending U.S. sanctions on Iran's auto industry, and licensing the supply and installation in Iran of spare parts for safety of flight for Iranian civil aviation
- ✧ No new nuclear-related UN Security Council sanctions and EU nuclear-related sanctions; the U.S. refraining from imposing new nuclear-related sanctions
- ✧ Establishing a financial channel to facilitate humanitarian trade for Iran's domestic needs using Iranian oil revenues held abroad

As a final step toward a comprehensive solution, the following elements were agreed.

- ➢ Having a specified long-term duration to be agreed upon
- ➢ Reflecting the rights and obligations of parties to the NPT and the IAEA Safeguards Agreements
- ➢ Lifting all UN Security Council, multilateral and national nuclear-related sanctions
- ➢ Agreeing a mutually defined enrichment program with agreed parameters consistent with practical-needs, with agreed limits on scope and level of enrichment activities, capacity, and stocks of enriched uranium
- ➢ Fully resolving concerns related to the reactor at Arak. No reprocessing or construction of a facility capable of reprocessing
- ➢ Fully implementing the agreed transparency measures and enhanced monitoring. Ratifying and implementing the Additional Protocol by Iran
- ➢ Re-opening international civil nuclear cooperation

On November 28, Iran informed the IAEA that it will invite IAEA inspectors to visit the heavy water reactor at Arak in December 2013, for the first time in two years.

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Towards addressing the concern that a state may abuse the right of the states parties by withdrawing from the NPT, after acquiring nuclear weapons in violation of the Treaty, some states—mostly Western countries, including Japan—have proposed to make withdrawal more difficult by preventing the right of withdrawal from being abused and to take measures for preventing nuclear material acquired while still a member of the NPT from being used for nuclear weapons after a withdrawal from the Treaty. Other states—mainly Brazil and the Non-Aligned Movement (NAM) countries, including Iran—are against such proposals. They argue that there is no need to revise or reinterpret the Article 10 on a withdrawal of the NPT, which is the right of all states parties.[172]

C) Nuclear-Weapon-Free Zones

The treaties establishing nuclear-weapon-free zones (NWFZs) have entered into force in Latin America (Tlatelolco Treaty), the South Pacific (Rarotonga Treaty), Southeast Asia (Bangkok Treaty), Africa (Pelindaba Treaty), and Central Asia (Central Asian NWFZ Treaty). In addition, Mongolia declared its territory a nuclear-weapon-free zone at the UN General Assembly (UNGA) in 1992, and the UNGA has been adopting a resolution entitled "Mongolia's International

[172] Reaching Critical Will, *NPT News in Brief*, Vol. 11, No. 9 (2 May 2013), p. 4; Reaching Critical Will, *NPT News in Brief*, Vol. 11, No. 10 (3 May 2013), p. 3.

Security and Nuclear-Weapon-Free-Status" every two years since 1998, in support of Mongolia's declaration.[173] All the states eligible to join the NWFZs in Latin America, Southeast Asia and Central Asia are parties to the respective NWFZ treaties.

A Conference on a Middle East Zone Free of Weapons of Mass Destruction (WMD) during 2012, agreed at the 2010 NPT Review Conference (RevCon), has yet to be convened. At the 2013 NPT Preparatory Committee (PrepCom), Jaakko Laajava, Finland's undersecretary of state for foreign and security policy and the Facilitator of the Middle East Conference, proposed to hold a consultative meeting by the regional countries prior to the Conference.[174] While Israel accepted to participate in the meeting, Arab states including Egypt argued that they could not do so unless a date for the Conference was set and details of the consultative meeting were clarified.[175] Furthermore, Egypt decided to walkout of the 2013 PrepCom, "aim[ing] to send a strong message of dissatisfaction with the lack of seriousness in dealing with the issue of establishing a zone free of nuclear weapons."[176]

At the UN General Assembly in September 2013, Egyptian Foreign Minister Nabil Fahmy proposed the following steps toward establishing a WMD-free zone in the Middle East: firstly, regional countries and nuclear-weapon states (NWS) issue letters to the UN secretary-general, backing the concept of declaring the region a WMD-free zone; secondly, regional countries that have yet to sign or ratify key nuclear, chemical or biological weapons-ban treaties would commit to doing so by the end of 2013; and thirdly, the regional countries and three NPT depositary states would proceed to hold a Middle East Conference in Helsinki. The Arab League supported (but did not "endorse") the Egyptian proposal.[177]

The result has been an impasse, though the states and actors involved have continued to seek an agreed method of convening the Conference. The Middle Eastern countries, including Israel and Iran, were reported to have met in Glion, Switzerland on October 21-22, 2013, to discuss convening it, though details of the meeting are not clear.[178] A second meeting was held a month later on November 25-26 at the same location to explore possible modalities for the process. Unfortunately, a wide gap still exists between them, as "While Arab states insist that the focus must remain on nuclear, biological and conventional weapons and delivery systems, Israel says the role of unconventional systems cannot be discussed outside of the broader context of threats to

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[173] 53/77D, 4 December 1998. As mentioned before, in September 2012, Mongolia and the 5 NWS signed a political declaration that formally recognizes Mongolia's nuclear-weapon-free status.

[174] Elaine M. Grossman, "Finnish Envoy Proposes Quick-and-Easy Confab on Mideast WMD Ban," *Global Security Newswire*, May 2, 2013, http://www.nti.org/gsn/article/finnish-envoy-proposes-quick-and-easy-confab-mideast-wmd-ban/.

[175] NPT/CONF.2015/PC.II/WP.34, 19 April 2013.

[176] "Statement by the Arab Republic of Egypt," Cluster II Specific Issues, 2013 NPT PrepCom, April 29, 2013.

[177] Elaine M. Grossman, "Arab League Backs Steps toward Banning Mideast WMDs," *Global Security Newswire*, November 11, 2013, http://www.nti.org/gsn/article/arab-league-backs-steps-toward-banning-mideast-wmds/.

[178] "Israel Reported to Discuss Joining Nuke-Free Mideast Conference," *Time of Israel*, October 31, 2013, http://www.timesofisrael.com/israel-reported-to-discuss-joining-nuke-free-mideast-conference/.

national security in the Middle East."[179]

On Northeast Asia and South Asia, initiatives for establishing NWFZs have been proposed by the private sectors in the respective regions. However, there is no indication that state parties in these regions are taking any serious initiative toward such a goal.[180]

(2) IAEA Safeguards Applied to the NPT NNWS

A) Conclusion of the IAEA Safeguards Agreements

Under Article 3-1 of the NPT, "[e]ach Non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfillment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices." The basic structure and content of the safeguards agreement are specified in the Comprehensive Safeguards Agreement (CSA), known as INFCIRC/153, that each state negotiates with the IAEA and then signs and ratifies. To date, 12 NPT non-nuclear-weapon states (NNWS) have yet to conclude CSAs with the IAEA.[181]

An NPT NNWS or any other state may also conclude with the IAEA an additional protocol to its safeguards agreement, based on a model document known as INFCIRC/540 or the Additional Protocol. As of September 2013, 116 NPT NNWS have ratified Additional Protocols. New ratifiers in 2013 were Bosnia and Herzegovina, and Vietnam. A state's implementation of the Additional Protocol, along with the CSA, allows the IAEA Secretariat to draw a so-called "broader conclusion" that "all nuclear material in the State has remained in peaceful activities." This conclusion is that the Agency finds no indications of diversion of declared nuclear material from peaceful nuclear activities or any undeclared nuclear material or activities in that country. Subsequently, the IAEA implements integrated safeguards defined as the "optimized combination of all safeguards measures available to the Agency under [CSAs] and [Additional Protocols], to maximize effectiveness and efficiency within available resources."

The current status of the signature and ratification of the CSAs and the Additional Protocols and the implementation of integrated safeguards by the NPT NNWS studied in this project is presented in the following table.

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[179] Elaine M. Grossman, "Israel, Arab States Talking—But Still Deadlocked on Mideast WMD Ban," *Global Security Newswire*, December 5, 2013, http://www.nti.org/gsn/article/israel-arab-states-talking-still-deadlocked-mideast-wmd-ban/. Iran did not attend the second meeting due to busy working for the another meetings with EU3+3.

[180] Pakistan had proposed to establish a NWFZ in South Asia until May 1998 when it conducted nuclear tests.

[181] The 12 NNWS either have nuclear material in small quantity or conduct no nuclear activity.

Table2-1: The status of the conclusion and implementation of the IAEA safeguards agreement by the NNWS party to the NPT (as of the end of December 2012)

	Australia	Austria	Belgium	Brazil	Canada	Egypt	Iran	Germany	Indonesia	Japan	Kazakhstan	South Korea
CSA	In force	In force	In force	In force	In force	In force	In force	In force	In force	In force	In force	In force
Additional Protocol	In force	In force	In force		In force		Signed	In force	In force	In force	In force	In force
Broader conclusion drawn	○	○	○		○			○	○	○		○
Integrated safeguards	○	○	○		○			○	○	○		○

	Mexico	Netherlands	New Zealand	Norway	South Africa	Sweden	Switzerland	Syria	Turkey	UAE	North Korea
CSA	In force	In force	In force	In force	In force	In force	In force	In force	In force	In force	In force*
AP	In force	In force	In force	In force	In force	In force	In force		In force	In force	
Broader conclusion drawn		○	○	○	○	○			○		
Integrated safeguards		○		○		○					

* North Korea has refused to accept comprehensive safeguards since it announced its withdrawal from the NPT in 1993.

Source) IAEA, "Safeguards Statement for 2012."

B) Compliance with the IAEA Safeguards Agreements

Under Article 12-C of the Statute of the IAEA, the IAEA "Board shall report the non-compliance [with safeguards agreements] to all members and to the Security Council and General Assembly of the United Nations." Up to now, the three cases of non-compliance that have been reported to the UN Security Council have yet to be resolved: North Korea, Iran and Syria.

The government of North Korea in April 2009 asked the IAEA to remove seals and surveillance from the nuclear facilities in Yongbyon and to leave the country. Since then, no safeguards measures have been implemented by the IAEA in North Korea.[182]

As for Syria, the IAEA Director General judged in May 2011 that the Dair Alzour site, which was destroyed by an Israeli air raid in September 2007, was very likely a clandestinely constructed, undeclared nuclear reactor. In August 2013, the IAEA reported that "the Agency [had] not received any new information from Syria or other Member States that would have an impact on the Agency's assessment of the nature of the destroyed building at the Dair Alzour site." With

[182] See, for example, GOV/2012/36-GC(56)/11, 30 August 2012.

regard to other Syrian facilities, the IAEA "informed Syria that…the 2013 physical inventory verification at the [Miniature Neutron Source Reactor (MNSR)] would be postponed until the security conditions had sufficiently improved."[183] Meanwhile, Syria declared the small amount of nuclear material at the MNSR.

Iran has accepted IAEA inspections of its declared nuclear activities, including uranium enrichment, under the CSA. However, as indicated again in the report by the IAEA Director-General in August 2013, "[w]hile the Agency continues to verify the non-diversion of declared nuclear material at the nuclear facilities and [Location Outside Facilities (LOFs)] declared by Iran under its Safeguards Agreement, as Iran is not providing the necessary cooperation, including by not implementing its Additional Protocol, the Agency is unable to provide credible assurance about the absence of undeclared nuclear material and activities in Iran, and therefore to conclude that all nuclear material in Iran is in peaceful activities." This report also pointed out that: "[t]he Agency has not been able to begin substantive work with Iran on resolving the outstanding issues, including those related to possible military dimensions to Iran's nuclear programme"; and "Iran continues not to implement modified Code 3.1 of its Subsidiary Arrangements General Part, notwithstanding statements it has made in relation to the construction of new research reactors, new uranium enrichment facilities and new power reactors."[184]

In response, Iran sent an explanatory note to the IAEA which strongly criticized the report, saying that it was "not balanced and factual…[and] the claims and baseless allegations against Islamic Republic of Iran's peaceful nuclear activities as contained in the [Director-General] report…[were] unprofessional, unfair, illegal and politicized." Furthermore, Iran states in the explanatory note that "[a]s the result of Iran's proactive cooperation all outstanding issues…[had been] resolved by 2008 and reported by the former Director General to the Board of Governors."[185]

The contentious between Iran and the IAEA began to change after the inauguration of President Rouhani. The IAEA and Iran concluded a Joint Statement on a Framework for Cooperation at the meeting in November 2013, agreeing, among other issues, on the following points.[186]

- Iran and the IAEA will cooperate further with respect to verification activities to be undertaken by the IAEA to resolve all present and past issues. It is foreseen that Iran's cooperation will include providing the IAEA with timely information about its nuclear facilities and in regard to the implementation of transparency measures.
- The IAEA agreed to continue to take into account Iran's security concerns including through the use of managed access and the protection of confidential information.
- As a first step, Iran and the IAEA agreed to the practical measures listed in the attached

[183] GOV/2013/41, 28 August 2013.

[184] GOV/2013/40, 28 August 2013.

[185] INFCIRC/854, 26 September 2013.

[186] "Joint Statement on a Framework for Cooperation," signed by the IAEA and Iran, 11 November 2013, http://www.iaea.org/newscenter/pressreleases/2013/prn201321.html.

Annex. Iran will provide the access and information within three months from the date of this Statement. The IAEA will report to the Board of Governors on progress in the implementation of these measures.

In the attached Annex of the Joint Statement, the following measures are listed: providing mutually agreed relevant information and managed access to the Gchine mine in Bandar Abbas, and to the Heavy Water Production Plant near Arak; clarification of the announcement made by Iran regarding additional enrichment facilities; and further clarification of the announcement made by Iran with respect to laser enrichment technology. However, the pending matter of the IAEA's request to visit the Parchin site was not listed in the Joint Statement.

In the Joint Plan of Action concluded between the EU3+3 and Iran in November 2013, the following measures for enhancing monitoring as the elements of a first step were agreed.

- Provision of specified information to the IAEA, including information on Iran's plans for nuclear facilities, a description of each building on each nuclear site, a description of the scale of operations for each location engaged in specified nuclear activities, information on uranium mines and mills, and information on source material
- Submission of an updated design information questionnaire (DIQ) for the IR-40 at Arak
- Steps to agree with the IAEA on conclusion of the Safeguards Approach for the IR-40
- Daily IAEA inspector access when inspectors are not present for the purpose of Design Information Verification, Interim Inventory Verification, Physical Inventory Verification, and unannounced inspections, for the purpose of access to offline surveillance records, at Fordow and Natanz
- IAEA inspector managed access to: centrifuge assembly workshops; centrifuge rotor production workshop and storage facilities; and uranium mines and mills

Despite the significance of the Joint Plan of Action, the EU3+3 and Iran have yet to agree on measures for solving certain "outstanding issues," particularly the dispute regarding the Parchin site. On this point, two U.S. experts analyzed that "Iran appear[ed] to be in the final stages of modifying the suspected high explosive test site at the Parchin complex, having recently asphalted large sections of the site," which makes it difficult to conduct any IAEA inspection for verifying whether Iran conducted nuclear weapons-related activities.[187]

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In June 2013, a press report about the classified IAEA Safeguards Implementation Report, which was leaked, cited the following details.[188]

- For 71 of 159 member states, the IAEA "was not able to get timely responses to agency

[187] David Albright and Robert Avagyan, "Update on the Parchin Site," *ISIS Report*, August 22, 2013, http://isis-online.org/isis-reports/detail/august-22-2013-update-on-the-parchin-site-by-david-albright-and-robert-avag/8#images.

[188] Jonathan Tirone, "UN Atomic Agency Says 70 Countries Join Iran Shirking Duty," *Bloomberg*, June 6, 2013, http://www.bloomberg.com/news/2013-06-05/un-atomic-agency-says-70-countries-joined-iran-in-shirking-duty.html ; "Iran not U.N. Nuclear Watchdog's Only Headache, Report Shows," *Reuters*, June 7, 2013, http://www.reuters.com/article/2013/06/07/us-nuclear-iaea-safeguards-idUSBRE9560OS20130607; Mark Hibbs, "Safeguards in the Spotlight," *Arms Control Wonk*, 9 June 2013, http://hibbs.armscontrolwonk.com/archive/1878/safeguards-in-the-spotlight.

requests for, or clarification of, safeguards relevant information": the states were named in the press report.

- Brazil, China and Georgia were among the 159-member countries that most consistently responded late to IAEA requests.
- The IAEA conducted 1,962 on-site inspections in 2012, with 215 taking place in Iran.
- Inspections in Iran consumed over 12 percent of the IAEA budget for safeguards.
- IAEA investigators spent 1,356 calendar days in Iran last year visiting its nuclear facilities (c.f. 180 calendar days in France, 16 calendar days in Russia, and 50 calendar days in the United States).

(3) IAEA Safeguards Applied to NWS and Non-Parties to the NPT

A NWS is not required to conclude a CSA with the IAEA. However, to alleviate the concerns about the discriminatory nature of the NPT, the NWS have voluntarily agreed to apply safeguards to some of their nuclear facilities and fissile material that are not involved in military activities. All NWS have also concluded Additional Protocols with the IAEA.

The IAEA Annual Report 2012 lists facilities in NWS under Agency safeguards or containing safeguarded nuclear material in NWS on December 2012, as below.[189] The IAEA does not publish the number of inspections conducted in the NWS.

- China: A power reactor, a research reactor, and an enrichment plant
- France: A fuel fabrication plant, a reprocessing plant, and an enrichment plant
- Russia: A separate storage facility
- The United Kingdom: An enrichment plant and three separate storage facilities
- The United States: A separate storage facility

At the 2013 NPT PrepCom, the United States reported that it had "made over 290 nuclear facilities eligible for IAEA safeguards under [its] Voluntary Offer safeguards agreement, and under [its] Additional Protocol declared over 330 nuclear-related activities and hosted complementary access visits by IAEA inspectors."[190] The United States is the only NWS that has been conducted Complementary Access arrangements.[191] In addition, it stated at the 2013 IAEA General Assembly that, "[a]s a transparency measure, the United States cooperated with the IAEA to allow international monitoring of the downblending of 50 Metric Tons of [highly enriched uranium (HEU)]," and that it "remain[s] firmly committed to eliminating 34 Metric Tons of weapons-origin plutonium…under IAEA verification."[192]

The non-NPT states have concluded safeguards agreements based on INFCIRC/66. These

[189] GC(57)/3, Table A21.

