

Chapter 2. Nuclear Nonproliferation¹

(1) ACCEPTANCE AND COMPLIANCE WITH NUCLEAR NON-PROLIFERATION OBLIGATIONS

A) Accession to the NPT

The Nuclear Non-Proliferation Treaty (NPT) has 191 adherents (including the Holy See and Palestine). Among the current 193 United Nations (UN) Member States, those remaining outside the 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 possess any nuclear weapons; and, arguably, North Korea. North Korea declared its withdrawal from the NPT in 2003, but there is no agreement among the states parties on North Korea's official status. It has refused to return to the Treaty despite UN Security Council resolutions (UNSCRs) demanding that it do so at an early date.

B) Compliance with Articles I and II of the NPT and the UNSC resolutions on non-proliferation

NORTH KOREA

Since the NPT entered into force, no case of non-compliance with Articles I and II of the Treaty has been officially reported by the United Nations or any other international organization.² 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 non-compliance with Article II. The U.S. State Department clearly stated in its 2017 report, titled "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," that North Korea was in violation of its obligations under Articles II and III of the NPT and in non-compliance with its International Atomic Energy Agency (IAEA) Safeguards Agreement at the time it announced its withdrawal from the NPT in 2003.³

UNSCR 1787, adopted in October 2006, stipulates that:

[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 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.⁴

[1] This chapter is written by Hirofumi Tosaki.

[2] No international body is explicitly mandated with a responsibility for assessing compliance with these articles, apart from the IAEA's safeguards verification mandate.

[3] U.S. Department of State, "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," April 2017, <https://www.state.gov/t/avc/rls/rpt/2017/270330.htm>.

[4] S/RES/1718, October 14, 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)."

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 manner.” In defiance, North Korea has failed to respond to the UN Security Council’s decisions, and has continued nuclear weapon and ballistic missile-related activities, including its sixth nuclear test in September 2017.

The year 2017 again saw the absence of any negotiations with North Korea over its nuclear program. In August 2017, U.S. Secretary of State Rex W. Tillerson offered negotiations with North Korea if it surrendered its nuclear weapons. He also offered a set of four assurances, saying: “We do not seek a regime change, we do not seek the collapse of the regime, we do not seek an accelerated reunification of the peninsula, we do not seek an excuse to send our military north of the 38th parallel.”⁵ In late September, Tillerson repeated his outreach effort. A day later, however, President Donald Trump undercut these efforts by tweeting: “I told Rex Tillerson, our wonderful Secretary of State, that he is wasting his time trying to negotiate with Little Rocket Man.”⁶ For its part, North Korea insisted that it would not engage in dialogue unless the United States renounced its “hostile policy”; and it had no intention to negotiate over its nuclear weapons except as part of arms control talks in which the US also put its weapons on the table.⁷ The Six-Party Talks have not been convened since March 2007 due to North Korea’s actions contrary to the purpose of the talks and its refusal to re-commit to denuclearization.

There have been positive developments between North and South Korea, however. In his New Year address of January 2018, while flaunting possession

of a claimed nuclear deterrent and urging cancellation of U.S.-South Korean joint military exercises, Kim Jong-un, the Chairman of the Workers’ Party of Korea, stated:

The north and the south should desist from doing anything that might aggravate the situation, and they should make concerted efforts to defuse military tension and create a peaceful environment. The south Korean authorities should respond positively to our sincere efforts for a detente, instead of inducing the exacerbation of the situation by joining the United States in its reckless moves for a north-targeted nuclear war that threatens the destiny of the entire nation as well as peace and stability on this land.⁸

Responding positively, South Korea repeated an offer to hold a bilateral high-level talks and announced that the United States and South Korea agreed to postpone their joint military exercise until after the Pyeongchang Winter Olympics and Paralympic Games in February-March 2018. South-North high-level talks were subsequently held on January 9, 2018. In a Joint Statement they said that they agreed on: the North’s participation in the Pyeongchang Winter Olympics and Paralympic Games; alleviation of the military tension; and resolution of the South-North issues bilaterally. However, North Korea reportedly insisted that it had no intention to discuss its nuclear issues with the South.

IRAN

The E3/EU+3 (France, Germany and the United Kingdom/European Union plus China, Russia and the United States) and Iran agreed the Joint

[5] “North Korea: US Not Seeking Regime Change, Says Rex Tillerson,” *BBC*, August 2, 2017, <http://www.bbc.com/news/world-us-canada-40797613>.

[6] Peter Baker and David E. Sanger, “Trump Says Tillerson Is ‘Wasting His Time’ on North Korea,” *New York Times*, October 1, 2017, <https://www.nytimes.com/2017/10/01/us/politics/trump-tillerson-north-korea.html>.

[7] See, for instance, Foster Klug and Hyung-Jin Kim, “North Korea Refuses to Put Its Nuclear on the Negotiating Table,” *Christian Science Monitor*, July 5, 2017, <https://www.csmonitor.com/World/Asia-Pacific/2017/0705/North-Korea-refuses-to-put-its-nuclear-program-on-the-negotiating-table>.

[8] “Kim Jong Un’s 2018 New Year’s Address,” January 1, 2018, <https://www.ncnk.org/node/1427>.

Comprehensive Plan of Action (JCPOA) on July 14, 2015 in Vienna.⁹ Since then, the IAEA has submitted quarterly reports to the Board of Governors confirming Iran's adherence to its nuclear obligations under the JCPOA. The main points of the IAEA November 2017 report are:¹⁰

- At the Fuel Enrichment Plant (FEP) at Natanz, there have been no more than 5,060 IR-1 centrifuges;
- Iran's total enriched uranium stockpile has not exceeded 300 kg of UF₆ enriched up to 3.67% U-235 (or the equivalent in different chemical forms). The quantity of 300 kg of UF₆ corresponds to 202.8 kg of uranium;
- Iran has not enriched uranium above 3.67% U-235;
- Iran's stock of heavy water was 114.4 metric tonnes. Throughout the reporting period, Iran had no more than 130 metric tonnes of heavy water;
- Iran has accepted the IAEA safeguards;
- Iran has continued to permit the Agency to use on-line enrichment monitors and electronic seals which communicate their status within nuclear sites to Agency inspectors, and to facilitate the automated collection of Agency measurement recordings registered by installed measurement devices;
- Iran has continued to permit the Agency to monitor...that all uranium ore concentrate (UOC) produced in Iran or obtained from any other source is transferred to the Uranium Conversion Facility (UCF) at Esfahan;
- Iran continues to provisionally apply the Additional Protocol to its Safeguards Agreement in accordance with Article 17(b) of the Additional Protocol, pending its entry into force. The Agency has continued to evaluate Iran's declarations under the Additional Protocol, and has conducted complementary

accesses under the Additional Protocol to all the sites and locations in Iran which it needed to visit.

- The Agency's verification and monitoring of Iran's nuclear-related commitments set out in Section T of Annex I continues. (Section T prohibited certain activities relevant to the development of nuclear weapons, but the JCPOA did not say how these prohibitions were to be verified.)

On the other hand, statements by the U.S. new administration raised concerns about the future of the JCPOA. President Trump criticized the agreement even before his inauguration. In March 2016, he said, "My number one priority is to dismantle the disastrous deal with Iran." Under the Iran Nuclear Agreement Review Act (INARA), the president is required to issue a certification to Congress every 90 days determining that: 1) Iran is fully implementing the JCPOA; 2) Iran has not committed a material breach; 3) Iran has not taken any action that could significantly advance a nuclear weapons program; and 4) suspension of sanctions is appropriate and proportionate to the measures taken by Iran and vital to U.S. national security interests.

President Trump issued certifications in April and July 2017. However, on October 13, after a review of the administration's Iran policy, he decided not to certify Iran's compliance on grounds of the fourth condition. He also claimed "Iran is not living up to the spirit of the deal," including Iran's support for terrorism. Such certification decisions are an internal US requirement, not part of the JCPOA. Meanwhile, President Trump continued to suspend sanctions, as required by the accord. His decision not to certify triggered a 60-day period under the INARA, in which the U.S. Congress had expedited authority to reinstitute pre-JCPOA sanctions, although this period

[9] "Joint Comprehensive Plan of Action," Vienna, July 14, 2015. JCPOA is posted on the U.S. State Department's website (<http://www.state.gov/e/eb/tfs/spi/iran/jcpoa/>).

