

Section 2 Transfer and Proliferation of Weapons of Mass Destruction

The transfer and proliferation of weapons of mass destruction (WMDs), such as nuclear, biological and chemical (NBC) weapons, and ballistic missiles that deliver such weapons, have been recognized as a significant

threat since the end of the Cold War. In particular, there still remain strong concerns that non-state actors, including terrorists, against which traditional deterrence works less effectively, could acquire and use WMDs.

1 Nuclear Weapons

During the Cold War, the Cuban Missile Crisis of 1962 raised awareness of the danger of a full-scale nuclear war between the United States and the Soviet Union. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) that took effect in 1970 prohibited countries other than those that exploded a nuclear weapon or other nuclear explosive device in or before 1966¹ from having nuclear weapons, and provided that arms control and disarmament of nuclear forces would be pursued through two-way negotiations.²

The NPT is currently signed by 191 countries and regions.³ While some countries that had previously possessed nuclear weapons became signatories of this treaty as non-nuclear weapon states by abandoning these weapons,⁴ India, Israel, and Pakistan still refuse to accede to this treaty as non-nuclear weapon states. There are other countries that have declared the development and possession of nuclear weapons, such as North Korea, which announced that it conducted nuclear tests in October 2006, May 2009, February 2013, January 2016, and September 2016.⁵

Then U.S. President Obama's speech in April 2009 in which he expressed his hopes for a world without nuclear weapons demonstrated U.S. determination to take concrete steps towards this world, specifically: the reduction of the role of nuclear weapons in U.S. national security while maintaining nuclear deterrence; the signing of a new treaty to replace the Strategic Arms Reduction

Treaty I (START I) between the United States and Russia; and pursuit of ratification of the Comprehensive Nuclear-Test-Ban Treaty (CTBT)⁶ by the U.S. Government. This in turn encouraged the international community to take initiatives towards nuclear disarmament and nonproliferation.

In fact, in April 2010, the presidents of the United States and Russia signed the New Strategic Arms Reduction Treaty (New START)⁷ to replace START I, which was put into effect in February 2011.

The United Kingdom also stated in the Strategic Defense and Security Review (SDSR) in October 2010 that the country would decrease the number of its nuclear warheads, and the NSS-SDSR 2015 released in November 2015 confirmed there is no change in this policy to reduce the number of nuclear warheads.

In the area of "nuclear security" which addresses terrorist activities that utilize nuclear and other radioactive materials, the Nuclear Security Summit that commenced at the proposal of then President Obama has been held on four occasions. The fourth Nuclear Security Summit that was held in Washington, D.C. in March-April 2016 adopted a Communiqué, which shared the recognition that the threat of nuclear terrorism remains an imminent challenge to the international community, and which outlined the need for continuous efforts to prevent nuclear materials from getting into the hands of non-state actors even after the summit.⁸

¹ The United States, the then Soviet Union (now Russia), the United Kingdom, France, and China. France and China acceded to the NPT in 1992.

² Article 6 of the NPT sets out the obligation of signatory countries to negotiate nuclear disarmament in good faith.

³ As of June 2017

⁴ South Africa, Ukraine, Kazakhstan, and Belarus.

⁵ After North Korea announced its withdrawal from the NPT in 1993, it pledged that it would remain a contracting state to the NPT. However, North Korea again declared its withdrawal from the NPT in January 2003. In the Joint Statement of the Six-Party Talks adopted in September 2005, North Korea pledged to return to the NPT at an early date. Nonetheless, North Korea subsequently announced the implementation of five nuclear tests. North Korea's nuclear tests constitute a major challenge to the NPT.

⁶ Adopted in 1996, this treaty bans all nuclear test explosions regardless of the location. Of the 44 nations that are required to ratify it for the treaty to enter into force, 8 nations have not yet ratified or signed the treaty (United States, China, India, Pakistan, Iran, Israel, Egypt, and North Korea) (as of December 2016).

⁷ The treaty stipulates that both countries would reduce the number of deployed strategic warheads to 1,550 and the number of deployed delivery vehicles to 700 by seven years following the treaty's entry into force. In April 2017, the United States reported that it had 1,411 deployed strategic nuclear warheads and 673 deployed delivery vehicles, while Russia reported that it had 1,765 deployed strategic nuclear warheads and 523 deployed delivery vehicles. These numbers are as of March 1, 2017.

⁸ At the Nuclear Security Summit, it was confirmed that the IAEA would play a central role in international nuclear security initiatives. Accordingly, the IAEA hosted the International Conference on Nuclear Security in Vienna, Austria in December 2016, which was attended by more than 2,000 people from 130 countries and 17 international organizations and groups.

The fact that the international community has begun to make steady and major strides towards nuclear disarmament and non-proliferation contributes to improving the international security environment, and is a welcome development. At the same time, while in June 2013, then President Obama made a speech in Berlin in which he announced his intention to negotiate with Russia on the reduction of the number of U.S. deployed

strategic nuclear weapons by up to one-third, among other cuts, negotiations have yet to begin.⁹ In contrast, China is deemed to have increased its inventory of nuclear warheads as well as developed and deployed their means of delivery,¹⁰ and thereby, continued to enhance the capability of its nuclear forces. It has been pointed out that initiatives for reducing nuclear weapons involving China will be needed in the future.