[190] "Statement by the United States of America," Cluster II, Second Session of the Preparatory Committee, 2015 Review Conference of the States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, April 26, 2013.

[191] Provisions for complementary access are included in the Additional Protocols of the United States, France, and the United Kingdom, but not in the Russian or Chinese Additional Protocols.

[192] "Statement by the United States of America," 2013 IAEA General Conference, September 16, 2013.

non-NPT states have accepted IAEA inspections of the facilities that they declare as subject to these agreements. According to the IAEA Annual Report 2012, the facilities placed under IAEA safeguards or containing safeguarded nuclear material in non-NPT states as of 31 December 2012 are as follows.

- India: Six power reactors, two fuel fabrication plants, a reprocessing plant, and a separate storage facility
- Israel: A research reactor
- Pakistan: Three power reactors and two research reactors

Concerning the protocols additional to non-NPT states' safeguards agreements (which do not follow the model Additional Protocol), India signed one in May 2009 but has not ratified yet. No negotiation has yet begun for similar protocols with Israel or Pakistan.

The Non-Proliferation and Disarmament Initiative (NPDI) issued a working paper at the 2013 NPT PrepCom, titled "Wider application of safeguards in the nuclear-weapon States," which called for:[193]

- Reviewing the operation of the voluntary-offer safeguards agreement and/or revisiting the voluntary-offer safeguards agreement so that the safeguards will be applicable to all nuclear material designated by each nuclear-weapon State as no longer required for military purposes and relevant facilities where it is located, in a manner neither to exclude such material from the scope of the safeguards application nor to reverse such material to military uses;
- Reviewing the existing scope of the additional protocol to add measures, if necessary, such as complementary access stipulated in the IAEA Model Additional Protocol; and
- Encourages those nuclear-weapon States that have not done so, to consider, when identifying certain specified nuclear material as "excess" for military uses, placing such "excess" under IAEA verification as soon as practicable, in a manner to make it irreversible

The NAM countries demanded the NWS to accept full-scope safeguards.[194]

(4) Cooperation with the IAEA

One of the most important measures to strengthen the effectiveness of the IAEA safeguards system is to promote the universal application of the Additional Protocol. Among the countries surveyed in this project, Australia, Austria, Belgium, Canada, France, Germany, Indonesia, Japan, South Korea, Mexico, the Netherlands, New Zealand, Norway, Sweden, Switzerland, Turkey, UAE, the United Kingdom and the United States consider that the Additional Protocol is "an integral part" of the current IAEA safeguards system.[195] Although it adopts a more moderate position, China also is of the opinion that "[i]t is necessary to strengthen the safeguards function of the IAEA and promote the universality of the Comprehensive Safeguards Agreement and its

[193] NPT/CONF.2015/PC.II/WP.23, 5 April 2013.

[194] NPT/CONF.2015/PC.II/WP.18, 21 March 2013.

[195] See, for example, statements made by those countries at the 2013 NPT PrepCom.

Additional Protocol."[196] At the 2013 NPT PrepCom, Switzerland, which is interested in optimizing the IAEA safeguards system, issued a working paper on strengthening cooperation between the IAEA and states.[197] Countries like Brazil, Egypt, Russia and South Africa consider that the conclusion of an Additional Protocol should be voluntary, not obligatory, although they acknowledge the importance of the Additional Protocol with regard to safeguards, as a major component of the nuclear non-proliferation regime. The NAM countries also argue that "it is fundamental to make a clear distinction between legal obligations and voluntary confidence-building measures and that such voluntary undertakings shall not be turned into legal safeguards obligations."[198]

Japan and the other Western countries have actively conducted outreach activities towards states that have yet to conclude an Additional Protocol. For example, at the 2013 NPT PrepCom, Japan introduced its efforts to support other countries' conclusion of the Additional Protocol through sharing knowledge.[199] In addition, some of the bilateral civil nuclear cooperation agreements recently concluded by Japan and the United States with NNWS stipulate that the partner states' conclusion of an Additional Protocol is one of the conditions for their cooperation.

Regarding research and development of the safeguards technology, the IAEA issued its plan for the Development and Implementation Support Programme for Nuclear Verification 2012-2013 in 2012. Based on this new, two-year plan, 24 projects will be undertaken with the support of the 21 states that participated in the support programme under the previous biennial plan.[200] The numbers of the member state support program (MSSP) tasks carried out by the states studied in this project are: the United States (58), the United Kingdom (31), France (27), Germany (23), Japan (14), Sweden (13), South Korea (12), Russia (11), Australia (8), Belgium (8), Brazil (8), the Netherlands (5), South Africa (4), and China (3).[201]

In January 2013, the IAEA published the "IAEA Department of Safeguards Long-Term R&D Plan, 2012-2023." In this report, the IAEA listed the following seven areas of long-term capabilities, for which further research and development are needed, in order to meet its strategic objectives for strengthening the safeguards: Concepts and approaches; Detection of undeclared nuclear material and activities; Safeguards equipment and communication; Information technology, collection, analysis and security; Analytical services; New mandates; and Training.[202]

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[196] "Statement by China," Cluster II, the Second Preparatory Committee for the 2015 NPT Review Conference, April 26, 2013.

[197] NPT/CONF.2015/PC.II/WP.33, 17 April 2013. Also see "Statement by Switzerland," Cluster II, the Second Preparatory Committee for the 2015 NPT Review Conference, 26 April 2013.

[198] "Statement by the Republic of Indonesia on Behalf of the Group of Member States of the Non-Aligned Movement," Cluster II, the Second Preparatory Committee for the 2015 NPT Review Conference, 26 April 2013.

[199] "Statement by Japan," Cluster II, the Second Preparatory Committee for the 2015 NPT Review Conference, 26 April 2013.

[200] IAEA, *Development and Implementation Support Programme for Nuclear Verification 2012-2013*.

[201] Ibid. For the MSSP tasks where a multiple number of states take part, they are counted as one task under all relevant countries. Also, those numbers do not reflect the level of importance of the tasks or budget.

[202] IAEA, "IAEA Department of Safeguards Long-Term R&D Plan, 2012-2023," January 2013.

(5) Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies

A) Establishment and implementation of national control systems

To assess this criterion, it is instructive to consider Japan's case. Japan serves as a member of all four multilateral export control regimes,[203] including the Nuclear Suppliers Group (NSG), and it has established legislative measures and other relevant national implementation systems. Japan implements an advanced export control system enforcing two types of controls: catch-all control and list control. Under the Japanese export control system, all countries are subject to the WMD catch-all control, except for countries belonging to the four international export control regimes and having solid export controls in place, including WMD catch-all controls. Japan designates 26 such countries as "white countries." Regarding states surveyed in this project, Australia, Austria, Belgium, Canada, France, Germany, South Korea, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States are "white countries." Like Japan, these countries also have their national implementation systems in place and have implemented effective export controls regarding nuclear-related items and technologies.

These countries have proactively made efforts to strengthen export controls. For example, Japan held the 20th Asian Export Control Seminar in February 2013. The purpose of this annual seminar is to "[step] up Asian and international efforts toward non-proliferation of weapons of mass-destruction (WMD) by raising common awareness of the importance of such non-proliferation and export controls over such weapons across Asia and by consolidating the export control capabilities there."[204] Persons in charge of export control from 15 Asian countries and regions, major Western countries, the UN Security Council, and four multilateral export control regimes participated in the 2013 Seminar. Japan also hosted the 9th Asian Senior-level Talks on Non-Proliferation (ASTOP) in March and the 10th ASTOP in October, at which senior level government officials in charge of non-proliferation policies from the Association of South-East Asian Nations (ASEAN) member countries, Australia, Canada, South Korea, New Zealand, the United States and Japan exchanged their views on non-proliferation issues, including the efforts by each country for strengthening strategic trade control system. In June, the United States and the EU hosted the International Export Control Cooperation and Outreach Dialogue. Representatives from 34 countries and administrative regions, as well as experts from industry and nongovernmental organizations, discussed how countries can reduce the threat of WMD proliferation through cooperation to strengthen strategic trade controls.[205]

At the 2013 NPT PrepCom, the NPDI proposed the following measures on bolstering export controls:[206]

- Encouraging States parties to share best practices and lessons learned regarding building,

[203] Aside from the NSG, Australia Group (AG), Missile Technology Control Regime (MTCR), and Wassenaar Arrangement (WA).

[204] Ministry of Economy, Trade and Industry, "The 20th Asian Export Control Seminar Was Held," February 28, 2013, http://www.meti.go.jp/english/press/2013/0228_04.html.

[205] U.S. Department of State, "U.S. and EU Jointly Hold International Dialogue in Brussels to Discuss Export Controls," Fact Sheet, June 26, 2013, http://www.state.gov/t/isn/rls/fs/211152.htm.

[206] NPT/CONF.2015/PC.II/WP.2, 6 March 2013.

implementing and reinforcing effective domestic export control systems and practices, including the effective use of catch-all controls;

- Requiring ongoing compliance by States with their IAEA safeguards obligations as a condition of nuclear equipment, material and technology supply by States parties;
- Reaffirming the principle that States parties should require the conclusion and implementation of a Safeguards Agreement (INFCIRC/153 (Corrected)) as well as an Additional Protocol (INFCIRC/540 (Corrected)) with the IAEA as a condition for new supply arrangements with non-nuclear-weapon States; and
- Calling on States parties to adhere to the multilaterally negotiated and agreed guidelines and understandings of the Nuclear Suppliers Group and Zangger Committee in developing their domestic export control systems.

Among other countries surveyed in this project, Brazil, China, Kazakhstan, Mexico, Russia, South Africa and Turkey are members of the NSG. These countries have set up export control systems, including catch-all controls.

As pointed out in the *Hiroshima Report 2013*, concerns have been expressed about Russia's and China's implementation of export controls. There are few indications that their implementation has significantly improved. Although, as mentioned later, China was reported to have implemented more stringent export controls vis-à-vis North Korea after the latter's nuclear test in February 2013, questions remain as to whether China is conducting adequate and strict enforcement of export controls overall.

As for other NNWS, the UAE's strategic trade control legislation in 2008 stipulates a catch-all control, but it is not clear how effectively the UAE implements export controls, given the known use of UAE ports for transshipment by Iranian traders.[207] Indonesia has yet to prepare a list of dual-use items and technologies, or catch-all control. Regarding Egyptian export control activities, no reliable information could be found since its February 2008 national report to the UN 1540 Committee.

India, Israel and Pakistan have also set up national export control systems, including catch-all controls. India's quest for membership in the NSG is supported by some member states, but the group has not yet made a decision. India's Foreign Secretary Ranjan Mathai stated that it is "committed to maintaining the highest export control standards," and announced that "the national SCOMET (special chemicals, organisms, materials, equipment and technologies) list has been updated to be on par with the current [NSG] and [Missile Technology Control Regime (MTCR)] lists."[208]

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[207] On the other hand, the UAE has taken steps to crack down on illicit traders, including by reportedly ordering about 500 companies to leave the emirates. International Institute for Strategic Studies, "Making Sanctions Work: Problems and Prospects, Dubai, 9-10 May 2011," Workshop Report, May 2011.

[208] "India Strengthens Its Nuclear Export Norms," *Mint*, March 13, 2013, http://www.livemint.com/Politics/HG0FHcSLTxfRp5EjbEOjbJ/India-strengthens-its-nuclear-export-norms.html.

Israel has established national legislation and national implementation systems for its export controls, based on all four multilateral export control regimes.[209]

Pakistan, according to its report to the UN 1540 Committee, has made efforts for enhancing its export control systems, including the introduction of a catch-all control system, after the revelation in 2004 of the proliferation activities of the nuclear black-market network led by A. Q. Khan.[210] Pakistan contends that its "export control regime is compatible with the guidelines of the MTCR, NSG and [Australia Group (AG)]."[211] However, it is still unclear how robust or successfully implemented such export control systems are in practice.[212]

At the time of writing, the status of export control implementation by North Korea, Iran and Syria is not clear. Cooperation among these countries in ballistic missile development appears to be continuing. Media reports about cooperation between Iran and North Korea in the nuclear realm cannot be confirmed. In August, it was reported that Mohammad Ali Jafari, Commander of the Iranian Revolutionary Guard Corp, met with the North Korean delegation that attended the inaugural ceremony of the new Iranian President, and that a commitment was made to the continuation of cooperation in nuclear and missile developments.[213] While the situations regarding WMD non-proliferation in the Middle East have been significantly changing, including Syria's accession to the Chemical Weapons Convention (CWC) and the interim nuclear agreement reached between Iran and the EU3+3 in November, it remains unclear how such changes will impact upon regional relationships and issues of proliferation cooperation.

B) Requiring the conclusion of the Additional Protocol for nuclear export

As mentioned earlier, some of the bilateral nuclear cooperation agreements that Japan and the United States concluded recently with other countries make the conclusion of the Additional Protocol a prerequisite for their cooperation with respective partner states.

The NPDI "reaffirm[ed] the principle that States parties should require the conclusion and implementation of a Safeguards Agreement (INFCIRC/153 (Corrected)) as well as an Additional Protocol (INFCIRC/540 (Corrected)) with IAEA as a condition for new supply arrangements with non-nuclear-weapon States" in a working paper issued at the 2013 NPT PrepCom.[214] Japan stated that it "call[ed] on all states to apply this safeguards standard (i.e., a comprehensive safeguards agreement reinforced by an additional protocol) as a condition for supplying nuclear

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209 A/AC/44/2013/1, 3 January 2013.

210 S/AC.44/2007/19, 3 August 2010.

211 "Pakistan Confers with Export Control Groups," *Global Security Newswire*, February 21, 2013, http://www.nti.org/gsn/article/pakistan-mulls-joining-missile-export-group/.

212 Paul K. Kerr and Mary Beth Nikitin, "Pakistan's Nuclear Weapons: Proliferation and Security Issues," *CRS Report for Congress*, March 19, 2013, p. 24.

213 "North Korea and Iran Pledged Nuclear Cooperation," *Sankei Shimbun*, November 3, 2013, http://sankei.jp.msn.com/world/news/131103/kor13110311130001-n1.htm (in Japanese).

214 NPT/CONF.2015/PC.II/WP.2, 6 March 2013.

material, equipment and technology to a recipient country, and to incorporate this condition in their civil nuclear cooperation agreements."[215] The Vienna Group of Ten (Australia, Austria, Canada, Denmark, Finland, Hungary, Ireland, the Netherlands, New Zealand, Norway and Sweden) also made a similar proposal at the PrepCom.[216]

C) Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues

With regard to Iranian and North Korean nuclear issues, the UN Member States are obliged to implement measures set out in the relevant resolutions adopted by the UN Security Council, including embargos on nuclear-, other WMD-, and ballistic missile-related items, material, and technologies. Questions have often been raised as to whether China has adequately implemented export controls vis-à-vis North Korea, although it is recognized that it is too optimistic to expect "perfection" in preventing illicit trafficking.

After the North's nuclear test in February 2013, China appeared to be cautiously adjusting its stance toward North Korea. According to a statement by the Bank of China, the North's Foreign Trade Bank was instructed to close its operations, and that its transactions had been halted in May.[217] It was also reported that China's other state-owned banks—China Construction Bank, Industrial and Commercial Bank of China, and Agricultural Bank of China—suspended business with North Korean financial institutions. Furthermore, China's Ministry of Commerce released a 236-page list of technologies and goods, usable for WMD and missile production, banned from export to North Korea in September.[218] This embargo is to be implemented by the Commerce Ministry along with the Ministry of Industry and Information Technology, China's Custom Administration, and the China Atomic Energy Authority. [219] Despite such positive announcements, it is still unclear to what extent China has implemented those measures.

In June 2013, the Panels of Experts, established pursuant to UNSCRs 1874 (2009) and 1929 (2010), which reported to their relevant UN Security Council Sanctions Committees, published reports on their findings and recommendations about the implementation of these resolutions.[220] The reports highlight the Iranian and North Korean attempts to import and export proscribed

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[215] "Statement by Japan," Cluster II, the Second Preparatory Committee for the NPT Review Conference, 26 April 2013.

[216] NPT/CONF.2015/PC.II/WP.7, 6 March 2013.

[217] "North Korean Account Closed by Bank of China," *China.org.cn*, May 8, 2013, http://www.china.org.cn/business/2013-05/08/content_28757468.htm.

[218] The list published by China is posted on homepage of the Nautilus Institute, http://nautilus.org/napsnet/napsnet-special-reports/technical-bulletin-translatable-version/#axzz2lBo5lNZx.

[219] "China Releases List of Goods Banned from Export to North Korea," *Reuters*, September 23, 2013, http://www.reuters.com/article/2013/09/23/us-china-north-korea-ban-idUSBRE98M0E420130923; Jane Perlez, "China Bans Items for Export to North Korea, Fearing Their Use in Weapons," *New York Times*, September 24, 2013, http://www.nytimes.com/2013/09/25/world/asia/china-bans-certain-north-korean-exports-for-fear-of-weapons-use.html?_r=0; Roger Cavazos, Peter Hayes and David von Hippel, "Technical Bulletin #59 on Prohibition of Dual Use Exports to North Korea," *NAPSNet Special Reports*, September 26, 2013, http://nautilus.org/napsnet/napsnet-special-reports/technical-bulletin-59-on-prohibition-of-dual-use-exports-to-north-korea/.

[220] "Report of the Panel of Experts Established Pursuant to Resolution 1929 (2010)," S/2013.331, 5 June 2013; "Report of the Panel of Experts Established Pursuant to Resolution 1874 (2009)," S/2013/337, 11 June 2013.

items in violation of the resolutions and the efforts of the international community to prevent illicit trafficking. Regarding North Korea, the Panel reported, inter alia: missile-related shipment seized by South Korea in May 2012; prevention of an attempt by officials of North Korea to obtain missile technology in the Ukraine in June 2012; and transportable-erector-launchers (transferred from China) for the KN-08 long-range ballistic missile, observed during the April 2012 military parade. The reports also pointed out that North Korea and Iran continued to seek items for their prohibited activities from abroad, using multiple and increasingly complex procurement methods.