[10] GOV/2017/48, November 13, 2017.

passed without any such Congressional action. In his October 13 statement, President Trump urged removal of the JCPOA's "sunset clause," which he said would allow Iran to conduct unrestricted nuclear activities (including enriching uranium) after a certain period. He also sought restrictions on Iran's missile program, stating that, "in the event we are not able to reach a solution working with Congress and our allies, then the agreement will be terminated."¹¹

Other parties sought to protect the JCPOA. Iran insisted that it continues to fully implement the agreement. Iran's Supreme Leader Ayatollah Ali Khamenei stated, "we will not tear up the [nuclear] deal before the other party does so."¹² The EU is also determined to preserve the JCPOA.¹³ In addition, IAEA Director General Yukiya Amano stated: "The IAEA's verification and monitoring activities address all the nuclear-related elements under the JCPOA. They are undertaken in an impartial and objective manner and in accordance with the modalities defined by the JCPOA and standard safeguards practice...So far, the IAEA has had access to all locations it needed to visit. At present, Iran is subject to the world's most robust nuclear verification regime."¹⁴

While Iran's President Hassan Rouhani underlined that Iran's preference is to remain in the accord, he warned that it would withdraw from the JCPOA

and revive suspended nuclear activities if the United States continues "threats and sanctions" against Iran.¹⁵ He also insisted that Iran had no intention to renegotiate the JCPOA.¹⁶ Furthermore, Iran argued that its ballistic missiles were not in violation of the UN Security Council Resolution because they are not intended for delivery of nuclear warheads, and that Iran's supreme leader has restricted the range of ballistic missiles manufactured in the country to 2,000 km, which limits their reach largely to regional Middle East targets.¹⁷ The United States was not the only state to express concern about Iran's ballistic missiles. While France maintains its position that the JCPOA should be preserved, it said that, separate from the agreement, it wanted an uncompromising dialogue with Iran about its ballistic missiles.¹⁸

WITHDRAWAL FROM THE NPT

Although Article X-1 of the NPT contains some guidance on how a state can legitimately withdraw from the treaty, there remains a lack of clarity over some aspects of this process. Concerns have focused on a state choosing to withdraw from the NPT, after first acquiring nuclear weapons in violation of the Treaty. Japan, South Korea and other several Western countries have proposed measures to prevent the right of withdrawal from being abused.

In 2017, few remarkable proposals or arguments were

[11] "Remarks by President Trump on Iran Strategy," October 13, 2017, <https://www.whitehouse.gov/the-press-office/2017/10/13/remarks-president-trump-iran-strategy>; "President Donald J. Trump's New Strategy on Iran," October 13, 2017, <https://www.whitehouse.gov/the-press-office/2017/10/13/president-donald-j-trumps-new-strategy-iran>.

[12] "Khamenei: Iran Won't Be First to Abandon Nuclear Deal," *Al-Monitor*, October 18, 2017, <https://www.al-monitor.com/pulse/originals/2017/10/khamenei-reaction-trump-policy-speech-nuclear-deal-jcpoa.html>.

[13] "EU Committed to Iran Nuclear Deal," *World Nuclear News*, October 16, 2017, <http://www.world-nuclear-news.org/NP-EU-committed-to-Iran-nuclear-deal-1610177.html>.

[14] "Statement by IAEA Director General Yukiya Amano," IAEA, October 13, 2017, <https://www.iaea.org/newscenter/statements/statement-by-iaea-director-general-yukiya-amano-13-october-2017>.

[15] Nasser Karimi, "Iranian President Threatens to Revitalize Nuclear Program," *Associated Press*, August 15, 2017, <https://www.apnews.com/3a08240c809a40db86566af3ef844229>.

[16] "Iran Nuclear Deal Cannot Be Renegotiated: Rouhani," *Reuters*, September 21, 2017, <https://www.reuters.com/article/us-iran-politics-nuclear-deal/iran-nuclear-deal-cannot-be-renegotiated-rouhani-idUSKCN1BW1NM>.

[17] Jon Gambrell, "Iran Says Supreme Leader Limiting Ballistic Missile Range," *Associated Press*, October 31, 2017, <https://apnews.com/a9b9ff80f4424ce5be3a4a81e04dc8dc/Iran-Guard:-Supreme-leader-limiting-ballistic-missile-range>.

[18] John Irish, "Despite EU Caution, France Pursues Tough Line on Iran Missile Program," *Reuters*, November 15, 2017, <https://www.reuters.com/article/us-iran-nuclear-france-eu/despite-eu-caution-france-pursues-tough-line-on-iran-missile-program-idUSKBN1DF23M>.

made. At the 2015 NPT Review Conference (RevCon),¹⁹ western countries insisted that withdrawal from the NPT should be made difficult by adding several conditions, while they also acknowledged the right of states parties to withdraw. Among NWS, Chinese and Russian positions on this issue seem more cautious than those of France, the United Kingdom and the United States. Some NNWS, including the Non-Aligned Movement (NAM) countries, argue that there is no need to revise or reinterpret Article 10 on a withdrawal from the NPT, which is the right of all state parties.

C) Nuclear-Weapon-Free Zones

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 Security and Nuclear-Weapon-Free-Status” every two years since 1998, in support of Mongolia’s declaration.²⁰ All the states eligible to join the NWFZs in Latin America, Southeast Asia and Central Asia are parties to the respective NWFZ treaties.

Regarding efforts for establishing a Middle East Zone Free of WMD, the convening of an international conference, agreed at the 2010 NPT RevCon, could

not be achieved before the 2015 NPT RevCon. Furthermore, at the latter RevCon, a final document was not adopted due to a lack of consensus on the language regarding that international conference. At the 2017 NPT PrepCom, Middle Eastern countries, with the notable exception of Egypt, Iran, Lebanon and Syria, urged that such a conference be held prior to the 2020 NPT RevCon.²¹ Russia stated: “Convening a conference on the WMD-free zone remains an urgent and achievable objective in the context of implementing the 1995 Resolution on the Middle East. Preparation for this event, including achieving the agreement on all organizational modalities and substantive issues should be started as soon as possible. Russia as one of the co-sponsors of the 1995 Resolution is willing to fully support this process.”²² However, Egypt, which repeated deep dissatisfaction about the failure of its convening by 2015, has not assented to such a proposal of holding the international conference within the 2020 NPT review process period.²³ The United States also criticized the proposal on grounds that “the conditions necessary for a Middle East WMD-free zone do not currently exist,” adding that “misguided attempts to coerce an outcome, or to hold the NPT review process hostage, indicate a misunderstanding of the function and purpose of weapons-free zones.”²⁴

In 2017, the UNGA resolution, titled “Establishment of a nuclear-weapon-free zone in the region of the Middle East,”²⁵ was adopted without a vote, as had happened in the past. However, few concrete measures are mentioned in the resolution.

Concerning Northeast Asia and South Asia, while

[19] On the arguments and proposals made at the 2015 NPT RevCon by countries surveyed in this report, see the *Hiroshima Report 2016*.

[20] 53/77D, December 4, 1998.

[21] NPT/CONF.2020/PC.I/WP.30, May 4, 2017.

[22] “Statement by Russia,” General Debate, First Session of the Preparatory Committee for the 2020 NPT Review Conference, May 2, 2017. See also NPT/CONF.2020/PC.I/WP.31, May 8, 2017.

[23] “Statement by Egypt,” Cluster 2, Specific Issue, First Session of the Preparatory Committee for the 2020 NPT Review Conference, May 8, 2017.

[24] “Statement by the United States,” Cluster 2, Regional Issues, First Session of the Preparatory Committee for the 2020 NPT Review Conference, May 8, 2017.

[25] A/RES/72/24, December 4, 2017.

initiatives for establishing NWFZs have been proposed by the private sectors in the respective regions, there is no indication that state parties in these regions are taking any serious initiative toward such a goal. Meanwhile, in its report submitted to the 2015 NPT RevCon, Mongolia expressed a willingness to “[p]lay an active role in promoting the idea of establishing a nuclear weapon-free zone in north-east Asia.”²⁶

[26] NPT/CONF.2015/8, February 25, 2015.

[Column 7] Regional Security and Nuclear Weapons-Free Zones

John H. King

Regional security is an important way to augment general worldwide security. But it is a confusing concept, primarily because it is so difficult to define. What are the elements of regional security? When is it achieved? Is it a goal or a process? The answers to these and related questions indicate that credible regional security depends on using a variety of security-related instruments in a redundant and overlapping way. And these elements must be directly targeted to the specific needs of any given region.

One of these instruments is the Nuclear Weapons-Free Zone (NWFZ), which has long been recognized as a way to enhance security in various regions of the world. NWFZs seek to augment regional security by emphasizing the absence of nuclear weapons there as well as by formalizing the agreement of Nuclear-Weapons States (NWS) not to bring into or use nuclear weapons within those regions. In this sense, NWFZ agreements are highly visible symbols that support the objectives of the Nuclear Nonproliferation Treaty (NPT) and give it increased political and legal weight within a region.

Furthermore, regional NWFZ treaties work even better when augmented by other legal and political instruments such as non-aggression pacts, no-first-use (of nuclear weapons) declarations, conventional arms control treaties and the like. But NWFZ treaties have a primary place in the panoply of regional security elements because of their special political visibility, the

fact that the main states in the region are directly involved, and because the five nuclear powers recognized in the NPT sign special protocols giving specific assurances on observing NWFZ treaty requirements.

Although many regions of the world are already covered by NWFZ treaties, important areas remain outside these treaty zones. The two most important are the regions of the Middle East and of Northeast Asia. (Europe and North America are important regions as well but are not examined here since they are composed mostly of non-nuclear countries that nevertheless have implicit nuclear obligations as a result of their NATO treaty membership.)

While the effort to achieve a Middle Eastern NWFZ treaty has received much attention in the UN and its First Committee (Disarmament) for many years, far less attention has been focused on the possibility of such a treaty for the Northeast Asian region. While there are fewer potential members of such a treaty in this region (see below), there could be substantial benefits for the region if an appropriate NFWZ treaty could be achieved. This is because the Northeast Asian region runs through a fault line of potentially immediate nuclear conflict, given the existence there of nuclear-armed states and states protected by “nuclear-umbrella” security treaties that do not exist in other such regions. But this is also why a NWFZ treaty for this region would be so very difficult to achieve, and yet so much more important.

A definition of the Northeast Asia security region would include the following states or regions: China, Mongolia, South Korea, North Korea, Russia and Japan. Note, however, that this definition has important anomalies. Mongolia already has Nuclear Weapon-Free (NWF) status,

while formerly independent Macao and Hong Kong are now part of China even though they have a degree of autonomy within that country. China and Russia are defined as NWS, while North Korea possesses nuclear weapons and has left the NPT. South Korea and Japan have defense agreements with the United States that place them under the U.S. nuclear umbrella even if both countries foreswear permitting nuclear weapons into their territories. (Nevertheless, both are NPT members and could thus form a NWFZ.) Taiwan is not recognized as a Member State by the UN and legally cannot be a member of a state-based agreement such as a NWFZ treaty, even if it already adheres informally to the principles of many arms control and disarmament treaties.

For the Northeast Asia region, the most immediate security threat is posed by North Korea's nuclear weapons and rogue state status. This must be dealt with first and foremost, with Japan and South Korea playing a major role in view of their close proximity to North Korea. In this regard, presented below are some options for improving regional security such as modified NWFZs, related *sui generis* arrangements and political/diplomatic elements that would lead to improved confidence and security. These options admittedly require new and "outside the box" political thinking and cooperation, but the deteriorating security situation in the region requires this.

First, both Japan and South Korea could seek to join the Bangkok Treaty—amended to permit expansion—thus converting it into an East Asian NWFZ. Article 15 of that Treaty provides for accession by additional states. The main advantage is that the adhesion of both countries to the Bangkok Treaty would give that Treaty greater visibility and effectiveness within the

enlarged zone in dealing with North Korea's nuclear weapons capabilities.

Second, and failing the possibility of joining the Bangkok Treaty, Japan and South Korea could simply establish a Northeast Asia NWFZ between themselves. Although lacking the greater support that an expanded Bangkok Treaty would offer, the smaller NWFZ could still produce a noticeable security effect in the region by demonstrating both countries' desire to work together to offset North Korea's threatening nuclear posture.

Third, as the regional countries most affected, Japan and South Korea together could seek – in partnership with the NWS – the normalization of relations with North Korea so as to provide the political base for dealing peacefully with the security problems caused by its nuclear status. There is precedent: the normalization of relations between the U.S. and China in 1979. Should this be possible – and there is no reason it should not be if planned and executed carefully – steps could then be taken to negotiate an end to the still-existing 1953 armistice as well as various complementary actions to reduce security tensions in the Northeast Asian area and, most importantly, to avoid a catastrophic war.

A necessary precondition, however, would have to be open recognition that North Korea's possesses nuclear weapons. In this regard, there are precedents since members of the international community have already done as much with Israel, Pakistan and India. Such recognition could facilitate negotiations leading ultimately to the re-association of North Korea with the international community and the regularization of the political status of the Korean peninsula, among other goals. A regional East Asia or Northeast Asia NWFZ treaty with its implementing/review organizations would

enhance operational and political efforts to this end and would provide a coordination mechanism concerning nuclear disarmament strategies. The benefits for regional security in Northeast Asia, and for Japan and South Korea in particular, could be enormous.

The proposals made above are just a few examples of steps that might be taken to achieve these important goals. There are obviously others or combinations thereof that can also be considered. The point is that if the security of the Northeast region is to be satisfactorily achieved, a great deal of inventiveness and willingness to shatter long-standing (not to say encrusted) policies will be needed. Hopefully the countries of the region will be able to meet the challenge.

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(2) IAEA SAFEGUARDS APPLIED TO THE NPT NNWS

A) Conclusion of IAEA Safeguards Agreements

Under Article III-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, which each state negotiates with the IAEA and then signs and ratifies. As of December 2016, 12 NPT NNWS have yet to conclude CSAs with the IAEA.²⁷

In accordance with a strengthened safeguards system in place since 1997, 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. As of December 2017, 126 NPT NNWS have ratified Additional Protocols. Honduras, Senegal and Thailand newly ratified them in 2017. Iran started provisional implementation of the Additional Protocol in January 2016, while it has yet to ratify the Protocol.

A state’s faithful 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 so-called “integrated safeguards,” which is 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.” As of the end of 2016, 69 NNWS have applied integrated safeguards.²⁸

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. In addition to the IAEA safeguards, EU countries accept safeguards conducted by EURATOM, and Argentina and Brazil conduct mutual inspections under the bilateral Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC).

In 2005, the IAEA modified what is called the Small Quantity Protocol (SQP) which until then held in abeyance most of the operative provisions of the IAEA’s verification tools for states which have only very small quantities of nuclear material. In the resolution, “Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards” adopted in September 2016, the IAEA General Conference called on all States with unmodified Small Quantity Protocols (SQPs) to either rescind or amend them.²⁹ As of June 2017, the amended SQPs for the respective 56 countries were entered into force. Among states that have announced an intention to introduce nuclear energy, Saudi Arabia has yet to accept an amended SQP.

[27] This number includes Palestine, which acceded to the NPT in 2015. Those 12 countries have little nuclear material, or do not conduct nuclear-related activities.

[28] IAEA, *IAEA Annual Report 2016*, September 2017, p. 14.

[29] GC(61)/16, July 26, 2017.

B) Compliance with IAEA Safeguards Agreements

The IAEA Annual Report 2016 stated:

Of the 124 States that had both a CSA and an [Additional Protocol (AP)] in force the Agency concluded that all nuclear material remained in peaceful activities for 69 States; for the remaining 55 States, as the necessary evaluation regarding the absence of undeclared nuclear material and activities for each of these States remained ongoing, the Agency concluded only that declared nuclear material remained in peaceful activities. For 49 States with a CSA but with no AP in force, the Agency concluded that declared nuclear material remained in peaceful activities.³⁰

NORTH KOREA

Because North Korea since 2002 has refused to accept the IAEA safeguards, the agency has attempted to analyze the North's nuclear activities through satellite images and other information. The IAEA Director-General summarized the current situation of North Korea's nuclear issues in relation to the implementation of the IAEA safeguards in August 2017, as follows.³¹

- 5 MW Graphite Reactor: there were indications consistent with the reactor's operation, including steam discharges and the outflow of cooling water.
- Radiochemical Laboratory: The Agency has not observed indications of it being in operation during the reporting period.³²
- Yongbyon Nuclear Fuel Rod Fabrication Plant: There were indications consistent with the use of the reported centrifuge enrichment facility

located within the plant.