In addition to the cases included in the reports, the following cases of illicit trafficking were reported in the news during 2013

- In April, based on the U.S. intelligence, Turkish officials searched a Libyan-registered vessel Al En Ti Sar, en route from North Korea to Syria, and seized 1,400 rifles and pistols and some 30,000 bullets as well as gas masks apparently for chemical protection;[221]
- In July, the Panamanian government interdicted a North Korean cargo vessel Chong Chon Gang, and seized two air-defense missile batteries, missile parts, and engines for Mig-21 fighter jet among other illicit military goods;[222]
- In February, Iran was reported to have attempted to buy 100,000 ring-shaped magnets, usable for centrifuge machines, from China;[223]
- In March, German and Turkish security forces arrested seven people suspected of smuggling nuclear-related items to Iran;[224] and
- Iran imported a high grade of refined alumina ore from several European countries, including Germany and France, that Tehran could be using to make armor parts and missile components.[225]

D) Participation in the PSI

As of June 2013, a total of 102 countries—including 21 member states of the Operational Expert Group (Australia, Canada, France, Germany, Japan, South Korea, the Netherlands, New Zealand, Norway, Russia, Turkey, the United Kingdom, the United States and others) as well as Belgium, Israel, Kazakhstan, Switzerland, Sweden, the UAE and others—have expressed their support for the principles and objectives of the Proliferation Security Initiative (PSI), and have participated and cooperated in PSI-related activities.[226]

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[221] "North Korea 'Tried to Send Gas Masks to Assad,'" *Japan Times*, August 27, 2013, http://www.japantimes.co.jp/news/2013/08/27/asia-pacific/north-korea-tried-to-send-gas-masks-to-assad/#.UortwtKkGSo.

[222] "Panama Uncovers Fighter Jet Engines from Seized North Korea Ship," *Reuters*, July 30, 2013, http://www.reuters.com/article/2013/07/31/us-panama-ship-idUSBRE96U02R20130731.

[223] Joby Warrick, "Iran's Bid to Buy Banned Magnets Stokes Fears about Major Expansion of Nuclear Capacity," *Washington Post*, February 14, 2013, http://www.washingtonpost.com/world/national-security/iranian-buying-spree-raises-concerns-about-major-expansion-of-nuclear-capacity/2013/02/13/2090805c-7537-11e2-8f84-3e4b513b1a13_story.html.

[224] "Nuclear Materials Smugglers Arrested," *UPI*, March 11, 2013, http://www.upi.com/Top_News/World-News/2013/03/11/Nuclear-materials-smugglers-arrested/UPI-80861362997303/?spt=hs&or=tn.

[225] Maytaal Angel and Jonathan Saul, "Iran Importing Missile-Grade Ore from Germany, France," *Reuters*, February 2, 2013, http://www.reuters.com/article/2013/07/02/us-iran-alumina-weapons-idUSBRE9610F520130702.

[226] Bureau of International Security and Nonproliferation, U.S. Department of State, "Proliferation Security

In May 2013, 72 countries attended the tenth anniversary of the PSI, with a high-level political meeting in Warsaw. In the Joint Statements issued by the four sessions—Enhancing Critical Interdiction Capabilities and Practices; Ensuring a Robust Initiative; Expanding Strategic Communications; and Strengthening Authorities for Action—the participating countries agreed to take specific actions.

The interdiction activities actually carried out within the framework of the PSI are often based on information provided by intelligence agencies; therefore, most of them are classified. However, several cases were reported of interdictions involving shipments of WMD-related material to North Korea and Iran. Additionally, participating states have endorsed the PSI statement of interdiction principles and endeavored to reinforce their capabilities to interdict WMD through exercises and outreach activities. The UAE and the United States jointly hosted the PSI exercise, named Leading Edge 2013, from January-February 2013. 28 countries participated in this exercise.[227]

E) Civil nuclear cooperation with non-parties to the NPT

In September 2008, the NSG agreed to grant India a waiver, allowing nuclear trade with the state. Since then, some countries have sought to move forward civil nuclear cooperation with India, including conclusion of nuclear cooperation agreements.

As of November 2012, Canada, France, Kazakhstan, South Korea, Russia and the United States have concluded bilateral nuclear cooperation agreements with India.[228] However, it has been pointed out that India's liability law—which obliges not only nuclear reactor operators but also nuclear suppliers to be liable in case of a nuclear accident—poses one of the obstacles to proceeding with actual civil nuclear cooperation or concluding nuclear cooperation agreements with India. Due to this issue, an Indian-Russian project to construct two nuclear power reactors has not made progress.

Australia, Japan and the United Kingdom continue to negotiate with India on respective bilateral nuclear cooperation agreements, but they have yet to be concluded. Japan demands a clause be written into any agreement that would nullify the accord if India conducts another nuclear-weapons test, but India has not accepted it. Australia, under a new Liberal-National government since September 2013, seems ready to explore the possibility to move forward with conclusion of a nuclear cooperation agreement, which will enable Australia to export uranium to India.[229] Australia has emphasized that it will not "ease off its demands for strong safeguards in

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Initiative Participants," November 20, 2012, http://www.state.gov/t/isn/c27732.htm.

[227] "UAE-US Leading Edge 13 Concluded in Abu Dhabi," *UAE Interact*, February 7, 2013, http://www.uaeinteract.com/docs/UAE-US_LEADING_EDGE_13_concluded_n_Abu_Dhabi/53363.htm.

[228] Vladimir Radyuhin, "India and Russia Fail to Resolve Nuclear Liability," *The Hindue*, June 29, 2013, http://www.thehindu.com/news/international/world/india-and-russia-fail-to-resolve-nuclear-liability/article4863790.ece.

[229] "India, Australia Inching Towards Civil Nuclear Agreement," *The Hindu*, November 2, 2013, http://www.thehindu.com/news/national/india-australia-inching-towards-civil-nuclear-agreement/article5306545.ece.

any trade deal that guarantees its uranium will not be diverted to India's nuclear-weapons program, according to specialists."[230]

The NSG has yet to conclude whether India should be invited as a member or not. NWS, except China, have supported India's participation in the NSG. The United Kingdom presented a paper prepared ahead of the NSG's annual meeting in June 2013, arguing for Indian membership.[231] Australia also stated its support for India's full membership.[232] On the other hand, some European countries and Japan are considered to be unenthusiastic about India's participation, because of norms on nuclear disarmament and non-proliferation.[233] China strongly opposes the proposal that India alone becomes an NSG member, implying that Pakistan should be treated the same as India.

Meanwhile, China has been criticized for its April 2010 agreement to export two nuclear power reactors to Pakistan, which may constitute a violation of the NSG guidelines. China has claimed an exemption for this transaction under the "grandfather" clause of the NSG guidelines (i.e. it was not applicable as they became an NSG participant after the start of negotiations on the supply of the reactors). China will also supply enriched uranium to Pakistan for running those reactors.[234] Their construction started in November 2013 in Karachi, and because other Chinese reactors had been built at Chashma, there is a question about whether the earlier agreement to build them "grandfathered" the new ones for NSG guideline purposes.[235]

At the 2013 NPT PrepCom, the NAM countries argued that "all States parties to the Treaty shall refrain from the transfer of nuclear technology and materials to States not parties to the Treaty unless they are placed under the IAEA comprehensive safeguards,"[236] strongly suggesting that they have become critical about nuclear cooperation with the non-NPT parties, including India and Pakistan.

(6) Transparency in the Peaceful Use of Nuclear Energy

In addition to accepting IAEA full-scope safeguards, as described earlier, a state should aim to be fully transparent about its nuclear-related activities and future plans, in order to demonstrate

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[230] Rachel Oswald, "Australian Election Seen Likely to Speed Talks with India on Uranium Deal," *Global Security Newswire*, September 11, 2013, http://www.nti.org/gsn/article/australian-election-seen-likely-speed-talks-india-uranium-deal/.

[231] Fredrik Dahl, "Britain Lobbies for Nuclear Export Group to Admit India," *Reuters*, June 14, 2013, http://www.reuters.com/article/2013/06/14/us-nuclear-india-britain-idUSBRE95D0ZA20130614; Daniel Horner, "NSG Revises List, Continues India Debate," *Arms Control Today*, Vol. 43, No. 6 (July/August 2013), pp. 38-39.

[232] "Australia Will Support India's Membership of the Nuclear Suppliers Group," Media Release, November 18, 2013, http://foreignminister.gov.au/releases/2013/jb_mr_131118a.html.

[233] "Nuclear States Divided on India Joining Export Control Group," *Reuters*, March 20, 2013, http://www.reuters.com/article/2013/03/20/us-nuclear-suppliers-india-idUSBRE92J13220130320.

[234] "Pakistan Starts Work on New Atomic Site, with Chinese Help," *Global Secuirity Newswire*, November 27, 2013, http://www.nti.org/gsn/article/pakistan-begins-work-new-atomic-site-being-built-chinese-help/.

[235] Bill Gertz, "China, Pakistan Reach Nuke Agreement," *The Washington Free Beacon*, March 22, 2013, http://freebeacon.com/china-pakistan-reach-nuke-agreement/.

[236] NPT/CONF.2015/PC.II/WP.18, 21 March 2013.

that it has no intention of developing nuclear weapons. A state that concludes an Additional Protocol with the IAEA is obliged to provide information on its general plans for the next ten-year period relevant to any nuclear fuel cycle development (including nuclear fuel cycle-related research and development activities). Most countries actively promoting the peaceful use of nuclear energy have issued mid- or long-term nuclear development plans, including the construction of nuclear power plants.[237] The international community may be concerned about the possible development of nuclear weapon programs when states conduct nuclear activities without publishing their nuclear development plans (e.g., Israel, North Korea and Syria), or are engaged in nuclear activities which seem inconsistent with their plans or natural resources (e.g., Iran).

From the standpoint of transparency, communications received by the IAEA from certain member states concerning their policies regarding the management of plutonium, including the amount of plutonium held, are also important. Using the format of the Guidelines for the Management of Plutonium (INFCIRC/549) agreed in 1997, the five NWS, Belgium, Germany, Japan, and Switzerland annually publish data on the amount of civil unirradiated plutonium under their control. By November 2013, China, France, Germany, Japan, Switzerland and the United Kingdom had declared their civilian plutonium holdings as of December 2012. France, Germany and the United Kingdom had reported their holdings of not only civil plutonium but also HEU.

Australia, Austria, Brazil, Canada, Egypt, Iran, Kazakhstan, South Korea, Mexico, the Netherlands, New Zealand, Norway, South Africa, Sweden, Turkey and the UAE have published the amount of fissile material holdings or at least have placed their declared nuclear material under IAEA safeguards. From this, it may be concluded that these states have given clear evidence of transparency about their civil nuclear activities.

[237] The World Nuclear Association's website (http://world-nuclear.org/) provides summaries of the current and future plans of civil nuclear programs around the world.

3. Nuclear Security*

In response to the increasing concern about "loose nukes" resulting from the dissolution of the Soviet Union and the terrorist attacks on the United States in September 2001, international efforts to enhance nuclear security have accelerated and nuclear security tools have been greatly augmented. In 2005, the Amendment to the Convention on the Physical Protection of Nuclear Material was adopted (has not yet entered into force). In 2007, the International Convention for the Suppression of Acts of Nuclear Terrorism (Nuclear Terrorism Convention) entered into force. In 2011, the fifth revision of Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Rev.5) was issued. In addition, the two Nuclear Security Summits in 2010 and 2012 provided opportunities for world leaders to show commitment to strengthening nuclear security by declaring and supporting nuclear security approaches to be taken. Similarly, the International Conference on Nuclear Security: Enhancing Global Efforts, organized by the International Atomic Energy Agency (IAEA) in July 2013, served as a platform for participating countries to make official remarks about their respective nuclear security policies at the Ministerial Meeting at the beginning of the conference. These official statements, as well as the membership status of international conventions and implementation status of the measures recommended to take by INFCIRC/225/Rev.5, provide an important overview for assessing the nuclear security performance of each country.

Nevertheless, the following features pose a challenge to conducting a survey of the nuclear security status of each country. Firstly, there is no legally binding, universal instrument as regards nuclear security. In this regard, United Nations Security Council Resolution (UNSCR) 1540 is expected to serve as a legally binding, universal instrument; however, as the report obligation of the resolution has not been fulfilled, it does not function as it is supposed to. Secondly, due to the sensitivity of nuclear security-related information, it is very difficult to obtain comprehensive information for the evaluation of the actual nuclear security status on a per country basis. Nuclear security-related information, particularly regarding threat assessment, a Design Basis Threat (DBT),[238] physical protection systems for facilities and transport of nuclear and other radiological material, as well as the nuclear security plan of each state, is confidential information for counter-terrorism reasons and is shared only among a very limited group of people with "need-to-know" status. Thirdly, the responsibility of the nuclear security of a state entirely rests with the individual state. In other words, nuclear security requirements need to be established based on national decisions and sovereignty. Each state decides what level of nuclear security requirements to impose in accordance with its own national threat assessment. These features suggest that, unlike nuclear non-proliferation for which safeguards serve as a universal tool, it is difficult to establish performance standards, evaluation criteria, and above all, a verification mechanism for nuclear security.

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* This chapter is written by Kazuko Hamada.

238 The IAEA defines it as "The attributes and characteristics of potential insider and/or external adversaries, who might attempt unauthorized removal or sabotage, against which a physical protection system is designed and evaluated." International Atomic Energy Agency (IAEA), "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)," IAEA Nuclear Security Series No. 13, 2011.

In view of these factors, this report surveys the following items to evaluate the nuclear security system and performance of each country. In order to assess nuclear security risks of each, this report considers the existence of indicators of nuclear material that is "attractive" for malicious intent; facilities to produce such material; and related activities. It also examines the accession status to nuclear security related international conventions, implementation status for recommended nuclear security measures, and official statements related to nuclear security approaches, to evaluate the nuclear security performance and status of each county.

(1) The Amount of Fissile Material Usable for Weapons

A nuclear security threat is defined as "a person or group of persons with motivation, intention and capability to commit criminal or intentional unauthorized acts involving or directed at nuclear material, other radioactive material, associated facilities or associated activities or other acts determined by the State to have an adverse impact on nuclear security."[239] The IAEA recommends to take a graded approach that takes into account: "the current evaluation of the threat, the relative 'attractiveness,'[240] the nature of the nuclear material and potential consequences associated with the unauthorized removal of nuclear material and with the sabotage against nuclear material or nuclear facilities"[241] to decide physical protection requirements. This suggests that the more suitable nuclear and other radioactive material, related nuclear facilities and activities are to achieve malicious intentions, the higher the nuclear security risk is, thereby requiring a high-level of protection measures corresponding to the security risk. In a similar way, the larger the consequences of a certain malicious act, the stronger the level of security measures required.

Two kinds of malicious acts, unauthorized removal and sabotage, are present in nuclear security, and the "attractiveness" of potential targets differs depending on the intention of a certain act, as does the required protection level. The intentions of unauthorized removal are to construct a nuclear explosive device or to disperse radioactive material. For the former intention, the more suitable the targeted nuclear material is for the construction of a nuclear explosive device, the higher the "attractiveness" of the material becomes, as well as the risk involved. Sabotage acts may aim to "endanger the health and safety of personnel, the public or the environment by exposure to radiation or release of radioactive substances by intentionally attacking or destroying a nuclear facility or nuclear material in use, storage or transport."[242] To this end, for the purposes of sabotage and unauthorized removal for radioactive material dispersal, the risk increases with the size of the consequences.

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[239] International Atomic Energy Agency (IAEA), " Objective and Essential Elements of a State's Nuclear Security Regime," IAEA Nuclear Security Series No. 20, 2013, p.13.

[240] This indicates the suitability to achieve malicious intents and expresses the possible perception of potential adversaries only.

[241] IAEA, "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)," p.14.

[242] Ibid., p.53.

The “attractiveness” of unauthorized removal of material for the manufacture of a nuclear explosive device is directly related to its ease of use in a nuclear explosive device. IAEA’s INFCIRC/225/Rev.5 categorizes nuclear material in the basis of its type, composition, amount, and radioactive level. An assessment is then made on whether to place them into category I, II, and III (see table 3-1), which range from higher to lower in terms of its “attractiveness” for this purpose. It then recommends taking protective measures in accordance with the categorization of the material held.

While it is not possible to assess the exact holdings of category I nuclear material for most countries, estimates can be obtained for some of them from the “Global Fissile Material Report 2013: Increasing Transparency of Nuclear Warhead and Fissile Material Stocks as a Step toward Disarmament” (discussed below), published by the International Panel on Fissile Materials (IPFM). More generally, countries with nuclear power plants are assumed to possess category I nuclear material and, depending on the type of research reactors, countries without nuclear power plants but possessing nuclear research reactors may also be assumed to possess it.

Table 3-1 shows that plutonium with an isotopic concentration of plutonium 239 of 80% or more is more attractive than other plutonium isotopes for manufacture of such devices. In the case of highly enriched uranium (HEU) is assessed as weapon-grade with an isotopic concentration of 90% uranium-235. Both require high-level protection measures. The IPFM annually publishes a “Global Fissile Material Report” summarizing states’ known holdings of weapon usable material. Its 2013 evaluations of such fissile material holdings form the basis for table 3-2 below.

Table 3-1 : Categorization of Nuclear Material*

Material	Form	Category I High ←	Category II Attractiveness	→ Category III[c] Low
1. Plutonium[a]	Unirradiated[b]	≧2kg	2kg＞ ＞500g	500g≧ ＞15g
2. Uranium-235 (^{235}U)	Unirradiated[b] −Uranium enriched to 20% ^{235}U or more −Uranium enriched to 10% ^{235}U but less than 20% ^{235}U −Uranium enriched above natural, but less than 10% ^{235}U	≧5kg ------ ------	5kg＞ ＞1kg ≧10kg ------	1kg≧ ＞15g 10kg＞ ＞1kg ≧10kg
3. Uranium-233 (^{233}U)	Unirradiated[b]	≧2kg	2kg＞ ＞500g	500g≧ ＞15g
4. Irradiated fuel (The categorization of irradiated fuel in the table is based on international transport considerations. The State may assign a different category for domestic use, storage and transport taking all relevant factors into account.)			Depleted or natural uranium, thorium or low enriched fuel (less than 10% fissile content) [d)/e)]	

*) This is "special fissionable material" or "source material" that is defined in Statute of the IAEA. The Statute defines "special fissional material" as plutonium-239; uranium-233; uranium enriched in the isotopes 235 or 233; any material containing one or more of the foregoing; any such other fissionable material as the Board of Governors shall from time to time determine; but the term "special fissionable material" does not include source material. It also defines "source material" as uranium containing the mixture of isotopes occurring in nature; uranium depleted in the isotope 235; thorium; any of the foregoing in the form of metal, alloy, chemical compound, or concentrate; any other material containing one or more of the foregoing in such concentration as the Board of Governors shall from time to time determine; and such other material as the Board of Governors shall from time to time determine. International Atomic Energy Agency (IAEA), "Statute," As Amended up to 23 February 1989.

a) All plutonium except that with isotopic concentration exceeding 80% in plutonium-238.

b) Material not irradiated in a reactor or material irradiated in a reactor but with a radiation level equal to or less than 1 Gy/h. (100 rad/h) at 1 m unshielded.

c) Quantities not falling in Category III and natural uranium, depleted uranium and thorium should be protected at least in accordance with prudent management practice.

d) Although this level of protection is recommended, it would be open to States, upon evaluation of the specific circumstances, to assign a different category of physical protection.

e) Other fuel which by virtue of its original fissile material content is classified as Category I or II before irradiation may be reduced one category level while the radiation level from the fuel exceeds 1 Gy/h (100 rad/h) at one metre unshielded.

Source) IAEA, "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)," IAEA Nuclear Security Series No. 13, 2011.

Table 3-2: Stockpiles of Fissile Material Usable for Weapons in 2012 (estimates)

[Metric Tons]	HEU	Stockpile available for weapons	Naval (fresh)	Naval (irradiated)	Civilian Material	Excess (mostly for blend-down)	Weapon Pu.	Military Stockpile	Excess military material	Additional Strategic stockpile	Civilian use Pu	Civilian stockpile, stored in country (Dec. 2010)	Civilian stockpile, stored outside country (Dec. 2010)
China	16 ± 4	16					1.8 ± 0.5	1.8			0.01		
France	26 ± 6	6 ± 2			4.7		6	6			57.5	57.5	
Russia	695 ± 120	616	20	10	20	29	128 ± 8	88	34	6	49.5	49.5	
U.K.	21.2	11.7		8.1	1.4		7.6	3.2	4.4		91.2	90.3	0.9
U.S.	595	260	152	100	20	63	87.6	38.3	49.3				
India	2.4 ± 0.9						5.24	0.54± 0.18		4.7	0.24	0.24	
Israel	0.3						0.84	0.84					
Pakistan	3 ± 1.2	3 ± 1.2					0.15 ± 0.05	0.15					
Belgium	0.7-0.75												
Germany	0.95										5.8	2	3.8
Japan	1.2-1.4										44.3	9.3	35
Switzerland	0.005-0.01										< 0.05		
N. Korea	0.042						0.03	0.03					
Others	15				15						11		11

Source) International Panel on Fissile Materials, "Global Fissile Material Report 2013: Increasing Transparency of Nuclear Warhead and Fissile Material Stocks as a Step toward Disarmament," International Panel on Fissile Materials, October 2013; (For Switzerland and Belgium) Reports of the member countries under the Guidelines for the Management of Plutonium (INFCIRC/549); (For Belgium, Germany, Japan, Switzerland, North Korea) James Martin Center for Nonproliferation Studies (CNS), "Civil Highly Enriched Uranium: Who Has What?"

The holdings of HEU and plutonium of some countries other than the ones in table 3-2 are estimated as follows.

- Countries assumed to retain 1 ton of HEU (category I is 5 kg and more): Kazakhstan (10,520 kg) [243]
- Countries assumed to retain 1kg and more but less than 1ton of HEU (category I is 5 kg and more): Canada (less than 1,500 kg), the Netherlands (730-810 kg), Iran (7 kg), Australia (1019 kg), Norway (1-9 kg)[244]
- Countries assumed to retain 1kg and more of separated plutonium: the Netherlands[245]

Countries that do not have weapon-grade HEU or plutonium but have a uranium enrichment facility or a nuclear reactor with a reprocessing facility are judged to have higher risk than those without these facilities. Thus, the existence of nuclear power plants, research reactors, uranium enrichment facilities, and reprocessing facilities in a country increases the level of risk that the country faces.

As for unauthorized removal that is intended to harm people by releasing radioactive substance, using nuclear or other radioactive material is also a security risk. The IAEA recommends that a State defines the risk based on the amount, forms, composition, mobility, and accessibility of nuclear and other radioactive material and takes prospective measures against the defined risk.[246] As for sabotage with a plant, nuclear or other radioactive material and related production facilities are also potential targets. In this regard, the IAEA also recommends that a State "establishes its threshold(s) of unacceptable radiological consequences" and that the vital areas where risk associated materials, devices, and functions are located "in order to determine appropriate levels of physical protection taking into account existing nuclear safety and radiation protection."[247] Given the complexity of technical and motivational assessments of nuclear security risks, and the policy consideration of a State that are also involved, it is difficult to produce objective risk evaluations for such issues.

Based on this understanding, table 3-3 regards the presence of nuclear power plants, research reactors, uranium enrichment facilities, and reprocessing facilities of surveyed countries, as risk indicators of unauthorized removal for a nuclear explosive device, as does possession of nuclear material usable for weapons. All require robust nuclear security measures including enhanced

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[243] James Martin Center for Nonproliferation Studies (CNS), "Civil Highly Enriched Uranium: Who Has What?" August 2011.

[244] Ibid. Mexico and South Africa have returned all HEU to their countries of origin according to the statements in 2012 Nuclear Security Summit and other sources and have been removed from this list. With regard to Australia, although it stated that it had returned HEU to an origin country, it is not clear whether or not some HEU remains and it has not been removed from the list.

[245] International Panel on Fissile Materials, "Global Fissile Material Report 2013: Increasing Transparency of Nuclear Warhead and Fissile Material Stocks as a Step toward Disarmament," International Panel on Fissile Materials, October 2013.

[246] IAEA, "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)," IAEA Nuclear Security Series No. 13, 2011.

[247] Ibid., p.14.

physical protection systems at facilities. States with these kinds of nuclear material have a responsibility to ensure the reliability of control systems.

Table 3-3 : Nuclear Fuel Cycle Facilities

	China	France	Russia	U.K.	U.S.	India	Israel	Pakistan	Australia	Austria	Belgium	Brazil	Canada	Egypt	Germany	Indonesia
Nuclear Power Plant	○	○	○	○	○	○		○			○	○	○		○	
Research Reactor	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Uranium Enrichment Facility	○	○	○	○	○	○[a]		○[a]				○			○	
Reprocessing Facility	○	○	○[b]	○	○	○[b]	○[a]	○[a]			△[c]	△[d]				

	Iran	Japan	Kazakhstan	South Korea	Mexico	Netherlands	New Zealand	Norway	South Africa	Sweden	Switzerland	Syria	Turkey	UAE	North Korea
Nuclear Power Plant	○	○	○	○	○	○			○	○	○			△[e]	
Research Reactor	○	○	○	○	○	○		○	○	△[f]	○	○	○		○
Uranium Enrichment Facility	○	○				○			△[c]						△[g]
Reprocessing Facility		△[h]													△[i]

a) Military use
b) Military and civilian use
c) Under decommissioning
d) Under shut down
e) Under construction
f) Under shut down and decommissioning
g) Under construction, the actual status is unknown
h) Under test operation
i) Stand-by

Source) International Atomic Energy Agency (IAEA), *Nuclear Fuel Cycle Information System,* http:// infcis.iaea.org/NFCIS/About.cshtml; International Panel on Fissile Materials, "Global Fissile Material Report 2013: Increasing Transparency of Nuclear Warhead and Fissile Material Stocks as a Step toward Disarmament," International Panel on Fissile Materials, October 2013.

(2) Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems

A) Accession status to nuclear security-related conventions

This report surveys the accession status of each country to the following nuclear security and safety-related conventions: Convention on the Physical Protection of Nuclear Material (CPPNM), Amendment to CPPNM (CPPNM Amendment), International Convention for the Suppression of Acts of Nuclear Terrorism (Nuclear Terrorism Convention), Convention on Nuclear Safety (Nuclear Safety Convention), Convention on Early Notification of a Nuclear Accident, Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, and Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency. The results are summarized in table 3-4.

CPPNM requires its party states to take appropriate protection measures for international transfer of nuclear material used for peaceful purposes, and not permit its transfer in the case such measures are not in place. It also calls for the criminalization of acts including unauthorized receipt, possession, use, transfer, alteration, disposal or dispersal of nuclear material and which causes damage to any person or property, as well as theft or robbery of nuclear material. It entered into force in 1987.

CPPNM Amendment greatly expands its scope by calling for party states to take protection measures against nuclear facilities and nuclear material in use, storage and transport, and impose regulations to prevent sabotage against nuclear facilities. It was adopted by consensus in 2005, but has not yet entered into force as of December 2013.

Nuclear Terrorism Convention, which became effective in 2007, requires party states to criminalize acts of possession and use of radioactive material or nuclear explosive devices with malicious intent and against those seeking to use and damage nuclear facilities in order to cause radioactive dispersal.

Nuclear Safety Convention is aimed at ensuring and enhancing the safety of nuclear power plants and became effective in 1996. The discussion to develop this convention started in response to the Chernobyl nuclear accident. Its party states are required to take legal and administrative measures, report to the review committee established under this convention, and accept peer review in order to ensure the safety of nuclear power plants under their jurisdiction.

Convention on Early Notification of a Nuclear Accident obligates its party states to immediately report to the IAEA when a nuclear accident has occurred, including the type, time, and location of the accident and relevant information. It entered into force in 1986.

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management calls for its member states to take legal and administrative measures, report to its review committee, and undergo peer review by other parties, for the purpose of ensuring

safety of spent fuel and radioactive waste. It became effective in 2001.

Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency establishes the international framework that enables equipment provision and dispatch of experts with the goals of preventing nuclear accidents and radioactive emergencies from exacerbating and minimizing their impact. It entered into force in 1987.

Some, if not all, of these nuclear safety-related conventions can be interpreted as providing protective measures for nuclear security purposes, and thus could be listed as nuclear security-related international conventions.

Table 3-4 shows the signature and ratification status of each country to these conventions. The differences from the findings of last year's report are that Syria has signed the Nuclear Safety Convention, and that North Korea has signed the Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency.

Table 3-4: Signature and Ratification Status for Major Nuclear Security and Safety-Related Conventions

[○ ratification, acceptance, approval, and accession; △ signature]

	China	France	Russia	U.K.	U.S.	India	Israel	Pakistan	Australia	Austria	Belgium	Brazil	Canada	Egypt	Germany	Indonesia
CPPNM	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○
CPPNM Amendment	○	△	○	○		○	○		○	○	○				○	○
Nuclear Terrorism Convention	○	○	○	○	△	○	△		○	○	○	○	○	△	○	
Nuclear Safety Convention	○	○	○	○	○	○	△	○	○	○	○	○	○	△	○	○
Convention on Early Notification of a Nuclear Accident	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	○	○	○	○	○				○	○	○	○	○		○	○
Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

	Iran	Japan	Kazakhstan	South Korea	Mexico	Netherlands	New Zealand	Norway	South Africa	Sweden	Switzerland	Syria	Turkey	UAE	North Korea
CPPNM		○	○	○	○	○	○	○	○	○	○		○	○	
CPPNM Amendment			○		○	○		○		○	○			○	
Nuclear Terrorism Convention		○	○	△	○	○	△	△	○	△	○	△	○	○	
Nuclear Safety Convention		○	○	○	○	○		○	○	○	○	△	○	○	
Convention on Early Notification of a Nuclear Accident	○	○	○	○	○	○	○	○	○	○	○	△	○	○	△
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management		○	○	○		○		○	○	○	○			○	
Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency	○	○	○	○	○	○	○	○	○	○	○	△	○	○	△

B) INFCIRC/225/Rev.5

INFCIRC/225/Rev.5 is IAEA's recommendation document without legally binding force for physical protection measures for nuclear material and related facilities and is, in fact, regarded as an instrument to set forth international standards with respect to physical protection of nuclear material and associated facilities. The first edition was formulated in 1975 as INFCIRC/225, based on "recommendations for physical protection of nuclear material (1972)," and has been revised several times and its latest edition, INFCIRC/225/Rev.5, was published in January 2011. This fifth edition introduces new measures that include creating limited access areas, graded approaches, the enhancement of defense-in-depth, protection against "Stand-off Attack," counter measures against insider threats, fostering a nuclear security culture as a preventive measure against insider threats, and the provision of redundancy measures to ensure the functions of the central alarm station during an emergency. Being provided with protective measures in accordance with the recommendation made by this fifth edition has been encouraged internationally, with a view to establishing a sufficient nuclear security system.[248] The communiqué of the Seoul Nuclear Security Summit in 2012 made it clear by declaring that all participating states were to make efforts to takeup these recommended measures.[249] Therefore, the application status of the recommended measures of INFCIRC/225/Rev.5 can serve as an indicator to evaluate the nuclear security system of each country. However, because the

[248] The IAEA is engaged in conducting outreach activities of workshops and regional training courses with the purpose of assisting states to taking the measures recommended by this INFCIRC/225/Rev.5. Similarly, the U.S. and Japan are also making efforts to promote the understanding of these recommended measures through outreach activities such as workshops.

[249] "Seoul Communiqué," 2012 Seoul Nuclear Security Summit, March 27, 2012.

information on the application status is limited, this report refers to official statements made available in the Seoul Nuclear Security Summit, International Conference on Nuclear Security: Enhancing Global Efforts organized by the IAEA (hereinafter referred to as IAEA Nuclear Security Conference), and other opportunities to evaluate the national nuclear security stance and performance of each state.

Application Status of Each Country of the Measures Recommended in INFCIRC/225/Rev.5[250]

The following part summarizes the measures taken by some countries to accommodate the recommended measures of INFCIRC/225/Rev.5.

In the field of the development of legal instruments, Japan amended its ministerial ordinances in 2011 and 2012, in order to apply the recommendations of INFCIRC/225/Rev.5, such as the setting of limited access areas and the enhancement of vital functions located outside protected areas. France, Belgium, Switzerland, Brazil, and the U.S. have declared that they have also established legal instruments based on the INFCIRC/225/Rev.5. In addition, Turkey has expressed that it is currently working to develop laws and regulations in line with the recommended measures of INFCIRC/225/Rev.5.

In the area of strengthening the physical protection measures, Australia and South Africa are trying to take measures corresponding to INFCIRC/225/Rev.5, as well as Indonesia, Sweden and China, who have stated that they are in the process of applying measures including the enhancement of physical protection systems, as per INFCIRC/225/Rev.5. In response to the intrusion incident to the Y-12 National Security Complex in 2011, the U.S. has stated that it has strenghtened physical protection measures at 175 facilities in the country that handle radioactive material and has undertaken the implementation of force-on-force exercises.[251] In addition, Mexico and the UAE have expressed that they are also working towards the application of INFCIRC/225/Rev.5 measures through participation in related workshops. Belgium has updated its DBT, which is to serve as a basis for the establishment of its nuclear security requirements, in order to respond to new threats identified by INFCIRC/225/Rev.5.

As for the measures against sabotage, the Netherlands has stated that it started to apply the risk-based categorization for nuclear material and implemented protection measures according to this categorization in January 2013. South Korea has also stated that it is working toward applying INFCIRC/225/Rev.5 measures such as protection measures in accordance with nuclear material categorization. The Netherlands has declared that it has established its national

[250] Progress statements made in the Seoul Nuclear Security Summit. https://www.nss2014.com/en/nss-2014/reference-documents.

[251] It is defined as "a performance test of the physical protection system that uses designated trained personnel in the role of an adversary force to simulate an attack consistent with the threat or the design basis threat." INFCIRC/225/Rev.5 recommends to conduct performance tests that include force-on-force exercises at least annually. International Atomic Energy Agency (IAEA), "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Rev.5)," IAEA Nuclear Security Series No. 13, 2011.

database for category I and II nuclear material.

With regard to cyber-terrorism, the Netherlands has made it clear that its DBT addresses the threat of cyber-terrorism and that its transport security is in line with the recommendations of INFCIRC/225/Rev.5. South Korea has also reported that it is using GPS for real time surveillance as transport security measures. Mexico has declared that it has recommended measures for transport in place.

In the field of protection measures against insider threats, Indonesia has introduced the "two person rule"[252] and, in addition, is working actively to nourish its nuclear security culture. In March 2013, it was the first country in the world to conduct the self-assessment of its nuclear security culture, in cooperation with the IAEA. Sweden obligates licensees to make efforts to promote nuclear security culture and applies its self-assessment as a regulatory requirement. In addition, Russia and Germany have reported that they are working to foster a nuclear security culture in their countries through participation in related workshops.

Table 3-5: Application Status of and Efforts for Recommended Measures of INFCIRC/225/Rev.5

	China	France	Russia	U.K.	U.S.	India	Israel	Pakistan	Australia	Austria	Belgium	Brazil	Canada	Egypt	Germany	Indonesia
INFCIRC/225/Rev.5	○	○	○	○	○	○		○	○		○	○			○	○

	Iran	Japan	Kazakhstan	South Korea	Mexico	Netherlands	New Zealand	Norway	South Africa	Sweden	Switzerland	Syria	Turkey	UAE	North Korea
INFCIRC/225/Rev.5		○		○	○	○			○	○	○		○	○	

"○" is shown for only the countries for which the related information is available or that have made official remarks about their effort for INFCIRC/225/Rev.5.

(3) Efforts to Maintain and Improve the Highest Level of Nuclear Security

A) Minimization of HEU in civilian use

HEU has been utilized for civilian purposes through its use in research reactors and isotope production reactors. However, since HEU is suitable for the manufacture of nuclear explosive devices, if it is removed from a regulatory control without authorization, such as by theft, it becomes possible that non-state actors as well as states can produce nuclear explosive devices. To meet these global concerns, the Global Threat Reduction Initiative (GTRI) was inaugurated in

[252] The IAEA defines it as "A procedure that requires at least two authorized and knowledgeable persons to be present to verify that activities involving nuclear material and nuclear facilities are authorized in order to detect access or actions that are unauthorized." IAEA, "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5)."