- Light Water Reactor (LWR) under construction: There were indications in the LWR construction yard of an increase in activities consistent with the fabrication of certain reactor components. The Agency has not observed indications of the delivery or introduction of major reactor components into the reactor containment building.
- The Pyongsan Mine and Concentration Plant: There were indications of ongoing mining, milling and concentration activities at locations previously declared as the Pyongsan uranium mine and the Pyongsan uranium concentration plant.

In this report, the IAEA unveiled that “in August 2017, a DPRK Team was formed within the Department of Safeguards. The purpose of this team is to enhance the monitoring of the DPRK's nuclear programme; maintain updated verification approaches and procedures for the nuclear facilities known to exist within the DPRK; prepare for the Agency's return to the DPRK; and ensure the availability of appropriate verification technologies and equipment.”³³

IRAN

The IAEA verifies and monitors implementation of Iran's nuclear obligations under the JCPOA, as well as the IAEA Safeguards Agreement. As mentioned above, IAEA Director-General reports have been regularly submitted to the Board of Governors every quarter. At the 2017 IAEA General Conference, Director-General Amano stated: “The Agency continues to verify the non-diversion of nuclear material declared by Iran under its Safeguards Agreement. Evaluations regarding the absence of undeclared nuclear material

[30] IAEA, *IAEA Annual Report 2016*, September 2017, p. 92.

[31] GOV/2017/36-GOV(61)/21, August 25, 2017.

[32] As reported in the chapter on Disarmament, the radiochemical laboratory was reported to have been operating intermittently earlier in the year.

[33] GOV/2017/36-GOV(61)/21, August 25, 2017.

Table 2-1: The status of the conclusion and implementation of the IAEA safeguards agreement by the NNWS party to the NPT

(as of December 2016)

	Australia	Austria	Belgium	Brazil	Canada	Chile	Egypt	Iran	Germany	Indonesia
CSA (Year)*	1974	1996	1997	1994	1972	1995	1982	1974	1977	1980
Additional Protocol (Year) *	1997	2004	2004		2000	2003		Signed**	2004	1999
Broader conclusion drawn	○	○	○		○	○			○	○
Integrated safeguards	○	○	○		○	○			○	○

	Japan	Kazakhstan	South Korea	Mexico	Netherlands	New Zealand	Nigeria	Norway	Philippines
CSA (Year)*	1977	1995	1975	1973	1977	1972	1988	1972	1974
Additional Protocol (Year) *	1999	2007	2004	2011	2004	1998	2007	2000	2010
Broader conclusion drawn	○	○	○		○	○		○	○
Integrated safeguards	○		○		○			○	

	Poland	Saudi Arabia	South Africa	Sweden	Switzerland	Syria	Turkey	UAE	North Korea***
CSA (Year)*	2007	2009	1991	1995	1978	1992	2006	2003	1992
Additional Protocol (Year) *	2007		2002	2004	2005		2006	2010	
Broader conclusion drawn	○		○	○	○		○		
Integrated safeguards	○		○	○					

* (Year) shows when the CSA or Additional Protocol has been enforced.

**Iran has accepted to provisionally apply the Additional Protocol.

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

Source: IAEA, "Safeguards Statement for 2016," https://www.iaea.org/sites/default/files/statement_sir_2016.pdf.

and activities in Iran continue.”³⁴

U.S. Ambassador to the UN, Nikki Haley, in August 2017 encouraged the IAEA to seek access to Iranian military bases to ensure that Iran did not conceal activities prohibited by the JCPOA, particularly nuclear weapons-related activities prohibited under Section T.³⁵ However, the IAEA reportedly responded that it would only seek access when it had legitimate reason to suspect banned activity.³⁶

SYRIA

As for Syria, the IAEA Director-General judged in May 2011 that the facility at Dair Alzour, which was destroyed by an Israeli air raid in September 2007, was very likely a clandestinely constructed, undeclared nuclear reactor. While the IAEA repeatedly called on Syria to cooperate fully with the Agency so as to solve the outstanding issues, Syria has not responded to that request.³⁷

(3) IAEA SAFEGUARDS APPLIED TO NWS AND NON-PARTIES TO THE NPT

A NWS is not required to conclude a CSA with the IAEA under the NPT. However, to alleviate the criticisms 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 tailored Additional Protocols with the IAEA.

The *IAEA Annual Report 2016* (Annex) published

in September 2017 lists facilities in NWS under Agency safeguards or containing safeguarded nuclear material.³⁸ For these five NWS, the IAEA “concluded that nuclear material to which safeguards were applied in selected facilities remained in peaceful activities or had been withdrawn from safeguards as provided for in the agreements.”³⁹ The IAEA does not publish the number of inspections conducted in the NWS. The safeguarded facilities include:

- 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 two separate storage facilities
- The United States: A separate storage facility

Each NWS has already concluded an IAEA Additional Protocol. Among them, the respective Protocols by France, the United Kingdom and the United States stipulate that the IAEA can conduct complementary access. Among them, the United States is the only country that has hosted a complementary access visit by the IAEA. Compared to the three NWS mentioned above, application of IAEA safeguards to nuclear facilities by China and Russia are more limited. No provision for complementary access visits is stipulated in their Additional Protocols.

France and the United Kingdom respectively have offered to make certain civil nuclear material subject to IAEA safeguards under trilateral agreements with EURATOM and the IAEA. However, because of the prospective withdrawal of the United Kingdom from the European Union (EU), or “Brexit”, the

[34] “Director General’s Statement to Sixty-first Regular Session of IAEA General Conference,” September 18, 2017, <https://www.iaea.org/newscenter/statements/statement-to-sixty-first-regular-session-of-iaea-general-conference-2017>.

[35] “Nuclear Inspectors Should Have Access to Iran Military Bases: Haley,” *Reuters*, August 26, 2017, <https://www.reuters.com/article/us-iran-nuclear-usa-haley-idUSKCN1B524I>.

[36] “IAEA Doesn’t Check Iran Military Sites for Nukes Because There’s ‘No Reason To,’” *Sputnik News*, September 1, 2017, <https://sputniknews.com/middleeast/201709011056978649-iran-military-sites-nuclear-weapons/>.

[37] IAEA, *IAEA Annual Report 2016*, September 2017, pp. 94-95.

[38] *IAEA Annual Report 2016*, GC(61)/3/Annex, September 2017, Table A32(a). The IAEA does not declassify the number of inspections that the IAEA conducted in each NWS, respectively.

[39] *IAEA Annual Report 2016*, September 2017, p. 96.

United Kingdom will withdraw from the EURATOM. In October 2017, a Nuclear Safeguards Bill was introduced to UK parliament, whose purpose is to establish a system of domestic safeguards to replace the existing EURATOM safeguards when the United Kingdom will withdraw from it in 2019.⁴⁰ The United Kingdom stated at the IAEA General Conference: “the UK is establishing a domestic nuclear safeguards regime which will deliver to existing Euratom standards. This will ensure that the IAEA retains its right to inspect all civil nuclear facilities, and will continue to receive all current safeguards reporting, ensuring that international verification of our safeguards activity continues to be robust.”⁴¹

Between 1996 and 2002, Russia, the United States and the IAEA undertook to investigate technical, legal and financial issues associated with IAEA verification of fissile material derived from dismantled nuclear warheads. However, such material has not yet been under the IAEA verification.

India, Israel and Pakistan have concluded facility-specific safeguards agreements based on INFCIRC/66. These non-NPT states have accepted IAEA inspections of the facilities that they declare as subject to these agreements. In this regard, Pakistan and the IAEA brought into force a safeguards agreement based on INFCIRC/66, under which two nuclear reactors provided by Pakistan are subject to the IAEA safeguards. According to the *IAEA Annual Report 2016*, the facilities placed under IAEA safeguards or containing safeguarded nuclear material in non-NPT states as of December 31, 2016 are as follows:⁴²

- India: Seven power reactors, two fuel

fabrication plants, two reprocessing plants, and a separate storage facility

- Israel: A research reactor
- Pakistan: Five power reactors and two research reactors

Regarding their activities in 2016, the IAEA “concluded that the nuclear material, facilities or other items to which safeguards were applied remained in peaceful activities.”⁴³

Concerning the protocols additional to non-NPT states’ safeguards agreements (which differ significantly from the model Additional Protocol), the Indian-IAEA Additional Protocol entered into force on July 25, 2014. This Additional Protocol is similar to ones that the IAEA concluded with China and Russia, with provisions on providing information and protecting classified information but no provision on complementary access. No negotiation has yet begun for similar protocols with Israel or Pakistan.