2004 by the United States to manage the return of Russian- or U.S.-origin HEU located in civilian sites to its country of origin and converting research reactors to operate with low enriched uranium (LEU). The Nuclear Security Summits in 2010 and 2012 supported this effort as one of the most important potential actions to improve nuclear security.

According to the report of the Global Security Partnership, 82 research reactors had been converted to LEU use, and 235 kg of HEU from Ukraine, Uzbekistan, and Poland has been returned to Russia, while 12 kg of HEU from Mexico were returned to the U.S. during the period October 2012 to September 2013.[253]

At the Seoul Nuclear Security Summit and other occasions, the following reports on commitments to minimizate HEU use were made.

- China: Based on the agreement with the U.S. in 2010, it is conducting the conversion of research reactors to use LEU.
- France: It is working closely with other countries for the technology development for the conversion to use LEU.
- Russia: It has converted 1,320 kg of unirradiated HEU to LEU since 2010. It is planning to accept HEU from Uzbekistan and Ukraine. In addition, in cooperation with the U.S. it is conducting the technology development and feasibility study for LEU conversion of six research reactors at Kurchatov Atomic Energy Research Institute.
- United States: It has converted 10.5 tons of U.S. HEU and 2 tons of Russian HEU to be LEU and has been supporting the return of 400kg of HEU from 10 countries to their respective origins.
- Israel: It has returned HEU to the U.S.
- Austria: It has returned HEU.[254]
- Australia: It has shut down the research reactors that used HEU and returned all spent fuel to its origin. It has developed technology of radiopharmaceutical production using LEU. It returned exessive HEU to the U.S. in 2013.
- Belgium: As a leading producer of radioactive isotope in the world, it is cooperating with the U.S., France, and the Netherlands in minimizing the use of HEU. It has exchanged diplomatic notes with the U.S. about the conversion of the BR2 research reactor and the processing facility of the National Institute for Radioelements (I.R.E.) and is making preparation efforts to return its HEU to the U.S. in 2014.
- Canada: It returned HEU to the U.S. in 2012 to fulfill a commitment made in 2010. It is planning to finish the return of all HEU by 2018. It has financially contributed $8,000,000 to the conversion activities to use LEU in Mexico and Vietnam.
- Kazakhstan: It has returned HEU from the WR-K research reactor to Russia and is currently working on its conversion to LEU use. The conversion is expected to be completed in 2014.

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[253] Emily Mella, "Reported Accomplishments of Selected Threat Reduction and Nonproliferation Programs by Agency for Fiscal Year 2012," *Policy Update*, Global Security Partnership, August 2013.

[254] Nuclear Threat Initiative, "NTI Nuclear Material Security Index: Building a Framework for Assurance, Accountability, and Action," Second Edition, January 2014, p. 40.

- South Korea: It is conducting technology development to enable HEU reactors to be converted to use LEU and is cooperating with other countries on the application of this technology.
- Mexico: It completed the conversion of HEU reactors to use LEU and returned all its HEU to its origin in 2012.
- The Netherlands: It has completed the conversion of its research reactors to use LEU.
- South Africa: It has completed the conversion of major supply facilities of molybdenum-99 to use LEU and returned HEU to the U.S.
- Sweden: It converted the all research reactors to use LEU in the 1990s. It is currently contributing to the international effort of the minimization of HEU use.

B) Prevention of illicit trafficking

Countries with nuclear material need to have in place effective measures and strict controls at both state and facility levels—including nuclear material accounting and control—in order to detect and prevent illicit transfers of nuclear material to other states or non-state actors. The Communiqué of the Seoul Nuclear Security Summit lists those measures, including the advancement of technical capabilities in the fields of national inspection and detection of nuclear and other radioactive material at the borders; further utilization of legal, intelligence and financial tools to effectively prosecute offenses; participation in the IAEA Incident and Trafficking Database (ITDB) program; provision of necessary information relating to nuclear and other radioactive material outside of regulatory control; and sharing of information on individuals involved in trafficking offenses with International Criminal Police Organization (INTERPOL) and the World Customs Organization.

Established in 1995, the IAEA ITDB is the database on incidents related to unauthorized possession, illicit trafficking, illegal dispersal of radioactive material, and discovery of nuclear and other radioactive material out of regulatory control. By providing and sharing information of relevant incidents, participating countries are expected to serve as international surveillance against illicit trafficking and strengthen their efforts for its prevention, and for nuclear security performance as a whole. As of December 2012, 120 countries have joined the ITDB, and all the countries surveyed in this report other than Syria, Egypt, and North Korea have participated in it.

A total of 2,331 incidents have been reported from 1995 until the end of 2012. In 2012 alone, a total of 160 incidents[255] were reported. The breakdown of incidents in 2012 is as follows:[256]

- 17 incidents of "illegal possession of and attempts to sell nuclear material or radioactive sources";
- 24 incidents of "thefts or losses of radioactive sources"; and

[255] Although the total number of the incidents in 2012 is written as 147 in the *IAEA Annual Report 2012*, it should be 160 as the total of the three breakdowns and thus, "160" is used in this report.

[256] Ibid., p. 69.

- 119 incidents of "discoveries of uncontrolled material, unauthorized movement or storage of nuclear material, radioactive sources and/or radioactive contaminated material."

Detailed information on incidents and illicit trafficking is not published so as not to discourage participating countries to report related incident(s). Therefore, as it is not possible to assess the involvement of the surveyed countries, this report considers only their respective participation status.

Preventive measures against illicit trafficking of nuclear and other radiological material include the development of legal instruments for export control and enforced detection capability, such as the installation of sensing devices for radiological material at national borders. The following describes some of efforts taken as preventive measures against illicit trafficking of nuclear and other radiological material.

- India: It updated its list of dual-use items in 2013 in accordance with the Guideline II of the Nuclear Suppliers Group (NSG).
- Israel: It has established a legal instrument for illegal transfer prevention. Under the U.S.-led Megaports Initiative, it shares its experience in countering illicit trafficking with others.
- Pakistan: It has revised its control list to strengthen its export control. It is working to install Special Nuclear Material Portals at major entrance and exit points, as measures for deterrence, detection, and prevention of illicit trafficking of nuclear and other radiological material.
- Brazil: It has amended its legal instrument against illicit trafficking. It is providing training for border guards of the Mercosur[257] states on prevention, detection and response of illicit transfer of nuclear and other radiological material and sharing relevant information and best practices with them.
- Mexico: It conducts capacity building programs to develop the laws and regulations of export control of dual-use items and enhance export control capability. It has improved the capabilities for detection of nuclear and other radiological material at five ports under the U.S.-led Megaports Initiative.
- Sweden: It organized the Second INTERPOL Radiological and Nuclear Trafficking and Terrorism Analysis Conference in 2012.
- UAE: It has established legal instruments, including the control list for export control. It has developed enhanced control capabilities at ports, including the installation of detection equipment as well as the provision of personnel training through bilateral assistance programs, including the Megaports initiative.

Table 3-6 shows the implementation status of the minimization of HEU for peaceful purposes and measures for the prevention of illegal transfer of nuclear material and other radiological material based on official statements made at the Seoul Nuclear Security Summit or other opportunities.

[257] This is the customs union of South American countries.

Table 3-6: The implementation status of the minimization of HEU for peaceful purposes and measures for the prevention of illegal transfer

	China	France	Russia	U.K.	U.S.	India	Israel	Pakistan	Australia	Austria	Belgium	Brazil	Canada	Egypt	Germany	Indonesia
HEU minimization for peaceful purposes	○	○	○		○		○		○	○	○		○			
Participation in the ITDB	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○
Preventive measures against illegal transfer	○	○	○	○	○	○	○	○	○			○			○	

	Iran	Japan	Kazakhstan	South Korea	Mexico	Netherlands	New Zealand	Norway	South Africa	Sweden	Switzerland	Syria	Turkey	UAE	North Korea
HEU minimization for peaceful purposes			○	○	○				○	○					
Participation in the ITDB	○	○	○	○	○	○	○	○	○	○	○		○	○	
Preventive measures against illegal transfer		○		○	○				○	○				○	

"○"is provided to the countries for which public information on the effort in these areas is obtained.

C) Acceptance of international nuclear security review missions

In order to support the development of the nuclear security system and capabilities, the IAEA provides advisory services such as the International Nuclear Security Advisory Service (INSServ) and the International Physical Protection Advisory Service (IPPAS) to its member states. Upon the request of a member state, the INSServ provides recommendations to improve a broad spectrum of nuclear security activities of the state by reviewing its nuclear security system and requirements. Also upon the request of a member state, the IPPAS provides recommendations to improve the physical protection system of nuclear material, associated facilities, and transport systems of the state. As IPPAS reviews a state's nuclear security system in detail with a particular focus on the state's physical protection system, it is regarded as an in-depth review service compared to INSServ. In IPPAS missions, an IPPAS team, consisting of physical protection experts organized by the IAEA, visits government organizations and nuclear facilities in a state, reviews the physical protection system of the facility in detail, and conducts hearing investigations, in order to assess whether or not the reviewed physical protection system is in line with the recommendations of the IAEA INFCIRC/225 and to provide advice where necessary for its improvement.

Because the IPPAS is a service to review details of the physical protection system that include sensitive information held by a requesting state, it is expected to greatly contribute to the enhancement of its physical protection system in particular and its nuclear security performance in general. Therefore, the acceptance of the IPPAS indicates that the state is seriously working to strengthen its nuclear security system.

Since the IPPAS was initiated in 1996, 56 IPPAS missions have been conducted in 37 states (see table 3-8). In 2013, Romania received the follow-up mission of the IPPAS, and Australia, Hungary, and the U.S. received the IPPAS.

D) Technology development —nuclear forensics

Nuclear forensics is the technological method for the investigation of nuclear and other radiological material that has been removed without authorization from regulatory control and seized by a law enforcement authority. The role of nuclear forensics is to investigate the original location, history, and transport path of the seized material, and the intent of its removal, by analyzing its composition and physical and chemical form. It is considered as one of the key technologies to complement nuclear security efforts. Nuclear forensics activities include the categorization and characterization of a seized material and the interpretation of their results that includes the comparison of the results with a database and numerical simulation.

In the Nuclear Security Summit in 2010, international cooperation to build a nuclear forensics capability in each country was recommended.[258] Subsequently, in the communiqué of the Nuclear Security Summit in 2012, the importance of international cooperation in developing nuclear forensics capacity was reaffirmed.[259] As such an international cooperation initiative, the Nuclear Forensics International Technical Working Group (ITWG) was established in 1996 for the purpose of addressing the issue of illegal transfers following the end of the Cold War. The ITWG serves as the platform to support the technological development and sharing of nuclear forensic methods.

According to the reports made at the ITWG-17 (see table 3-7), France, the U.K., the U.S., Australia, Canada, Japan, South Korea, Sweden, and Switzerland are currently working on the development of nuclear forensics capability. Other than these countries, the European Commission's Joint Research Centre (EC-JRC) is conducting the characterization and interpretation of nuclear and other radioactive material seized in European Union (EU) countries. Its Institute for Transuranium Elements (ITU), located in Germany, is the main laboratory for its nuclear forensics activities. The Netherlands is carrying out a program to promote the international cooperation on technology development of nuclear forensics. In this regard, it has established a website to share the information of each country's nuclear forensics activities, aiming to harmonize their activities, and share best practice and a glossary of nuclear forensics. The country also organized an international table-top exercise of nuclear forensics in 2012.

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[258] The White House, Office of the Press Secretary, "Work Plan of the Washington Nuclear Security Summit," April 13, 2010.

[259] "Seoul Communiqué," 2012 Seoul Nuclear Security Summit.

Table 3-7: Nuclear forensics capabilities that were reported at the ITWG-17

	Uranium	Plutonium	Other radioactive material*	Evidence contaminated by radiological material
Categorization	France U.K. U.S. Australia Canada Japan South Korea Sweden Switzerland	France U.K. U.S. Canada South Korea Sweden	 Canada Japan South Korea Sweden Switzerland	 U.S. Canada
Characterization	France U.K. U.S. Canada Japan South Korea Switzerland EC-JRC(ITU)	France U.K. U.S. Canada Japan South Korea Switzerland EC-JRC(ITU)	 U.K. U.S. Canada Japan South Korea Switzerland EC-JRC(ITU)	 U.S. Canada EC-JRC(ITU)
Interpretation	France U.S. Canada Japan Switzerland EC-JRC(ITU)	France U.S. Canada Japan Switzerland EC-JRC(ITU)	 U.S. Japan EC-JRC(ITU)	 U.S. Canada EC-JRC(ITU)

* Irradiated fuel, Th, Cm, Cs, Am, Industrial radiation source, Sealed source

Note: In the case of Japan, Japan Atomic Energy Agency (JAEA) and others conducted not as a national capability as of the end of 2013.

E) Capacity building and support activities

In response to increased awareness about the importance of nuclear security capacity building and international cooperation in this area, many participating countries at the Washington and Seoul Nuclear Security Summits reported their intentions to establish or support the establishment of Centers of Excellence (COE) for nuclear security training. These states include Brazil, China, France, India, Japan, South Korea, Russia, South Africa, Pakistan, Switzerland, the United Kingdom, and the United States. As a regional effort, France and Sweden have actively supported the development of the EU Centres of Excellence on CBRN (chemical, biological, radioactive materials, nuclear) risk mitigation.

Of particular note, Kazakhstan established the Kazakhstan Regional Training Centre to foster nuclear security culture, in cooperation with the U.S. Department of Energy. It is currently providing training on nuclear material accounting and control, the physical protection of nuclear material, and countermeasures against trafficking. France is offering nuclear security training through its Institut de Radioprotection et de Sûreté Nucléaire (IRSN) and cooperating with India's Global Center for Nuclear Energy Partnership (GCNEP) in the area of nuclear security and research development. In cooperation with the U.S. Department of Energy, China is currently establishing a State Nuclear Security Technology Center (SNSTC). It is scheduled to start its

capacity building activities for domestic participants and Asian countries from 2015. South Korea is also in the process of establishing the International Nuclear Nonproliferation and Security Academy (INSA) with the support of the U.S. Energy Department. It is expected to be completed in February 2014. After its completion, it will provide training on nuclear non-proliferation and nuclear security matters, both nationally and internationally. Japan, in cooperation with the U.S. Energy Department, established the Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN) at the Japan Atomic Energy Agency (JAEA), and is currently providing training and support activities in the areas of nuclear security and safeguards.

In spite of these remarkable developments, some have pointed out the risk of overlap and redundancies in the activities of these centers if, with similar objectives and targets, they carry out their training activities in the same region without prior coordination. To reduce such duplication and to facilitate exchange of experts, information as well as training material, the International Network for Nuclear Security Training and Support Centers (NSTC/NSSC) was established in 2012 under the leadership of the IAEA. Through its annual meeting and the meetings of three working groups (WG A: Harmonization and cooperation, WG B: Best practice, WG C: Information management/other emerging issues), the NSTC/NSSC is expected to serve as the platform on which participating countries can improve the ability and effectiveness of their capacity building activities.

One of the purposes of this NSTC/NSSC initiative is to standardize the quality of nuclear security training. To this end, the IAEA is cooperating with its member states for the development of training curriculum for nuclear security. As a part of this effort, Brazil, in cooperation with the IAEA, is establishing the Nuclear Security Support Center. In the same way, Pakistan established its Nuclear Security Training Center and is currently providing nuclear security training, mainly to the staff of Pakistan Nuclear Regulatory Authority. In addition, the Netherlands, in cooperation with the IAEA, has since 2012 been providing a masters program in nuclear security for IAEA member states at the Reactor Institute Delft of Delft University of Technology.

Enhancing the effectiveness of nuclear security training by harmonizing the activities of COEs is also one of the purposes of the NSTC/NSSC initiative. In this regard, there is some concern that the content and targeted participants of the nuclear security training courses of Japan (ISCN), South Korea (INSA), and China (SNSTC) will overlap or be duplicated, and thus, possibly undermining the overall effectiveness of nuclear security training. Against this concern, an effort to achieve the harmonization of these three COEs began in 2012 under the initiative of the IAEA. Because South Korea's INSA and China's SNSTC have not yet been established,[260] this effort has thus far been limited to information sharing about their respective activities and plans to date. But, differentiating the training contents of each COE by characterizing them, and harmonizing

[260] South Korea's INSA is planned to be established in February 2014. China's SNSTC is scheduled to be completed in 2015.

their training schedules to avoid overlaps, are currently being considered as possibilities for the future.

F) IAEA Nuclear Security Plan and Nuclear Security Fund

In March 2002 the IAEA Board of Governors approved the first three-year Nuclear Security Plan as a program to combat the risk of nuclear terrorism. The third Nuclear Security Plan covering the period 2010-2013[261] was approved in August 2009 and has been implemented.[262] Moreover, the IAEA established the Nuclear Security Fund (NSF), a voluntary funding mechanism to prevent, detect, and respond to nuclear terrorism, and has called for member states to make voluntary contributions to it.[263]

According to the IAEA Annual Report 2012, 19 States (including China, France, Russia, the U.S., the U.K., India, Canada, Germany, South Korea, the Netherlands, New Zealand, Norway, and Sweden) and the EU provided such extra budgetary funding. The total revenue of the NSF amounted to some €25 million in 2012.[264] Table 3-8 shows only the countries that made funding contributions in 2012.

G) Participation in international efforts

The establishment of a "Global Partnership against the Spread of Weapons and Materials of Mass Destruction" (G8GP) was agreed in the G8 Kananaskis Summit in 2002. In addition to the G8 member states (including France, Germany, Japan, the U.K., the U.S. and Russia), donor participants (Australia, South Korea, Sweden, Switzerland, etc.) have participated in the G8GP and carried out various projects, in particular denuclearization cooperation in Russia. The membership of the G8GP had expanded to 27 states at the end of 2013.[265]

The G8 Summit in St. Petersburg in July 2006 agreed to establish the Global Initiative to Combat Nuclear Terrorism (GICNT), proposed by Russia and the United States. Participating states were to make efforts to fulfill its eight principles, including the improvement of physical protection measures for nuclear and other radiological material; the enhancement of security of civilian nuclear facilities and of detection capability of illegal transfers; and the prevention of financial assistance to terrorists. Since the first meeting of the GICNT in Morocco in October 2006, its membership has expanded to be 85 states (including Australia, China, France, Russia, Germany, India, Israel, Japan, South Korea, Pakistan, Sweden, Switzerland, the U.K. and the U.S.) and 4

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261 The Nuclear Security Plan for 2014-2017 was approved in September 2013.