Some NNWS call on the NWS for further application of the IAEA safeguards to their nuclear facilities in order to alleviate a discriminative nature that NNWS are obliged to accept full scope safeguards to their respective nuclear activities while NWS do not need to do so. The NAM countries, in particular, continue to demand that the NWS and non-NPT states should accept full-scope safeguards.⁴⁴

[40] “Nuclear Safeguards Bill Introduced Today,” Press Release, *Gov.UK*, October 11, 2017, <https://www.gov.uk/government/news/nuclear-safeguards-bill-introduced-today>. The proposed bill is posted on the U.K. Parliament homepage (<https://services.parliament.uk/bills/2017-19/nuclearsafeguards.html>).

[41] “Statement by the United Kingdom,” IAEA General Conference, September 18-22, 2017, <https://www.iaea.org/sites/default/files/gc61-uk-statement.pdf>.

[42] *IAEA Annual Report 2016*, GC(61)/3/Annex, September 2017, Table A32(a). The IAEA does not declassify the number of inspections that the IAEA conducted in each country, respectively.

[43] IAEA, *IAEA Annual Report 2016*, September 2017, p. 92.

[44] NPT/CONF.2020/PC.I/WP.21, April 20, 2017.

(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, Chile, France, Germany, Indonesia, Japan, South Korea, Mexico, the Netherlands, New Zealand, Nigeria, Norway, the Philippines, Poland, 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.⁴⁵

Other countries, including Brazil, 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 safeguarding element of the nuclear non-proliferation regime.⁴⁶ In the meantime, while arguing that acceptance of the Additional Protocol is a voluntary measure, South Africa nonetheless regards it as an indispensable instrument to enable the IAEA to provide credible assurances regarding the absence of undeclared nuclear material and activities in a State;⁴⁷ and Russia called upon the countries that had not yet done so, to conclude as soon as possible the Additional Protocol.⁴⁸ The NAM countries 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.”⁴⁹ In addition, Sweden proposed to stipulate an obligation

of concluding an Additional Protocol in the Treaty on the Prohibition of Nuclear Weapons during its negotiations. However, this proposal was rejected.

In the resolution titled “Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards,” adopted at the IAEA General Conference in 2017, the following points were stated, based on divergent views regarding additional protocols:⁵⁰

- “Bearing in mind that it is the sovereign decision of any State to conclude an additional protocol, but once in force, the additional protocol is a legal obligation, encourages all States which have not yet done so to conclude and to bring into force additional protocols as soon as possible and to implement them provisionally pending their entry into force in conformity with their national legislation.”
- “Notes that, in the case of a State with a comprehensive safeguards agreement supplemented by an additional protocol in force, these measures represent the enhanced verification standard for that State.”

The IAEA has contemplated a state-level concept (SLC), in which the Agency considers a broad range of information about a country’s nuclear capabilities and tailors its safeguards activities in each country accordingly, so as to make IAEA safeguards more effective and efficient. In the resolution titled “Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards,” adopted at the IAEA General Conference in 2017, important assurances about the SLC mentioned below were welcomed:⁵¹

[45] See statements addressed by respective countries at the IAEA General Conferences and the NPT Review Conference.

[46] “Statement by Brazil,” Cluster 2, First Session of the Preparatory Committee for the 2020 NPT Review Conference, May 8, 2017.

[47] “Statement by South Africa,” General Debate, First Session of the Preparatory Committee for the 2020 NPT Review Conference, May 3, 2017.

[48] “Statement by Russia,” Cluster 2, First Session of the Preparatory Committee for the 2020 NPT Review Conference, May 8, 2017.

[49] NPT/CONF.2020/PC.I/WP.21, April 20, 2017.

[50] GC(61)/RES/12, September 21, 2017.

[51] *Ibid.*

- The SLC does not, and will not, entail the introduction of any additional rights or obligations on the part of either States or the Agency, nor does it involve any modification in the interpretation of existing rights and obligations;
- The SLC is applicable to all States, but strictly within the scope of each individual State's safeguards agreement(s);
- The SLC is not a substitute for the Additional Protocol and is not designed as a means for the Agency to obtain from a State without an Additional Protocol the information and access provided for in the Additional Protocol;
- The development and implementation of State-level approaches requires close consultation with the State and/or regional authority, particularly in the implementation of in-field safeguards measures; and
- Safeguards-relevant information is only used for the purpose of safeguards implementation pursuant to the safeguards agreement in force with a particular State—and not beyond it.

In its *Annual Report 2016*, the IAEA reported: “During 2016, the Agency completed updating State-level safeguards approaches for the remaining States in the original group of 53 States that were already under integrated safeguards at the start of 2015. In addition, it developed State-level safeguards approaches for: eight States with a CSA and an AP in force and a broader conclusion; two States with a CSA and AP in force but without a broader conclusion; and one State with a voluntary offer agreement and an AP in force.”⁵²

Regarding research and development of safeguards technologies, under its long-term plan,⁵³ the IAEA

conducted the “Development and Implementation Support Programme for Nuclear Verification 2016-2017,”⁵⁴ in which 20 countries (including Australia, Belgium, Brazil, Canada, China, France, Germany, Japan, South Korea, the Netherlands, Russia, South Africa, Sweden, the United Kingdom and the United States) and the European Commission (EC) participated.

(5) IMPLEMENTING APPROPRIATE EXPORT CONTROLS ON NUCLEAR-RELATED ITEMS AND TECHNOLOGIES

A) Establishment and implementation of national control systems

On establishing and implementing national control systems regarding export controls on nuclear-related items and technologies, there were few remarkable developments in 2017. As described in the previous *Hiroshima Report*, the following countries surveyed in this Report belong to the four international export control regimes,⁵⁵ including the Nuclear Suppliers Group (NSG), have national implementation systems in place, and have implemented effective export controls regarding nuclear- (and other WMD-) related items and technologies through list and catch-all controls: Australia, Austria, Belgium, Canada, France, Germany, Japan, South Korea, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, the United Kingdom and the United States.

These countries have also proactively made efforts to strengthen export controls. For example, Japan held the 24th Asian Export Control Seminar in February 2017. The purpose of this annual seminar is to

[52] IAEA *Annual Report 2016*, September 2017, p. 96.

[53] IAEA, “IAEA Department of Safeguards Long-Term R&D Plan, 2012-2023,” January 2013.

[54] IAEA, “Development and Implementation Support Programme for Nuclear Verification 2016-2017.”

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

“assist export control officers in Asian countries and regions.” Persons in charge of export control from Asian and other regional major countries participated in the seminar.

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 for non-NSG members, the UAE is one of the few countries that have enacted comprehensive strategic trade control legislation, including a provision on catch-all controls. However, analysts have assessed that the UAE “lack[s] the necessary expertise, and possibly the financial resources, to institute an effective [export control] system.”⁵⁶ The Philippines, enacting a Strategic Trade Management Act (STMA) in November 2015, introduced list control and catch-all control. On the other hand, Egypt, Indonesia and Saudi Arabia have yet to established sufficient export control legislations and systems.

India, Israel and Pakistan have also set up national export control systems, including catch-all controls.⁵⁷ India’s quest for membership in the NSG is supported by some member states, but consensus on the matter was not reached in 2017.

At the time of writing, the status of export control implementation by North Korea, Iran and Syria is not clear. Rather, cooperation among these countries in ballistic missile development remains a concern, as mentioned below. In addition, North Korea was

involved in the past in constructing a graphite-moderated reactor in Syria to produce plutonium.

A U.S. think tank pointed out that among the 122 countries voting in favor of adopting the Treaty on the prohibition of Nuclear Weapons (TPNW), only 29 (or 24 percent) have adequate export control legislation.⁵⁸

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

Article III-2 of the NPT stipulates, “Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.” In the Final Document of the 2010 NPT RevCon, “[t]he Conference encourage[d] States parties to make use of multilaterally negotiated and agreed guidelines and understandings in developing their own national export controls” (Action 36). Under the NSG Guidelines Part I, one of the conditions for supplying materials and technology designed specifically for nuclear use is to accept the IAEA comprehensive safeguards. In addition, NSG member states agreed on the following principle in June 2013:⁵⁹

Suppliers will make special efforts in support of effective implementation of IAEA safeguards for enrichment or reprocessing facilities, equipment or technology and

[56] “Middle East and North Africa 1540 Reporting,” Nuclear Threat Initiative, January 31, 2014, <http://www.nti.org/analysis/reports/middle-east-and-north-africa-1540-reporting/>. See also Aaron Dunne, “Strategic Trade Controls in the United Arab Emirates: Key Considerations for the European Union,” *Non-Proliferation Papers*, No. 12 (March 2012).

[57] Regarding a situation of Pakistani export controls, see Paul K. Kerr and Mary Beth Nikitin, “Pakistan’s Nuclear Weapons,” *CRS Report*, August 1, 2016, pp. 25-26.

[58] David Albright, Sarah Burkhard, Allison Lach and Andrea Stricker, “Most Nuclear Ban Treaty Proponents are Lagging in Implementing Sound Export Control Legislation,” Institute for Science and International Security, September 27, 2017, <http://isis-online.org/isis-reports/detail/most-nuclear-ban-treaty-proponents-are-lagging-in-implementing-sound-export>.

[59] INFCIRC/254/Rev.12/Part 1, November 13, 2013.

should, consistent with paragraphs 4 and 14 of the Guidelines, ensure their peaceful nature. In this regard suppliers should authorize transfers, pursuant to this paragraph, only when the recipient has brought into force a Comprehensive Safeguards Agreement, and an Additional Protocol based on the Model Additional Protocol or, pending this, is implementing appropriate safeguards agreements in cooperation with the IAEA, including a regional accounting and control arrangement for nuclear materials, as approved by the IAEA Board of Governors.

The NPDI and the Vienna Group of Ten have argued that conclusion and implementation of the CSA and the Additional Protocol should be a condition for new supply arrangements with NNWS.⁶⁰ Some of the bilateral nuclear cooperation agreements that Japan and the United States concluded recently with other capitals make the conclusion of the Additional Protocol a prerequisite for their cooperation with respective partner states. On the other hand, the NAM countries continue to argue that supplier countries should “refrain from imposing or maintaining any restriction or limitation on the transfer of nuclear equipment, material and technology to other States parties with comprehensive safeguards agreements.”⁶¹

ISSUES ON ENRICHMENT AND REPROCESSING UNDER THE BILATERAL NUCLEAR COOPERATION AGREEMENTS

Enriching uranium and reprocessing spent fuel by NNWS is not prohibited under the NPT if the purpose is strictly peaceful and the activities are under IAEA safeguards, Yet they are highly sensitive activities in light of nuclear proliferation. The spread of enrichment and reprocessing (E&R) technologies would mean that more countries would acquire the potential for manufacturing nuclear weapons. As mentioned above, NSG guidelines make implementation of the

Additional Protocol by the recipient state a condition for transfer of enrichment or reprocessing facilities, equipment or technology.

While the U.S.-UAE and U.S.-Taiwan Nuclear Cooperation Agreements stipulate a so-called “gold standard”—the recipients are obliged to forgo enrichment and reprocessing activities—other bilateral agreements concluded and updated by the United States, such as one with Vietnam in 2014, do not stipulate similar obligations. Relatedly, under the updated U.S.-South Korean Nuclear Cooperation Agreement signed in July 2015, the United States does not give advance consent to enrich or reprocess U.S.-origin fuel while both countries agreed to continue joint research on *pyroprocessing*—which South Korea sought to promote—under their consultation and agreement. The Japan-U.S. Nuclear Cooperation Agreement, which stipulates comprehensive prior consent to Japan’s E&R activities, and is to expire in July 2018, will be automatically extended since neither sides notified an intention to terminate or renegotiate the agreement by January 2018, six months prior to its expiration.

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

With regard to the North Korean nuclear issue, the UN Member States are obliged to implement measures set out in the resolutions adopted by the UN Security Council, including embargos on nuclear-, other WMD-, and ballistic missile-related items, material, and technologies. The Panel of Experts, established pursuant to UNSCR 1874 (2009), published annual reports on their findings and recommendations about the implementation of the resolutions. As for the Iranian nuclear issue, the Iran Sanctions Committee and Panel of Experts ceased to exist after the conclusion of the JCPOA, at the insistence of Iran,

[60] For example, NPT/CONF.2020/PC.I/WP.2, March 15, 2017.

[61] NPT/CONF.2015/WP.6, March 9, 2015.

and the UN Security Council now has responsibility of oversight of remaining limitations.⁶²

NORTH KOREA

The UN Security Council has adopted numerous resolutions criticizing North Korean nuclear and missile activities. In 2017, in response to the North's repeated ballistic missile tests, UNSCR 2356 was unanimously adopted on June 2. Under this resolution, Security Council "[c]ondemn[ed] in the strongest terms the nuclear weapons and ballistic missile development activities including a series of ballistic missile launches and other activities conducted by the DPRK since 9 September 2016 in violation and flagrant disregard of the Security Council's resolutions," and decided on four entities and 14 individuals being subject to a travel ban and/or asset freeze.⁶³ Subsequently, after the North's ICBM launch, UNSCR 2371 was unanimously adopted on August 5, which stipulates the following sanction measures, inter alia:⁶⁴

- Adding nine individuals and four entities being subject to travel ban and/or asset freeze;
- Prohibiting North Korea from supplying, selling or transferring coal, iron, iron ore, seafood, lead and lead ore, and prohibiting other countries from procuring these items from the North;
- Prohibiting states from newly accepting North Korean overseas workers; and
- Prohibiting the opening of new joint ventures or cooperative entities with the North's entities or individuals, or the expansion of existing joint ventures through additional investments

In addition, nine days after North Korea's sixth nuclear test on September 3, the Security Council unanimously adopted UNSCR 2375, which stipulated the following sanction measures:

- Adding one individual and three entities being subject to travel ban and/or asset freeze;
- Designating additional items, materials, technologies and so on for export controls regarding WMD and conventional weapons;
- Requesting states to inspect vessels with the consent of the flag State, on the high seas, if they have information that provides reasonable grounds to believe that the cargo of such vessels contains items the supply, sale, transfer or export of which is prohibited by resolutions;
- Restricting to supply, sell or transfer crude oil and refined petroleum products to North Korea;
- Prohibiting from supplying, selling or transferring condensates and natural gas liquids to North Korea;
- Prohibiting from supplying, selling or transferring textiles by, and procuring from, North Korea;
- Prohibiting states from providing work authorizations for North Korean nationals; and
- Prohibiting the opening, maintenance and operation of joint ventures or cooperative entities with North Korea, and requiring the closing of existing joint ventures and cooperative entities.

Furthermore, after the North's ICBM test in November, UNSCR 2397 was unanimously adopted on December 22, which stipulated the following additional sanction measures:

- Restricting exports of crude oil to North Korea, not exceeding 4 million barrels per year, and requesting provider countries to report such exports;
- Restricting exports of refined petroleum

[62] David Albright and Andrea Stricker, "JCPOA Procurement Channel: Architecture and Issues," Institute for Science and International Security, December 11, 2015, http://isis-online.org/uploads/isis-reports/documents/Parts_1_and_2_JCPOA_Procurement_Channel_Architecture_and_Issues_Dec_2015-Final.pdf.

[63] S/RES/2356, June 2, 2017.

[64] S/RES/2371, August 5, 2017.

products to North Korea, in the aggregate amount of up to 500,000 barrels per year, and requesting provider countries to report such exports;

- Prohibiting UN member states from supplying, selling or transferring food and agricultural products, machinery, electrical equipment, earth and stone including magnesite and magnesia, wood, and vessels;
- Repatriating to North Korea all its nationals earning income in that Member State's jurisdiction and all the North's government safety oversight attachés monitoring DPRK workers abroad immediately but no later than 24 months from the date of adoption of this resolution;
- Implementing more strictly measures on maritime transportations; and
- Considering further measures on restricting a provision of petroleum if North Korea conduct a further test of nuclear weapons and ICBM-class missiles.

The annual Report of the Panel Experts published in February 2017 pointed out North Korea's activities in defiance of the UNSCRs, such as:⁶⁵

- North Korea is flouting sanctions through trade in prohibited goods, with evasion techniques that are increasing in scale, scope and sophistication;
- Designated entities and banks have continued to operate in the sanctioned environment by using agents who are highly experienced and well trained in moving money, people and goods, including arms and related materiel, across borders. These agents use non-nationals of North Korea as facilitators, and rely on numerous front companies;
- Diplomats, missions and trade representatives

of the North systematically play key roles in prohibited sales, procurement, finance and logistics; and

- North Korea continues to export banned minerals to generate revenue.