262 GOV/2009/54-GC(53)/18, 17 August 2009.

263 The IAEA has an unstable budget situation. Despite its growing role in nuclear security, the Agency is obliged to depend on extra-budgetary contributions, which are not necessarily granted from one year to another.

264 "IAEA Annual Report 2012," p. 71.

265 The followings are partner states (surveyed states are underlined). Core partners: the U.S., Canada, Germany, France, Italy, the U.K., Japan, Russia, EU. Other partner states: Australia, Belgium, Czech Republic, Denmark, Finland, Hungary, Ireland, Kazakhstan, South Korea, Mexico, the Netherlands, New Zealand, Norway, the Philippines, Poland, Sweden, Switzerland, Ukraine. Partner states that are considering participation in it: Argentina, Austria, Brazil, Chile, China, India, Kuwait, Morocco, Qatar, Saudi Arabia, Singapore, South Africa, Spain, Turkey, UAE, Jordan.

international organizations as official observers.[266]

On the one hand, it is hoped that the acceptance of the IPPAS by the IAEA; the effort for nuclear forensics; and the commitment to nuclear security capacity-building and support, will contribute to improving of the nuclear security capabilities of surveyed countries, and make more effective their respective nuclear security systems. On the other hand, the contributions of states to the IAEA Nuclear Security Fund and their participation in the G8GP and the GICNT are indicators of their desire to enhance their commitment to nuclear security and can be used to undertake an overall evaluation of each country's nuclear security system. Table 3-8 below shows the participation status in and effort for these nuclear security initiatives.

Table 3-8: The participation status in and effort for nuclear security initiatives

	China	France	Russia	U.K.	U.S.	India	Israel	Pakistan	Australia	Austria	Belgium	Brazil	Canada	Egypt	Germany	Indonesia
IPPAS	△	○		○	○				○					○		○
Nuclear Forensics		○	○	○	○			○	○		○		○		○	
Capacity Building & Support Activities	○	○	○	○	○	○		○	○	○		○	?		○	
Nuclear Security Fund	○	○	○	○	○	○							○		○	
G8 Global Partnership	△	○	○	○	○	△			○	△	○	△	○		○	
GICNT	○	○	○	○	○	○	○	○	○	○	○		○		○	

	Iran	Japan	Kazakhstan	South Korea	Mexico	Netherlands	New Zealand	Norway	South Africa	Sweden	Switzerland	Syria	Turkey	UAE	North Korea
IPPAS	○	△	○	△	○	○	○	○		○	○		○		
Nuclear Forensics		○		○		○		○	○	○	○		○		
Capacity Building & Support Activities		○	○	○		○		○	○		○				
Nuclear Security Fund				○		○	○	○		○					
G8 Global Partnership		○	○	○	○	○	○	○	△	○	○			△	
GICNT		○	○	○	○	○	○	○		○	○		○	○	

IPPAS: "△" is assigned for the countries that are planning to accept IPPAS or have held a related workshop.

G8 Global Partnership: "△" is assigned for the countries that are considering of the participation in it.

[266] See the U.S. Department of State homepage, http://www.state.gov/t/isn/c37083.htm. As for the GICNT's key multilateral meeting, workshops and exercises, see also the U.S. Department of State homepage, http://www.state.gov/documents/organization/172982.pdf.

Part II: Evaluation: Country-by-Country Analysis

In this "Evaluation" part, performances of the 31 countries surveyed in this project on three areas, that is, nuclear disarmament, non-proliferation and nuclear security, are evaluated numerically based upon study and analysis compiled in the "Report" section.

Evaluation of the four groups—nuclear-weapon states (NWS), non-parties to the Nuclear Non-Proliferation Treaty (NPT), non-nuclear-weapon states (NNWS), and one particular state (North Korea)—is made separately because of their different characteristics. Since different sets of criteria are applied to different groups of countries, full points differ according to the group each country belongs to. Then, as a measure to visualize a comparison of 31 countries' performances relatively, each country's performances in each area is put on a chart in percentage terms.

【Full Points for each group of countries】

Groups / Areas	(1) NWS	(2) Non-NPT Parties	(3) NNWS	(4) Other
	China, France, Russia, U.K., U.S.	India, Israel, Pakistan	Australia, Austria, Belgium, Brazil, Canada, Egypt, Germany, Indonesia, Iran, Japan, Kazakhstan, South Korea, Mexico, Netherlands, New Zealand, Norway, South Africa, Sweden, Switzerland, Syria, Turkey, UAE	North Korea*
Nuclear Disarmament	94	91	39	91
Nuclear Non-Proliferation	47	43	61	61
Nuclear Security	41	41	41	41

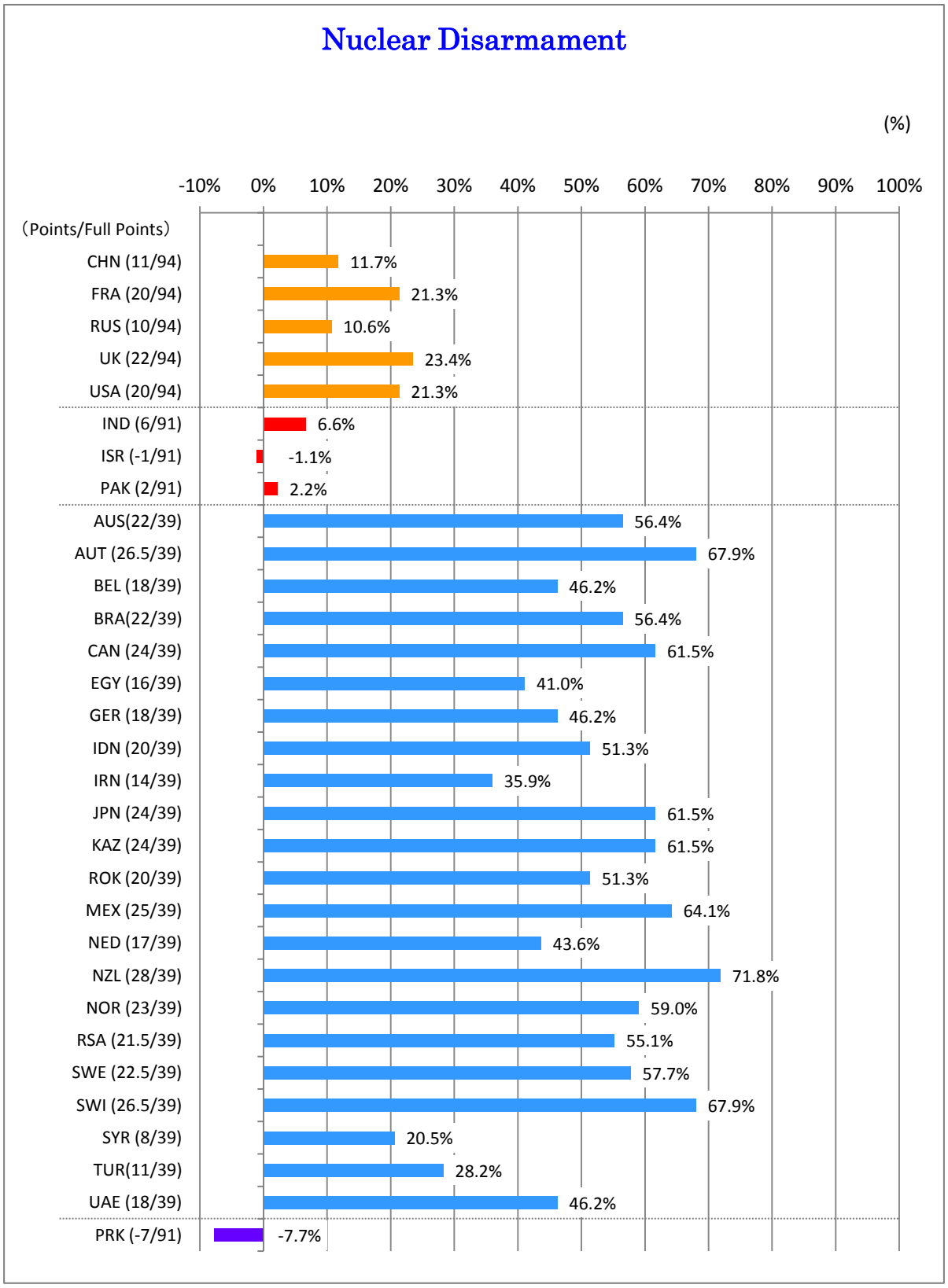
※ North Korea declared its suspension from the NPT in 1993 and its withdrawal in 2003, and conducted nuclear tests in 2006, 2009 and 2013. However, there is no agreement among the states parties on North Korea's official status.

In addition, radar charts were produced for the NWS to illustrate where each country stands in different aspects of nuclear disarmament. For this purpose the 12 issues used for nuclear disarmament evaluation were grouped into six aspects: (1) the number of nuclear weapons, (2) reduction of nuclear weapons, (3) commitment to achieving a "world without nuclear weapons," (4) operational policy, (5) the status of signature and ratification of, or attitudes of negotiation to relevant multilateral treaties, and (6) transparency.

Aspects	Issues
Number	The Number of Nuclear weapons
Reduction	Reduction of Nuclear weapons
Commitments	Commitments to achieving a world without nuclear weapons
	Disarmament and non-proliferation educations 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
Relevant 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

1. Area Summary

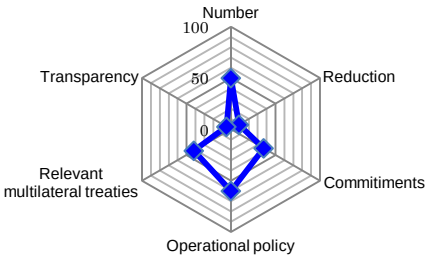
(1) Nuclear Disarmament



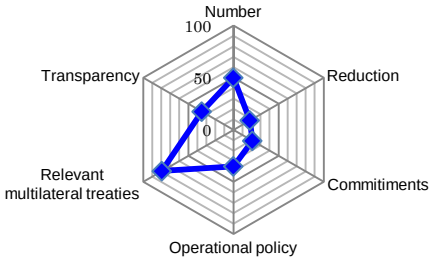
6-point Nuclear Disarmament Radar Charts

According to the following radar charts illustrating where each nuclear-weapon state stands in different aspects of nuclear disarmament, 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 further reductions of nuclear arsenals. The performances of the United Kingdom are relatively well-balanced.

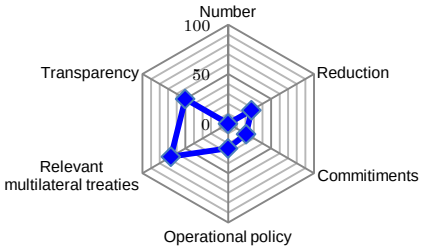
China



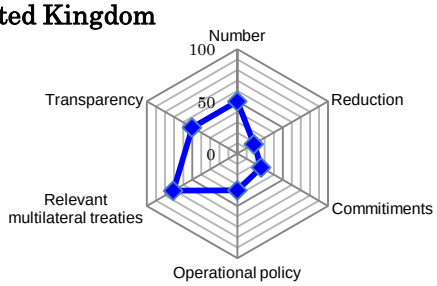
France



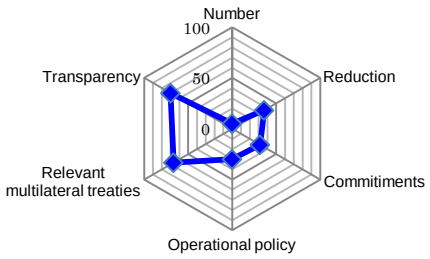
Russia



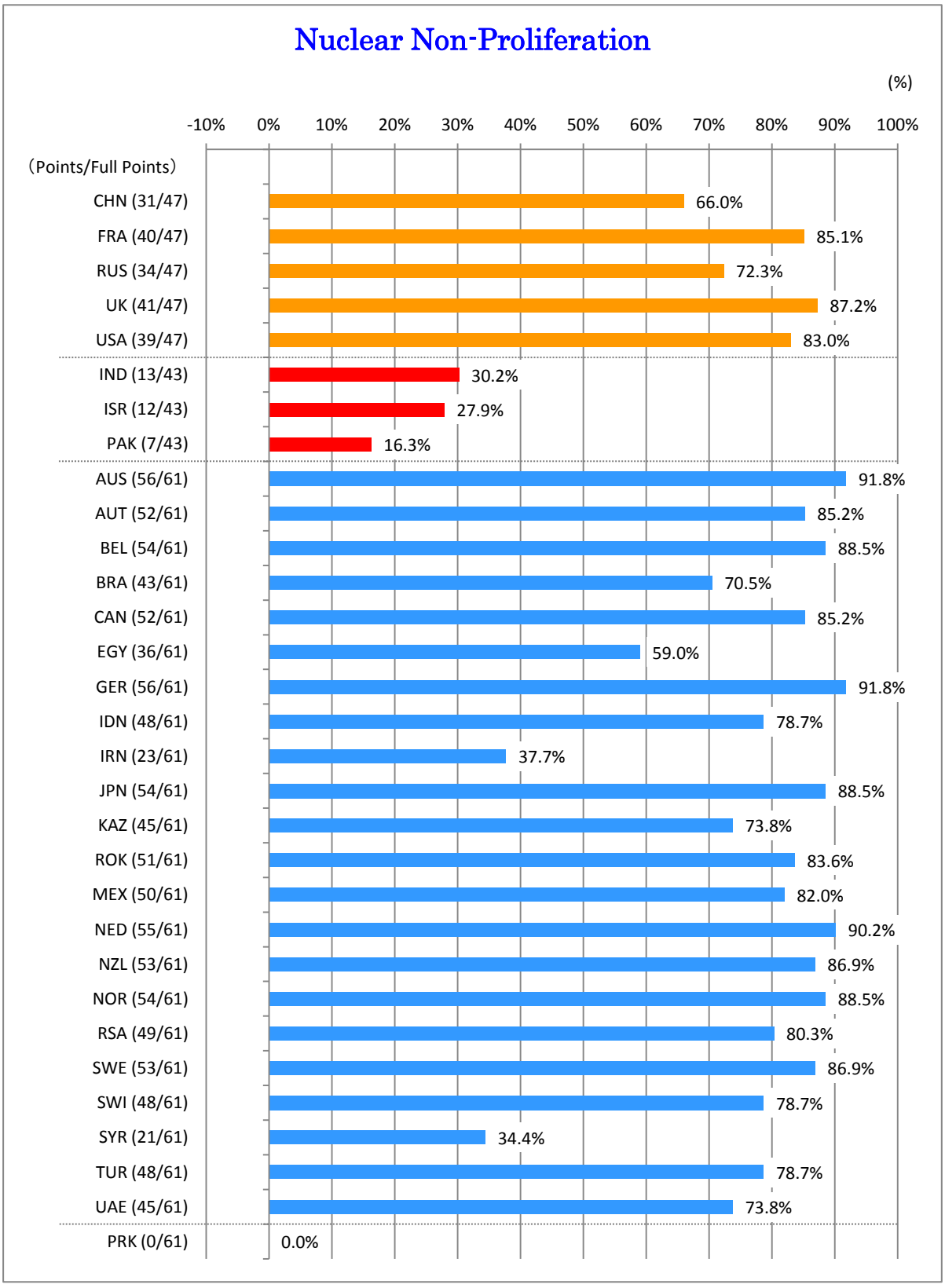
United Kingdom



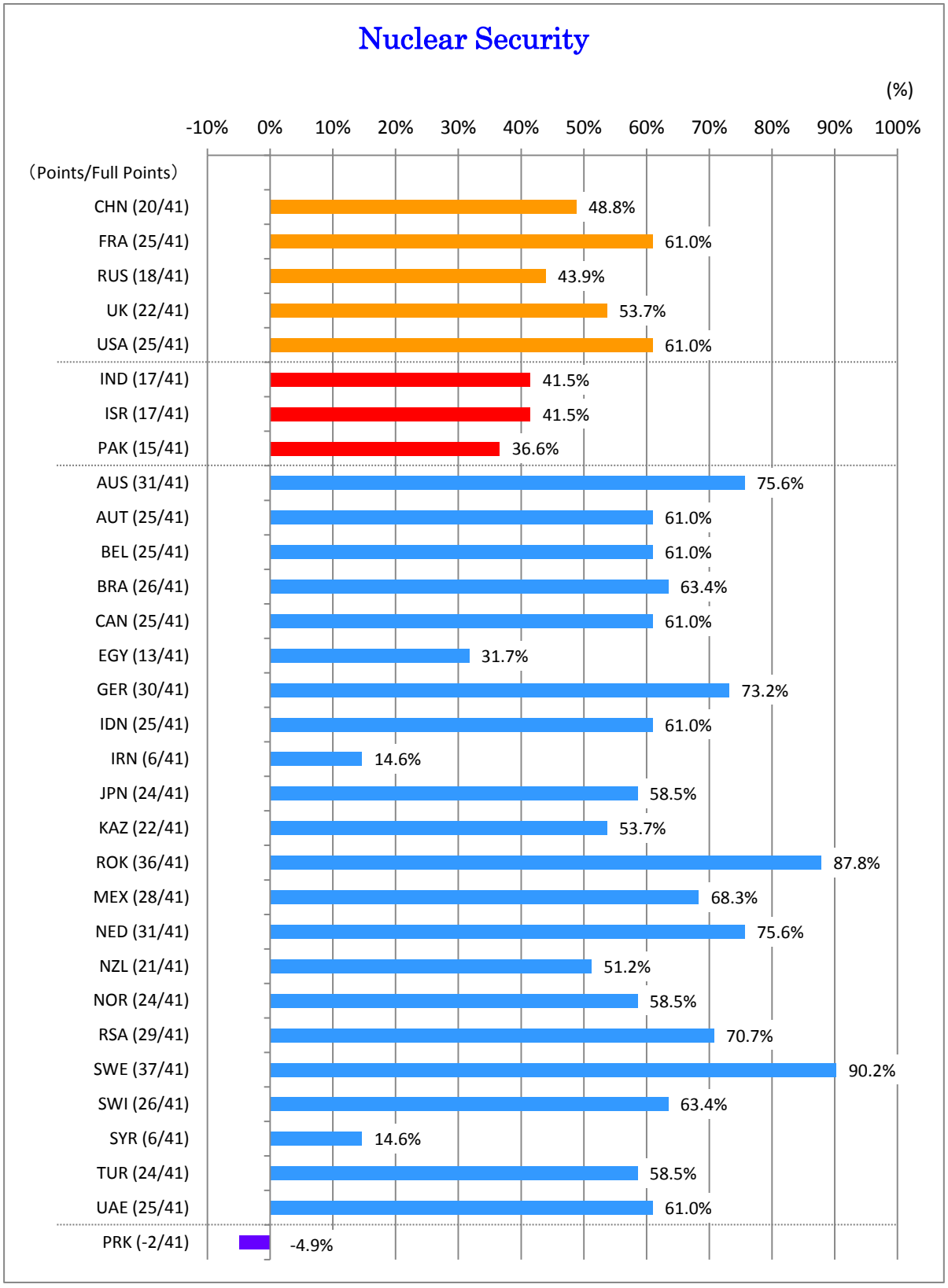
United States



(2) Nuclear Non-Proliferation



(3) Nuclear Security



2. Country-by-Country Summary

(1) Nuclear-Weapon States

China

China is estimated to possess approximately 250 nuclear warheads, and continues active modernization of its nuclear forces. Among the five NWS, it is the only country that has yet to reduce its nuclear arsenals. China declares no-first-use and the unconditional negative security assurance. While arguing the importance of transparency in intentions, China has maintained the least transparency about nuclear weapons capabilities among the NWS. China remains one of the non-ratifiers of the CTBT. Questions remain as to whether China is conducting adequate and strict implementation of nuclear-related export controls. It is in the process of incorporating INFCIRC/225/Rev.5 into its nuclear security regulations.

（1）Nuclear Disarmament　Points 11/94

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-10/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	0/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	0/15
	A concrete plan for further reduction of nuclear weapons	0/3
	Trends on strengthening/modernizing nuclear weapons capabilities	2/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the “sole purpose,” no first use, and related doctrines	3/3
	Negative security assurances	2/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	3/3
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	3/4
CTBT	Signing and ratifying the CTBT	2/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	2/3
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	1/2
	Nuclear Testing	-1/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	1/3
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	1/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	0/3
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	0/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/3
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	0/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0/1

（２）Nuclear Non-Proliferation　Points 31/47

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	－
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	－
	Signing and Ratifying an Additional Protocol	－
	Implementation of the integrated safeguards	－
	Compliance with the IAEA Safeguards Agreement	－
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	3/3
	Signing, ratifying, and implementing the Additional Protocol	3/4
Cooperation with the IAEA	Efforts for strengthening the safeguards	1/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	3/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	1/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	0/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 20/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-10/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	1/3

France

France has announced its maximum number of nuclear warheads as 300, and has reduced its overall nuclear forces. On the other hand, there was little progress in diminishing the role of nuclear weapons; it maintains the existing nuclear strategy and heavily conditional forms of negative security assurance. France has engaged in nuclear non-proliferation and security proactively, including acceptance and implementation of related treaties and arrangements.

（1）Nuclear Disarmament Points 20/94

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-10/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	2/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	0/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	1/15
	A concrete plan for further reduction of nuclear weapons	0/3
	Trends on strengthening/modernizing nuclear weapons capabilities	3/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the “sole purpose,” no first use, and related doctrines	0/3
	Negative security assurances	1/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	3/3
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	2/4
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	3/3
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	-1/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	2/3
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	3/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	0/3
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	0/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	2/3
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	1/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 40/47

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	－
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	－
	Signing and Ratifying an Additional Protocol	－
	Implementation of the integrated safeguards	－
	Compliance with the IAEA Safeguards Agreement	－
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	3/3
	Signing, ratifying, and implementing the Additional Protocol	3/4
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	0/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	2/2

（３）Nuclear Security　Points 25/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-12/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	2/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

Russia

Russia has reduced its strategic nuclear forces under the New START agreement. Still, it is estimated to possess 8,500 nuclear warheads. It continues to modernize and replace ICBMs and SLBMs. The program of converting 500 metric tons of Russian HEU (extracted from nuclear weapons and designated as no longer required for military purposes) and selling to the United States was concluded. Russia, which has accumulated the largest stock of fissile material usable for weapons, engages in strengthening nuclear security, such as minimizing HEU in civilian use.

（1）Nuclear Disarmament　Points　10/94

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-20/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	2/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	0/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	3/15
	A concrete plan for further reduction of nuclear weapons	0/3
	Trends on strengthening/modernizing nuclear weapons capabilities	3/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the “sole purpose,” no first use, and related doctrines	0/3
	Negative security assurances	1/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	2/3
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	1/4
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	2/3
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	-1/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	3/3
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	2/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	3/3
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	0/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	2/3
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	2/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 34/47

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	－
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	－
	Signing and Ratifying an Additional Protocol	－
	Implementation of the integrated safeguards	－
	Compliance with the IAEA Safeguards Agreement	－
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	3/3
	Signing, ratifying, and implementing the Additional Protocol	3/4
Cooperation with the IAEA	Efforts for strengthening the safeguards	1/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	4/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	0/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	0/2

（３）Nuclear Security　Points 18/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-16/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	1/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

The United Kingdom

The United Kingdom, which has reduced its nuclear arsenals incrementally, is estimated to possess 225 nuclear warheads. A few warheads per year have been dismantled. On the other hand, the United Kingdom is examining alternative options for the replacement of its Vanguard-class SSBNs. It has proactively engaged in nuclear non-proliferation and security, including acceptance and implementation of related treaties and arrangements.

（1）Nuclear Disarmament　Points　22/94

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-10/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	2/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	0/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	1/15
	A concrete plan for further reduction of nuclear weapons	0/3
	Trends on strengthening/modernizing nuclear weapons capabilities	3/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the “sole purpose,” no first use, and related doctrines	0/3
	Negative security assurances	1/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	3/3
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	2/4
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	2/3
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	-1/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	2/3
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	4/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	0/3
	Engagement in research and development for verification measures of nuclear weapons reduction	1/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	1/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	2/3
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	1/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	2/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 41/47

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	－
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	－
	Signing and Ratifying an Additional Protocol	－
	Implementation of the integrated safeguards	－
	Compliance with the IAEA Safeguards Agreement	－
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	3/3
	Signing, ratifying, and implementing the Additional Protocol	3/4
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	1/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	2/2

（３）Nuclear Security　Points 22/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-12/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	0/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	2/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

The United States

The United States, possessing 7,700 nuclear warheads, continues to implement the New START. In June it announced to explore reduction of its deployed strategic nuclear weapons by up to one-third. But the Nuclear Employment Strategy did not indicate new or significant measures for diminishing the role of its nuclear forces. The United States could not achieve the ratification of the CTBT in 2013. It has proactively led the efforts to bolster nuclear non-proliferation and security.

（1）Nuclear Disarmament Points 20/94

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-19/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	2/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	0/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	3/15
	A concrete plan for further reduction of nuclear weapons	2/3
	Trends on strengthening/modernizing nuclear weapons capabilities	3/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the “sole purpose,” no first use, and related doctrines	2/3
	Negative security assurances	1/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	1/3
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	1/4
CTBT	Signing and ratifying the CTBT	2/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	2/3
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	-1/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	2/3
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	4/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	3/3
	Engagement in research and development for verification measures of nuclear weapons reduction	1/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	1/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	2/3
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	2/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	2/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 39/47

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	－
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	－
	Signing and Ratifying an Additional Protocol	－
	Implementation of the integrated safeguards	－
	Compliance with the IAEA Safeguards Agreement	－
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	3/3
	Signing, ratifying, and implementing the Additional Protocol	3/4
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	0/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	0/2

（３）Nuclear Security　Points 25/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-12/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	1/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	5/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	2/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

(2) Non-Parties to the NPT

India

India is estimated to possess 90-110 nuclear warheads, having added 10 from the previous year. It also continues to develop ICBM and SLBM, and to produce fissile material for weapons. India maintains a moratorium on nuclear test explosions, but refuses to sign the CTBT. Among the non-parties to the NPT, India's performances on nuclear disarmament, non-proliferation and nuclear security are relatively positive.

（1）Nuclear Disarmament　Points　6/91

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-8/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	2/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	1/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	0/15
	A concrete plan for further reduction of nuclear weapons	0/3
	Trends on strengthening/modernizing nuclear weapons capabilities	2/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the "sole purpose," no first use, and related doctrines	3/3
	Negative security assurances	2/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	3/4
CTBT	Signing and ratifying the CTBT	0/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	2/3
	Cooperation with the CTBTO Preparatory Commission	0/2
	Contribution to the development of the CTBT verification systems	0/2
	Nuclear Testing	-1/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	0/3
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	1/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	0/3
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	0/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/3
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	0/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 13/43

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	0/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	2/3
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	－
	Signing and Ratifying an Additional Protocol	－
	Implementation of the integrated safeguards	－
	Compliance with the IAEA Safeguards Agreement	－
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	2/3
	Signing, ratifying, and implementing the Additional Protocol	1/4
Cooperation with the IAEA	Efforts for strengthening the safeguards	0/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	4/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	－
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	0/2

（３）Nuclear Security　Points 17/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-8/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	0/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	1/3

Israel

Israel has consistently pursued the policy of "nuclear opacity" while estimated to possess approximately 80 nuclear warheads. Such an attitude makes its points evaluation in nuclear disarmament and non-proliferation lower. Israel has yet to ratify the CTBT. Its performance in nuclear security is better in comparison, except in terms of participations in international cooperation.

（1）Nuclear Disarmament　Points　-1/91

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-6/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	1/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	0/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	0/15
	A concrete plan for further reduction of nuclear weapons	0/3
	Trends on strengthening/modernizing nuclear weapons capabilities	2/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the "sole purpose," no first use, and related doctrines	0/3
	Negative security assurances	0/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	2/4
CTBT	Signing and ratifying the CTBT	2/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	0/3
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	-1/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	0/3
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	0/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	0/3
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	0/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/3
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	0/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 12/43

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	0/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	3/3
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	－
	Signing and Ratifying an Additional Protocol	－
	Implementation of the integrated safeguards	－
	Compliance with the IAEA Safeguards Agreement	－
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	1/3
	Signing, ratifying, and implementing the Additional Protocol	0/4
Cooperation with the IAEA	Efforts for strengthening the safeguards	0/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	1/2
	Civil nuclear cooperation with non-parties to the NPT	－
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	0/2
	Reporting on plutonium management	0/2

（３）Nuclear Security　Points 17/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-5/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	1/2
	Convention on Nuclear Safety	1/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	3/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	1/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	1/3

Pakistan

Pakistan is estimated to possess 100-120 nuclear warheads, having added 10 from the previous year. It continues to develop short- and medium-range ballistic missiles. While maintaining a moratorium on nuclear test explosions, it refuses to sign the CTBT. Pakistan continues to block the commencement of negotiations on an FMCT at the CD. It is still unclear how robust or successfully implemented export control systems are in practice.

（1）Nuclear Disarmament Points 2/91

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-8/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	3/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	1/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	0/15
	A concrete plan for further reduction of nuclear weapons	0/3
	Trends on strengthening/modernizing nuclear weapons capabilities	2/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the “sole purpose,” no first use, and related doctrines	0/3
	Negative security assurances	2/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	3/4
CTBT	Signing and ratifying the CTBT	0/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	2/3
	Cooperation with the CTBTO Preparatory Commission	0/2
	Contribution to the development of the CTBT verification systems	0/2
	Nuclear Testing	-1/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	0/3
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	1/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	0/3
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	0/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/3
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	0/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	0/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 7/43

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	0/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	2/3
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	－
	Signing and Ratifying an Additional Protocol	－
	Implementation of the integrated safeguards	－
	Compliance with the IAEA Safeguards Agreement	－
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	1/3
	Signing, ratifying, and implementing the Additional Protocol	0/4
Cooperation with the IAEA	Efforts for strengthening the safeguards	0/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	2/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	0/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	－
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	0/2

（３）Nuclear Security　Points 15/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-6/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	0/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	0/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	1/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	1/3

(3) Non-Nuclear-Weapon States

Australia

Australia has proactively engaged in nuclear disarmament, non-proliferation and nuclear security. At the First Committee of the UN General Assembly, it led the issuing of the "Joint Statement on the Humanitarian Consequences of Nuclear Weapons" as an alternative for those countries which concur on the principle regarding the humanitarian consequences of nuclear weapons but cannot participate in the New Zealand-version statement due to their security policies.

（1）Nuclear Disarmament Points 22/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	1/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the "sole purpose," no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	-3/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	2/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 56/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	3/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	1/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 31/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-4/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	3/3

Austria

Austria has engaged in nuclear disarmament proactively, such as taking the initiative in convening the High-Level Meeting on Nuclear Disarmament and cooperating with civil society. On nuclear non-proliferation and nuclear security, Austria has also participated in and implemented the related-treaties and measures while its participations in the international cooperation on nuclear security are less in comparison.

（1）Nuclear Disarmament　Points　26.5/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	3/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0.5/1

（２）Nuclear Non-Proliferation　Points 52/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	2/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 25/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	1/3

Belgium

Belgium has engaged in nuclear disarmament, non-proliferation and nuclear security proactively, such as acceding to and complying with the related treaties and arrangements. On the other hand, it is hosting U.S. non-strategic nuclear weapons as part of NATO's nuclear sharing policy.

(1) Nuclear Disarmament Points 18/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	–
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	–
	A concrete plan for further reduction of nuclear weapons	–
	Trends on strengthening/modernizing nuclear weapons capabilities	–
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	–
	Commitment to the "sole purpose," no first use, and related doctrines	–
	Negative security assurances	–
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	–
	Relying on extended nuclear deterrence	-5/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	–
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	–
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	–
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	–
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	–
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	–
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	–
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	–
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 54/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 25/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-4/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	1/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	3/3

Brazil

Brazil has actively advocated promotion of nuclear disarmament at disarmament fora, including the NPT Preparatory Committee and the UN General Assembly. While it complies with nuclear non-proliferation obligations, Brazil continues to be reluctant about accepting the IAEA Additional Protocol. Brazil has acceded to the nuclear security-related treaties and establishment of regulations for national implementation, but its participation in international cooperation on nuclear security is less in comparison.

（1）Nuclear Disarmament　Points　22/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	–
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	–
	A concrete plan for further reduction of nuclear weapons	–
	Trends on strengthening/modernizing nuclear weapons capabilities	–
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	–
	Commitment to the “sole purpose,” no first use, and related doctrines	–
	Negative security assurances	–
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	–
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	–
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	–
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	–
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	–
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	–
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	–
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	–
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	–
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 43/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	3/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	0/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	1/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 26/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	3/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	1/3

Canada

Canada has proactively engaged in nuclear disarmament, non-proliferation and nuclear security. In particular, it has undertaken remarkable activities in promoting an FMCT, such as taking initiative in establishing a group of governmental experts (GGE) to be held in 2014, as well as advocating discussions on obligations and measures that should be included in the treaty. Canada has also undertaken active cooperation with civil society.

（1）Nuclear Disarmament　Points 24/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	1/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	-3/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	4/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	3/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 52/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	0/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 25/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-5/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

Egypt

Egypt has been active toward establishing a WMD-free zone in the Middle East. Meanwhile, it has yet to conclude the IAEA Additional Protocol. In addition, no reliable information could be found regarding its implementation of export controls. On nuclear security, there is much to be done to join the related treaties and implement national measures.

（1）Nuclear Disarmament　Points　16/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	2/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	0/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 36/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	1/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	0/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	0/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	1/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 13/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	0/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	1/2
	Convention on Nuclear Safety	1/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	0/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	0/3

Germany

Germany has proactively engaged in nuclear disarmament, non-proliferation and nuclear security, such as acceding to and complying with the related treaties and arrangements. On the other hand, it is hosting U.S. non-strategic nuclear weapons as part of NATO's nuclear sharing policy.

(1) Nuclear Disarmament Points 18/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the "sole purpose," no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	-5/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	—
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	3/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 56/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	2/2

（３）Nuclear Security　Points 30/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-4/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	1/2
	Capacity building and support activities	2/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

Indonesia

Indonesia has actively advocated promotion of nuclear disarmament at various nuclear disarmament fora, including the NPT Preparatory Committee. It has concluded the IAEA Additional Protocol, of which the NAM countries are less enthusiastic about acceptance. It has made efforts for establishing national implementation systems regarding nuclear security. On export controls, however, Indonesia has yet to prepare a list of dual-use items and technologies, or catch-all control.

（1）Nuclear Disarmament　Points 20/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	6/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	0/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 48/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	3/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	1/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	1/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 25/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	0/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	0/3

Iran

Conclusion of the Joint Plan of Action with the EU3+3 in November was a positive step forward. However, the Iranian case of non-compliance with the IAEA Safeguards Agreement has not yet been fully resolved. Meanwhile, Iran has not ratified the CTBT or the IAEA Additional Protocol. There is much to be done to join the related treaties and implement national measures. Its performance in nuclear security also needs to be improved, including conclusion of related treaties and establishment of national implementation systems.

（1）Nuclear Disarmament　Points 14/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	–
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	–
	A concrete plan for further reduction of nuclear weapons	–
	Trends on strengthening/modernizing nuclear weapons capabilities	–
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	–
	Commitment to the “sole purpose,” no first use, and related doctrines	–
	Negative security assurances	–
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	–
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	–
CTBT	Signing and ratifying the CTBT	2/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	–
	Cooperation with the CTBTO Preparatory Commission	0/2
	Contribution to the development of the CTBT verification systems	1/2
	Nuclear Testing	–
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	–
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	–
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	–
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	–
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	–
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	0/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 23/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	3/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	1/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	0/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	0/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	0/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	0/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	1/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 6/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-4/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	0/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	0/2
	Convention on Nuclear Safety	0/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	0/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	0/3

Japan

Japan has proactively engaged in nuclear disarmament, non-proliferation and nuclear security, as one of the countries that lead efforts to promote and strengthen those areas, particularly for achieving a world without nuclear weapons, promoting entry into force of the CTBT, undertaking disarmament and non-proliferation education, and bolstering the IAEA safeguards and export controls. Japan has also conducted proactive outreach activities. It is the only country that signed two joint statements on the humanitarian consequences of nuclear weapons issued at the First Committee of the UN General Assembly.