The Panel also noted in its mid-term report in September 2017 the following activities:⁶⁶

- North Korea continues to violate the financial sanctions by stationing agents abroad to execute financial transactions on behalf of national entities;
- North Korea continued to violate sectoral sanctions through the export of almost all of the commodities prohibited in the resolutions; and
- North Korea provided weapons and trainings to African countries' militaries and police.

Although the whole picture of such illegal activities by North Korea has not been elucidated, it has alleged to have engaged in various activities, including earning foreign currency to support nuclear weapons development by utilizing foreign networks. Some news articles highlighted the following alleged cases:

- North Korea has been switching the export destinations of coal subject to sanctions under the UNSCRs from China to Southeast Asian countries.⁶⁷
- At least eight North Korean ships that left Russia with a cargo of fuel this year headed for their homeland despite declaring other destinations. Reuters has no evidence of wrongdoing by the vessels, whose movements were recorded in Reuters ship-tracking data... [but] changing destination mid-voyage is a hallmark of North Korean state tactics to circumvent the international trade sanctions imposed over Pyongyang's nuclear weapons

[65] S/2017/150, February 27, 2017.

[66] S/2017/742, September 5, 2017.

[67] *Mainichi Shimbun*, August 20, 2017, <https://mainichi.jp/articles/20170821/koo/oom/030/113000c>. (in Japanese)

program.⁶⁸

- In December, Australian Federal Police arrested a Korean-Australian individual who was charged with acting as an agent for North Korea by allegedly attempting to broker sales for Pyongyang including ballistic missiles, and their items and technologies.⁶⁹

Regarding sanctions against North Korea, China's behavior has been drawing attention because of its close relationship with North Korea. China announced its implementation and reinforcement of sanctions. For example, in January 2017, China's Commerce Ministry announced more than 100 additional items, equipment and technologies for nuclear and missile development, which are subject to prohibited for export to North Korea in accordance with the UNSCRs. In February, the Commerce Ministry also announced that China would suspend all imports of coal from the North through the end of 2017.

However, China has also been criticized for weak enforcement efforts.⁷⁰ In 2017, the following cases, for instance, were reported:

- China "has purchased greater quantities of

iron ore, low-end manufactured goods, and seafood...resulting in an overall increase in trade revenue for North Korea compared to 2016."⁷¹

- Chinese clothing companies sent fabrics and other materials to North Korea, to make clothing labeled "Made in China," and obtained and exported such commodities. North Korean garment industry records sales of more than \$500 million in 2016.⁷²
- United States prosecutors accused a Chinese company, Mingzheng International Trading Limited (operated as a front company for North Korea's state-run Foreign Trade Bank), of laundering money for North Korea and said they would seek \$1.9 million in civil penalties.⁷³
- South Korean officials revealed in late December that the government had inspected and seized a Hong Kong-flagged vessel, which was alleged to transfer 600 tons of refined petroleum products to a North Korean ship in international waters.⁷⁴ In addition, it was reported in late December that U.S. reconnaissance satellites have spotted Chinese ships selling oil to North Korean vessels on

[68] Polina Nikolskaya, "From Russia with Fuel - North Korean Ships May Be Undermining Sanctions," *Reuters*, September 20, 2017, <https://www.reuters.com/article/us-northkorea-missiles-russia-exclusive/exclusive-from-russia-with-fuel-north-korean-ships-may-be-undermining-sanctions-idUSKCN1BV1DC>

[69] "Sydney Man Charged with Brokering North Korea Missile Sales," *Associated Press*, December 16, 2017, <https://www.nbcnews.com/news/north-korea/sydney-man-charged-brokering-north-korea-missile-sales-n830451>.

[70] Shirley A. Kan, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issue*, Congressional Research Service, RL31555, January 5, 2015, p.21.

[71] Will Edwards, "Can China Actually Restrain Kim Jong-Un?" *CIPHER Brief*, June 20, 2017, <https://www.thecipherbrief.com/article/asia/can-china-actually-restrain-kim-jong-un-1091>.

[72] Jane Perlez, Yufan Huang and Paul Mozur, "How North Korea Managed to Defy Years of Sanctions," *New York Times*, May 12, 2017, https://www.nytimes.com/2017/05/12/world/asia/north-korea-sanctions-loopholes-china-united-states-garment-industry.html?_r=0.

[73] Jonathan Soble, "U.S. Accuses Chinese Company of Money Laundering for North Korea," *New York Times*, June 16, 2017, <https://www.nytimes.com/2017/06/16/business/north-korea-money-laundering-mingzheng.html>.

[74] Yi Whan-woo, "Chinese Vessel Seized over North Korea Oil Trafficking," *Korea Times*, December 29, 2017, http://www.koreatimes.co.kr/www/nation/2017/12/103_241669.html; Choe Sang-Hun, "South Korea Seizes Ship Suspected of Sending Oil to North Korea," *New York Times*, December 29, 2017, <https://www.nytimes.com/2017/12/29/world/asia/south-korea-ship-seized.html>.

the West Sea around 30 times since October 2017.⁷⁵

In addition to sanctions under the UNSCRs, some countries impose respective unilateral sanctions against North Korea. For example, Japan, South Korea and the United States have expanded their respective lists of entities and individuals subject to a travel ban and/or asset freeze over their involvement in the North's nuclear and missile developments. The lists include not just North Korean but also Chinese and Russian entities and individuals. The EU also decided to impose unilateral sanctions in October 2017, including total bans on the export of petroleum and investment to North Korea. In November, the United States announced redesignation of the North as a state sponsor of terror, which had been removed in 2008 in exchange for progress in denuclearization talks. Furthermore, particularly after the nuclear test in September 2017, several countries reduced foreign and economic relationships with North Korea. The Philippines announced suspension of trade with North Korea, and Egypt cut off military cooperation with North Korea (after the US reduced aid because of that military trade). In October, the UAE stated that it would cease approval of visas to North Korean nationals and licenses to the North's entities. In addition, some African countries announced a cut-off of military and/or trade relations with North Korea.

Each UN member state is requested to report to the Security Council on the measures taken for

implementing UNSCRs. According to the Report of the Panel of Experts in September 2017, 78 countries submitted their national implementation reports on the UNSCR 2321. The submission rate has been steadily increasing although it is still limited.⁷⁶ Among countries surveyed in the *Hiroshima Report*, Austria, Iran, Kazakhstan, Nigeria, Norway, the Philippines and Syria did not submit their respective reports.⁷⁷

IRAN

In accordance with the JCPOA, approval of the Procurement Working Group, establishment under the agreement, is required for Iranian procurement of nuclear-related items and material. From the implementation day of the JCPOA through mid-June 2017, the Procurement Working Group received 16 procurement proposals.⁷⁸ Regarding procurement of dual-use items and technologies under the NSG Guidelines Part II: during January through June 2017, among 10 new proposals submitted, five of them were approved, one was withdrawn and four were under review;⁷⁹ and during July through December 2017, among eight new proposals submitted, four of them were approved, two were rejected and two were withdrawn.⁸⁰

NUCLEAR-RELATED COOPERATION BETWEEN CONCERNED STATES

In addition to the (reported) illicit activities mentioned above, it is often alleged that North Korea and Iran have been engaged in nuclear and missile

[75] Yu Yong-weon and Kim Jin-myung, "Chinese Ships Spotted Selling Oil to N.Korea," *Chosunilbo*, December 26, 2017, http://english.chosun.com/site/data/html_dir/2017/12/26/2017122601156.html. China denied the report that it had illicitly sold oil products to North Korea. Philip Wen and David Brunnstrom, "After Trump Criticism, China Denies Selling Oil Illicitly to North Korea," *Reuters*, December 29, 2017, <https://www.reuters.com/article/us-northkorea-missiles/after-trump-criticism-china-denies-selling-oil-illicitly-to-north-korea-idUSKBN1EN0D3>. In the late December, it was also reported that Russian tankers had supplied oil or oil products to North Korea on at least three occasions by transferring cargoes at sea. Guy Faulconbridge, Jonathan Saul and Polina Nikolskaya, "Russian Tankers Fueled North Korea Via Transfers at Sea—Source," *Reuters*, December 30, 2017, <https://www.reuters.com/article/us-northkorea-missiles-russia-oil-exclus/exclusive-russian-tankers-fueled-north-korea-via-transfers-at-sea-sources-idUSKBN1EN1OJ>.

[76] S/2017/742, September 5, 2017, p. 7.

[77] *Ibid.*, p. 43.

[78] S/2017/537, June 27, 2017.