（1）Nuclear Disarmament Points 24/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	1/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	-3/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	3/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 54/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	2/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 24/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-8/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	2/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	3/3

Kazakhstan

Kazakhstan has actively advocated the importance of the CTBT. In particular, it has taken initiative in establishing the ATOM (Abolish Testing. Our Mission) project. Kazakhstan has steadily acceded to the nuclear-related treaties and established national implementation systems.

（1）Nuclear Disarmament　Points　24/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	6/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 45/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	3/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	0/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	1/2
	Civil nuclear cooperation with non-parties to the NPT	0/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 22/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-5/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	3/3

South Korea

South Korea score high on nuclear security, in particular, based on its accession to the related treaties, establishment of national implementation system and participation in terms of international cooperation. South Korea has also steadily implemented nuclear disarmament- and non-proliferation-related measures, while it did not participate in the Australian-led "Joint Statement on the Humanitarian Consequences of Nuclear Weapons."

(1) Nuclear Disarmament Points 20/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	–
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	1/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	1/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	–
	A concrete plan for further reduction of nuclear weapons	–
	Trends on strengthening/modernizing nuclear weapons capabilities	–
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	–
	Commitment to the "sole purpose," no first use, and related doctrines	–
	Negative security assurances	–
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	–
	Relying on extended nuclear deterrence	-3/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	–
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	–
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	–
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	–
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	–
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	–
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	–
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	–
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 51/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	0/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points 36/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	1/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	2/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

Mexico

Mexico has actively advocated promotion of nuclear disarmament at, among others, the NPT Preparatory Committee and the UN General Assembly, and has also steadily implemented nuclear-related measures. It announced to convene the Second Conference on the Humanitarian Impact of Nuclear Weapons in February 2014. On nuclear security, Mexico returned all HEU to the United States.

（1）Nuclear Disarmament Points 25/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	6/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 50/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	3/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	1/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　28/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	3/3

Netherlands

The Netherlands has proactively engaged in nuclear disarmament, non-proliferation and nuclear security. It has carried out a program to promote international cooperation on technology development of nuclear forensics, and is to host the third Nuclear Security Summit in March 2014. Meanwhile, the Netherlands is hosting U.S. non-strategic nuclear weapons as part of NATO's nuclear sharing policy.

(1) Nuclear Disarmament Points 17/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the "sole purpose," no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	-5/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 55/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	3/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　31/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-5/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	2/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

New Zealand

New Zealand has actively advocated promotion of nuclear disarmament at various fora, including the UN General Assembly, where it led the issuing of the "Joint Statement on the Humanitarian Consequences of Nuclear Weapons." Among the three areas, New Zealand rates relatively low on nuclear security due to the lack of accession to the related treaties.

(1) Nuclear Disarmament Points 28/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the "sole purpose," no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	3/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0/1

（２）Nuclear Non-Proliferation　Points 53/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	3/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	2/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　21/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	1/2
	Convention on Nuclear Safety	0/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

Norway

Norway has proactively engaged in nuclear disarmament, non-proliferation and nuclear security. While it is under nuclear extended deterrence as a NATO member, Norway has emphasized the issue of humanitarian consequences of nuclear weapons. It hosted the International Conference on the Humanitarian Impact of Nuclear Weapons in March 2013.

（1）Nuclear Disarmament　Points　23/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	1/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	-3/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	1/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 54/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	2/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　24/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-4/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	1/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	1/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

South Africa

South Africa has been steadily implementing nuclear-related measures, such as accession to, and compliance with the related treaties. Its participation in terms of international cooperation on nuclear security is less in comparison.

（1）Nuclear Disarmament　Points　21.5/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0.5/1

（２）Nuclear Non-Proliferation　Points 49/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	3/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	1/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　29/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	1/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	1/3

Sweden

Sweden has actively advocated promotion of nuclear disarmament, and also proactively engaged in other areas. Particularly, it rates high on most of the items regarding nuclear security, including accession to the related treaties, establishment of national implementation systems and participation of the international cooperation.

（1）Nuclear Disarmament　Points　22.5/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	1/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	1/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	1/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0.5/1

（２）Nuclear Non-Proliferation　Points 53/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	4/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	2/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	1/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　37/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	1/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	4/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	2/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	2/2
	Participation in international efforts	3/3

Switzerland

Switzerland has actively advocated promotion of nuclear disarmament at the various fora, including the UN General Assembly and the NPT Preparatory Committee. It has also taken proactive attitudes regarding cooperation with civil society. It enacted national laws which restrict financing for nuclear weapons production. Switzerland has steadily implemented nuclear non-proliferation- and security-related measures.

（1）Nuclear Disarmament　Points　26.5/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	1/3
	Humanitarian consequences of nuclear weapons	3/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	3/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	1/2
	Decommissioning/conversion of nuclear weapons-related facilities	1/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	3/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0.5/1

（２）Nuclear Non-Proliferation　Points 48/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	2/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	3/3
	Participation in the PSI	1/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　26/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-5/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	4/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	0/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	1/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	3/3

Syria

The Syrian case of non-compliance with the IAEA Safeguards Agreement has not yet been resolved. Few meaningful efforts were undertaken in nuclear disarmament, non-proliferation and nuclear security. Syria neither acceded to the CTBT nor the nuclear security-related treaties. It has not concluded the IAEA Additional Protocol. It has yet to take appropriate measures on export controls.

（1）Nuclear Disarmament Points 8/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	5/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	0/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the “sole purpose,” no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	0/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	—
	Cooperation with the CTBTO Preparatory Commission	0/2
	Contribution to the development of the CTBT verification systems	0/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	0/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	0/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	1/1

（２）Nuclear Non-Proliferation　Points 21/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	4/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	0/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	0/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	0/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	0/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	0/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	0/2
	Reporting on plutonium management	0/2

（３）Nuclear Security　Points　6/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	0/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	1/2
	Convention on Nuclear Safety	1/2
	Convention on Early Notification of a Nuclear Accident	1/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	1/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	0/4
	Prevention of illicit trafficking	0/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	0/3

Turkey

Turkey is not particularly active on nuclear disarmament comparerd to other non-nuclear-weapon states. It is hosting U.S. non-strategic nuclear weapons as part of NATO's nuclear sharing policy. Turkey has implemented concrete measures on nuclear non-proliferation and nuclear security, with a few exceptions in terms of acceding to treaties and participating in international cooperation regarding nuclear security.

（1）Nuclear Disarmament　Points　11/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	—
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	4/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	0/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	—
	A concrete plan for further reduction of nuclear weapons	—
	Trends on strengthening/modernizing nuclear weapons capabilities	—
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	—
	Commitment to the "sole purpose," no first use, and related doctrines	—
	Negative security assurances	—
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	-5/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	—
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	—
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	2/2
	Nuclear Testing	—
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	—
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	—
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	—
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	—
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	—
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0/1

（２）Nuclear Non-Proliferation　Points 48/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	1/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	5/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	2/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　24/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	2/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	2/5
	Acceptance of international nuclear security review missions	2/2
	Technology development —nuclear forensics	2/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	1/3

UAE

On export controls, UAE established national legislation which includes a catch-all control, but it is not clear how effectively UAE has implemented such measures. UAE's performance in implementing nuclear security has generally progressed, except certain areas of participation in international cooperation. The UAE co-hosted a PSI exercise from January-February 2013.

(1) Nuclear Disarmament Points 18/39

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	–
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	6/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	2/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	–
	A concrete plan for further reduction of nuclear weapons	–
	Trends on strengthening/modernizing nuclear weapons capabilities	–
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	–
	Commitment to the "sole purpose," no first use, and related doctrines	–
	Negative security assurances	–
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	–
	Relying on extended nuclear deterrence	0/-5
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	–
CTBT	Signing and ratifying the CTBT	4/4
	The moratorium on nuclear test explosions pending CTBT's entry into force	–
	Cooperation with the CTBTO Preparatory Commission	2/2
	Contribution to the development of the CTBT verification systems	0/2
	Nuclear Testing	–
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	1/5
	Moratorium on the production of fissile material for use in nuclear weapons	–
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	–
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	–
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	–
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/2
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	–
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	1/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0/1

（２）Nuclear Non-Proliferation　Points 45/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	10/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	7/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	4/4
	Signing and Ratifying an Additional Protocol	5/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	5/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	1/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	3/5
	Requiring the conclusion of the Additional Protocol for nuclear export	1/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	2/3
	Participation in the PSI	1/2
	Civil nuclear cooperation with non-parties to the NPT	3/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	2/2
	Reporting on plutonium management	1/2

（３）Nuclear Security　Points　25/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	0/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	3/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	2/2
	Convention on Nuclear Safety	2/2
	Convention on Early Notification of a Nuclear Accident	2/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	2/2
	INFCIRC/225/Rev.5	2/4
	Enactment of laws and establishment of regulations for the national implementation	2/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	3/4
	Prevention of illicit trafficking	4/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	1/3

(4) Other

North Korea

North Korea conducted its third nuclear test explosion in February 2013, and emphasizes to maintain its nuclear deterrent capabilities. North Korea, which declared to withdraw from the NPT in 2003, reneges on most of the nuclear-related treaties, agreements, obligations and norms.

（1）Nuclear Disarmament　Points　-7/91

Article	Evaluation Criteria	Points
Status of Nuclear Forces	Status of Nuclear Forces (estimates)	-5/-20
Commitment to Achieve a World without Nuclear Weapons	Voting behavior on the UNGA resolutions on nuclear disarmament proposed by Japan, NAC and NAM	2/6
	Voting behavior on the UNGA resolutions calling for commitment of negotiations on a Nuclear Weapons Convention	2/2
	Announcement of significant policies and important activities	0/3
	Humanitarian consequences of nuclear weapons	0/3
Reduction of Nuclear Weapons	Reduction of nuclear weapons	0/15
	A concrete plan for further reduction of nuclear weapons	0/3
	Trends on strengthening/modernizing nuclear weapons capabilities	0/4
Diminishing the Role and Significance of Nuclear Weapons in the National Security Strategies and Policies	The current status of the roles and significance of nuclear weapons	-7/-8
	Commitment to the “sole purpose,” no first use, and related doctrines	0/3
	Negative security assurances	1/2
	Signing and ratifying the protocols of the treaties on nuclear-weapon-free zones	—
	Relying on extended nuclear deterrence	—
De-alerting	De-alerting or Measures for Maximizing Decision Time to Authorize the Use of Nuclear Weapons	3/4
CTBT	Signing and ratifying the CTBT	0/4
	The moratorium on nuclear test explosions pending CTBT’s entry into force	0/3
	Cooperation with the CTBTO Preparatory Commission	0/2
	Contribution to the development of the CTBT verification systems	0/2
	Nuclear Testing	-3/-3
FMCT	Commitment, efforts, and proposals toward immediate commencement of negotiations on an FMCT	0/5
	Moratorium on the production of fissile material for use in nuclear weapons	0/3
	Contribution to the development of verification measures	0/2
Transparency	Transparency in Nuclear Forces, Fissile Material for Nuclear Weapons, and Nuclear Strategy/Doctrine	0/6
Verifications of Nuclear Weapons Reductions	Acceptance and implementation of verification for nuclear weapons reduction	0/3
	Engagement in research and development for verification measures of nuclear weapons reduction	0/1
	The IAEA inspections to fissile material declared as no longer required for military purposes	0/3
Irreversibility	Implementing or planning dismantlement of nuclear warheads and their delivery vehicles	0/3
	Decommissioning/conversion of nuclear weapons-related facilities	0/2
	Measures for the fissile material declared excess for military purposes, such as disposition or conversion to peaceful purposes	0/2
Education	Disarmament and Non-proliferation Education and Cooperation with Civil Society	0/4
Hiroshima Peace Memorial Ceremony	Hiroshima Peace Memorial Ceremony	0/1

（２）Nuclear Non-Proliferation　Points 0/61

Article	Evaluation Criteria	Points
Acceptance and Compliance with the Nuclear Non-Proliferation Obligations	Accession to the NPT	0/10
	Compliance with Articles 1 and 2 of the NPT and the UNSC resolutions on non-proliferation	0/7
	Nuclear-Weapon-Free Zones	0/3
IAEA Safeguards Applied to the NPT NNWS	Signing and Ratifying a Comprehensive Safeguards Agreement	0/4
	Signing and Ratifying an Additional Protocol	0/5
	Implementation of the integrated safeguards	0/4
	Compliance with the IAEA Safeguards Agreement	0/5
IAEA Safeguards Applied to NWS and Non-Parties to the NPT	Application of the IAEA safeguards (VOA or INFCIRC/66) to their peaceful nuclear in facilities	—
	Signing, ratifying, and implementing the Additional Protocol	—
Cooperation with the IAEA	Efforts for strengthening the safeguards	0/4
Implementing Appropriate Export Controls on Nuclear-Related Items and Technologies	Establishment and implementation of the national implementation system	0/5
	Requiring the conclusion of the Additional Protocol for nuclear export	0/2
	Implementation of the UNSCRs concerning North Korean and Iranian nuclear issues	0/3
	Participation in the PSI	0/2
	Civil nuclear cooperation with non-parties to the NPT	0/3
Transparency in the Peaceful Use of Nuclear Energy	Reporting on the peaceful nuclear activities	0/2
	Reporting on plutonium management	0/2

（３）Nuclear Security　Points　-2/41

Article	Evaluation Criteria	Points
The Amount of Fissile Material	The Amount of Fissile Material Usable for Weapons	-5/-16
Status of Accession to Nuclear Security and Safety-Related Conventions, Participation to Nuclear Security Related Initiatives, and Application to Domestic Systems	Convention on the Physical Protection of Nuclear Material and the 2005 Amendment to the Convention	0/3
	International Convention for the Suppression of Acts of Nuclear Terrorism	0/2
	Convention on Nuclear Safety	0/2
	Convention on Early Notification of a Nuclear Accident	1/2
	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	0/2
	Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency	1/2
	INFCIRC/225/Rev.5	0/4
	Enactment of laws and establishment of regulations for the national implementation	1/4
Efforts to Maintain and Improve the Highest Level of Nuclear Security	Minimization of HEU in civilian use	0/4
	Prevention of illicit trafficking	0/5
	Acceptance of international nuclear security review missions	0/2
	Technology development —nuclear forensics	0/2
	Capacity building and support activities	0/2
	IAEA Nuclear Security Plan and Nuclear Security Fund	0/2
	Participation in international efforts	0/3

Abbreviation

ALCM	Air Launch Cruise Missile
AG	Australia Group
ASEAN	Association of Southeast Asian Nations
ASTOP	Asian Senior-level Talks on Non-Proliferation
ATM	Atmospheric Transport Model
AWE	Atomic Weapons Establishment
CBRN	Chemical, Biological, Radiological, Nuclear
CD	Conference on Disarmament
COE	Center of Excellence
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	CTBT Organization
CTR	Cooperative Threat Reduction
CWC	Chemical Weapons Convention
DBT	Design Basis Threat
DCA	Dual-Capable Aircraft
DDPR	Deterrence and Defense Posture Review
DIA	Defense Intelligence Agency
EU	European Union
EURATOM	European Atomic Energy Community
FMCT	Fissile Material Cut-Off Treaty
G8GP	G8 Global Partnership
GEM	Group of Eminent Persons
GGE	Group of Governmental Experts
GICNT	Global Initiative to Combat Nuclear Terrorism
GTRI	Global Threat Reduction Initiative
HEU	Highly Enriched Uranium
HLPM	High Level Political Meeting
IAEA	International Atomic Energy Agency
ICAN	International Campaign to Abolosh Nuclear Weapons
ICBM	Inter-Continental Ballistic Missile
ICC	International Criminal Court
ICJ	International Court of Justice
ICNND	International Commission on Nuclear Non-proliferation and Disarmament
IMS	International Monitoring System
INF	Intermediate-range Nuclear Forces
INSServ	International Nuclear Security Advisory Service
INTERPOL	International Criminal Police Organization
IOC	Initial Operational Capability
IPFM	International Panel on Fissile Materials
IPPAS	International Physical Protection Advisory Service
ISIS	Institute for Science and International Security
ITDB	Illicit Trafficking Database
ITWG	Nuclear Forensics International Technical Working Group
LEU	Low Enriched Uranium
LOF	Locations outside Facilities
LOW	Launch on Warning
LUA	Launch under Attack
MaRV	Maneuverable Reentry Vehicle
MD	Missile Defense
MFFF	Mixed Oxide Fuel Fabrication Facility
MIRV	Multiple Independently-targetable Reentry Vehicle
MOX	Mixed Oxide
MTCR	Missile Technology Control Regime

NAC	New Agenda Coalition
NAM	Non-Aligned Movement
NATO	North Atlantic Treaty Organization
NNSA	National Nuclear Security Administration
NPR	Nuclear Posture Review
NPDI	Non-Proliferation and Disarmament Initiative
NPEG	Non-Proliferation Experts Group
NPT	Nuclear Non-Proliferation Treaty
NSF	Nuclear Security Fund
NSG	Nuclear Suppliers Group
NSTC/NSSC	International Network for Nuclear Security Training and Support Centers
NTI	Nuclear Threat Initiative
OEWG	Open-Ended Working Group
PSI	Proliferation Security Initiative
SIPRI	Stockholm International Peace Research Institute
SIR	Safeguards Implementation Report
SLBM	Submarine Launched Ballistic Missile
SLN	Sandia National Laboratories
SRBM	Short-Range Ballistic Missile
SSBN	Ballistic Missile Submarine Nuclear-Powered
SSGN	Cruise missile submarine
SSN	Attack Submarines
SSP	Stockpile Stewardship Program
START	Strategic Arms Reduction Treaty (Talks)
TRR	Tehran Research Reactor
WA	Wassenaar Arrangement
WCO	World Customs Organization
WMD	Weapons of Mass Destruction