[79] *Ibid.*

[80] S/2017/1058, December 15, 2017.

development cooperation. Bilateral cooperation has been well documented in the area of missiles. In 2016, the United States imposed sanctions against such cooperation.⁸¹ However, no concrete evidence has been revealed to support allegations of nuclear-related cooperation.⁸²

Meanwhile, it was assessed that the engines of North Korea's Hwasong-12 IRBM and Hwasong-14 ICBM are likely RD250s that were developed by the Soviet for the SS-18 ICBM, and may have been transferred to North Korea by entities in Russia or Ukraine. Both countries denied the allegation.⁸³

D) Participation in the PSI

As of 2017, a total of 105 countries—including 21 member states of the Operational Expert Group (Australia, Canada, France, Germany, Japan, South Korea, the Netherlands, New Zealand, Norway, Poland, Russia, Turkey, the United Kingdom, the United States and others) as well as Belgium, Chile, Israel, Kazakhstan, the Philippines, Saudi Arabia, Switzerland, Sweden, the UAE and others—have expressed their support for the principles and objectives of the Proliferation Security Initiative (PSI). Many of them have participated and cooperated in PSI-related activities.⁸⁴

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 for interdicting WMD through exercises and outreach activities. In September 2017, Australia hosted an interdiction exercise, named “Pacific Protector 17,” in which 21 countries participated.⁸⁵

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 engage in civil nuclear cooperation with India, and several countries, including Australia, Canada, France, Kazakhstan, South Korea, Russia and the United States, have concluded bilateral civil nuclear cooperation agreements with India. In June 2017, Japan ratified the Japan-India Nuclear Cooperation Agreement signed in November 2016.⁸⁶ Prior to its ratification, Committee on Foreign Affairs and Defense, Japan's House of Councillors adopted the resolution, in which it requested the Japanese government to terminate the Agreement when India conducted a subcritical test.

Actual nuclear cooperation with India has not

[81] U.S. Department of Treasury, “Treasury Sanctions Those Involved in Ballistic Missile Procurement for Iran,” January 17, 2016, <https://www.treasury.gov/press-center/press-releases/Pages/jl0322.aspx>.

[82] John Park and Jim Walsh, *Stopping North Korea, Inc.: Sanctions Effectiveness and Unintended Consequences* (Cambridge, MA: MIT Security Program, 2016), p. 33; Paul K. Kerr, Steven A. Hildreth and Mary Beth D. Nilitin, “Iran-North Korea-Syria Ballistic Missile and Nuclear Cooperation,” *CRS Report*, February 26, 2016, pp. 7-9.

[83] Michael Elleman, “The Secret to North Korea's ICBM Success,” *IISS Voices*, August 14, 2017, <https://www.iiss.org/en/iiss%20voices/blogsections/iiss-voices-2017-adeb/august-2b48/north-korea-icbm-success-3abb>. Ukraine's report of investigation is “Report of Secretary of the National Security and Defense Council of Ukraine, Head of the Working Group Oleksandr Turchynov on Investigation of the Information Stated in the Article of The New York Times,” National Security and Defense Council of Ukraine, August 22, 2017, <http://www.rnbo.gov.ua/en/news/2859.html>.

[84] Bureau of International Security and Nonproliferation, U.S. Department of State, “Proliferation Security Initiative Participants,” June 9, 2015, <http://www.state.gov/t/isn/c27732.htm>.

[85] “Exercise Pacific Protector 17,” Australian Government, September 2017, <http://www.defence.gov.au/psi/ExPP17.asp>.

[86] See the *Hiroshima Report 2017*.

necessarily been concluded,⁸⁷ except India's receipt of uranium from France, Kazakhstan and Russia, and its conclusion of agreements to receive uranium from Argentina, Australia, Canada, Mongolia and Namibia.⁸⁸

Again in 2017, the NSG could not achieve consensus on India's membership application. China, the main opponent, has argued that applicant countries must be parties to the NPT. It is also reported that China will not accept India's participation in the NSG unless Pakistan is also accepted as a member.⁸⁹ Pakistan has argued that, as a state behaving responsibly regarding nuclear safety and security, it is qualified to be accepted as an NSG member. The NSG has considered a draft set of nine criteria to guide membership applications from states that are not party to the NPT. Items of condition written in a draft document in December 2016 included safeguards, moratorium on nuclear testing, and support of multilateral non-proliferation and disarmament regime.⁹⁰

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 China 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.⁹¹ Their construction started in

November 2013 in Karachi. Because all other Chinese reactors that were claimed to be excluded from NSG guidelines under the grandfather clause were built at Chashma, there is a question about whether the exemption can also apply to the Karachi plant.⁹²

The NAM countries have been critical of civil nuclear cooperation with non-NPT states, including India and Pakistan, and continue to argue that exporting states should refrain from transferring nuclear material and technologies to those states which do not accept IAEA comprehensive safeguards.⁹³

(6) TRANSPARENCY IN THE PEACEFUL USE OF NUCLEAR ENERGY

A) Efforts for transparency

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 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

[87] See, for example, the *Hiroshima Report 2017*.

[88] Adrian Levy, "India Is Building a Top-Secret Nuclear City to Produce Thermonuclear Weapons, Experts Say," *Foreign Policy*, December 16, 2015, http://foreignpolicy.com/2015/12/16/india_nuclear_city_top_secret_china_pakistan_barac/.

[89] "China and Pakistan join hands to block India's entry into Nuclear Suppliers Group," *Times of India*, May 12, 2016, <http://timesofindia.indiatimes.com/india/China-and-Pakistan-join-hands-to-block-Indias-entry-into-Nuclear-Suppliers-Group/articleshow/52243719.cms>.

[90] See Kelsey Davenport, "Export Group Mulls Membership Terms," *Arms Control Today*, Vol. 47, No. 1 (January/February 2017), p. 50.

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

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

[93] "Statement by Indonesia on behalf of the Non-Aligned Movement State," Cluster 3, First Session of the Preparatory Committee for the 2020 NPT Review Conference, May 9, 2017.

development plans, including the construction of nuclear power plants.⁹⁴ 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 (e.g., allegedly, 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 December 2017, all except the United Kingdom had declared their civilian plutonium holdings as of December 2016. France and Germany had reported their respective holdings of not only civil plutonium but also HEU. Japan's report submitted to the IAEA, mentioned above, was based on the annual report "The Current Situation of Plutonium Management in Japan" released by the Japan Atomic Energy Commission.⁹⁵

Australia, Austria, Brazil, Canada, Chile, Egypt, Iran, Kazakhstan, South Korea, Mexico, the Netherlands, New Zealand, Nigeria, Norway, the Philippines, Poland, Saudi Arabia, 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.

B) Multilateral approaches to the fuel cycle

Several countries have sought to establish multilateral approaches to the fuel cycle, including nuclear fuel banks, as one way to dissuade NNWS from adopting indigenous enrichment technologies. Austria, Germany, Japan, Russia, the United Kingdom, the United States and the EU, as well as six countries (France, Germany, the Netherlands, Russia, the United Kingdom and the United States) jointly, have made their respective proposals.

Among those proposals, nuclear fuel banks have actually and concretely made progress. Subsequent to the establishment of the International Uranium Enrichment Centre (IUEC) in Angarsk (Russia) and the American Assured Fuel Supply, the IAEA LEU fuel bank in Kazakhstan was inaugurated in August 2017. The LEU fuel bank was mainly funded by the Nuclear Threat Initiative (NTI), Kuwait, Norway, UAE, the United States and the EU. The IAEA LEU bank will store up to 90 tons of LEU—sufficient to run a 1,000 MW light-water reactor—in the form of uranium hexafluoride.⁹⁶ This is the first fuel bank under the direct support of the international organization: the IAEA will bear the costs of purchase and delivery of LEU; and Kazakhstan will meet the cost of LEU storage.⁹⁷

[94] 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.

[95] Office of Atomic Energy Policy, Cabinet Office, "The Status Report of Plutonium Management in Japan—2016," August 1, 2017, http://www.aec.go.jp/jicst/NC/about/kettei/170801_e.pdf.

[96] "LEU Fuel Bank in Kazakhstan is Inaugurated," *IPFM Blog*, August 29, 2017, http://fissilematerials.org/blog/2017/08/leu_fuel_bank_in_kazakhst.html.

[97] "Kazakhstan Signs IAEA 'Fuel Bank' Agreement," *World Nuclear News*, May 14, 2015, <http://world-nuclear-news.org/UF-Kazakhstan-signs-IAEA-fuel-bank-agreement-14051502.html>.