2 Biological and Chemical Weapons

Biological and chemical weapons are easy to manufacture at relatively low cost and are easy to disguise as most materials, equipment, and technology needed to manufacture these weapons can be used for both military and civilian purposes. For example, water purification equipment used to desalinate sea water can be exploited to extract bacteria for the production of biological weapons, and sodium cyanide used for the process of metal coating can be abused for the production of chemical weapons.¹¹ Accordingly, biological and chemical weapons are attractive to states and non-state actors, such as terrorists, seeking asymmetric means of attack.¹²

Biological weapons have the following characteristics: (1) manufacturing is easy and inexpensive; (2) there is usually an incubation period of a few days between exposure and onset; (3) their use is hard to detect; (4) even the threat of use can create great psychological effects; and (5) they can cause mass casualties and injuries depending on the circumstances of use and the type of weapon.¹³

As has been pointed out, advancements in life science could be misused or abused for the development of biological weapons. In view of these concerns, in November 2009, the United States established guidelines¹⁴

on responding to the proliferation of biological weapons and their use by terrorists. The guidelines set out that the United States would take measures to ensure the thorough management of pathogens and toxins.¹⁵

As for chemical weapons, Iraq repeatedly used mustard gas, tabun, and sarin¹⁶ in the Iran-Iraq War. In the late 1980s, Iraq used chemical weapons to suppress Iraqi Kurds.¹⁷ It is believed that other chemical weapons¹⁸ that were used included VX, a highly toxic nerve agent, and easy-to-manage binary rounds.¹⁹ In August 2013, sarin was used in the suburbs of Damascus, Syria, where Syrian troops clashed with antigovernment groups.²⁰ The Syrian Government denied using chemical weapons, but entered into the Chemical Weapons Convention (CWC) in line with an agreement between the United States and Russia. Subsequently, international efforts have been underway for the overseas transfer of chemical agents and other measures based on the decisions made by the Organization for the Prohibition of Chemical Weapons (OPCW)²¹ and a UN Security Council resolution.²² In August 2014, the operation to destroy Syria's sarin, VX gas, and other chemical weapons on the U.S. Navy transport vessel Cape Ray was completed.²³ In this

9 Regarding this proposal, Russia explained its position that all elements impacting strategic stability including missile defense, space weapons, and non-nuclear strategic weapons need to be taken into consideration, and that negotiations concerning the further reduction of strategic nuclear weapons require a multilateral framework involving all countries that have nuclear weapons.

10 See Part I, Chapter 2, Section 3-2 for China's ballistic missile development

11 The export of related dual-use items and technologies that can be used to develop and produce these biological and chemical weapons is controlled by the domestic laws of member states, including Japan, pursuant to an agreement of the Australia Group, a framework for international export control.

12 They refer to means of attack to strike an adversary's vulnerable points and are not conventional means. They include WMDs, ballistic missiles, terrorist attacks, and cyber attacks

13 Then Japan Defense Agency, "Basic Concept for Dealing with Biological Weapons" (January 2002).

14 In November 2009, the National Strategy for Countering Biological Threats was released. It presents guidelines on responding to the proliferation of biological weapons and their use by terrorists. In the State of the Union Address in January 2010, then President Obama said that the United States was launching a new initiative to respond promptly and effectively to bioterrorism and infectious diseases.

15 U.S. Executive Order (July 2, 2010)

16 Mustard gas is a slow-acting blister agent. Tabun and sarin are fast-acting nerve agents

17 It has been reported that a chemical weapons attack against a Kurdish village in 1988 killed several thousand people at once.

18 A weapon in which two types of relatively harmless chemicals that serve as ingredients for a chemical agent are contained separately within the weapon. It was devised so that the impact of the firing of the weapon or other action mixes the chemical materials in the warhead, causing a chemical reaction and thereby synthesis of the chemical agent. Binary rounds are easier to store and handle than weapons containing chemical agents from the outset.

19 Iraq joined the CWC in February 2009.

20 "United Nations Mission to Investigate Allegations of the Use of Chemical Weapons in the Syrian Arab Republic: Final Report" (December 12, 2013)

21 (The 33rd and 34th) meetings of the Executive Council of OPCW

22 UN Security Council Resolution 2118

23 According to OPCW, 600 tons of Category 1 extremely toxic chemical materials, including sarin and VX gas, were disposed of (August 19, 2014, Statement by the OPCW Director-General). In January 2016, OPCW reported that destruction of all of the chemical weapons reported by the Syrian Government was completed. Yet, even after that, incidents of using chemical weapons have continually occurred.

connection, in August 2015, the UN Security Council adopted a resolution that establishes a Joint Investigative Mechanism of the UN and OPCW to identify users of chemical weapons in the Syrian civil war, and investigation is under way. In November 2016, the term of this investigative mechanism was extended for one year. Currently efforts continue to be made to identify those responsible for the use of chemical weapons and to ensure that chemical weapons are not used ever again. Until now, the joint investigation mechanism involving the UN and OPCW has specified persons responsible for four incidents of chemical weapons use in Syria. It has been reported that three of these are attributed to the Syrian Army, while the remaining incident was initiated by ISIL.^{24, 25} Also, OPCW announced that sarin was used

once again in Khan Sheikhun, Syria in April 2017.

North Korea is an example of a country that is still presumed to possess these chemical weapons and which has not entered into the CWC. Furthermore, the Tokyo subway sarin attack in 1995, as well as incidents of bacillus anthracis being contained in mail items in the United States in 2001 and that of ricin being contained in a mail item in February 2004, showed that the threat of the use of WMDs by terrorists is real and that these weapons could cause serious damage if used in cities. Also, the Malaysian police announced that a VX nerve agent whose production and use are banned by the CWC was found on the body of Kim Jong-nam who was assassinated in February 2017.

3 Ballistic Missiles

Ballistic missiles enable the projection of heavy payloads over long distances and can be used as a means of delivering WMDs, such as nuclear, biological, and chemical weapons. Once launched, ballistic missiles follow an orbital flight trajectory and fall at a steep angle at high speed. As such, effectively countering them requires a highly advanced interceptor missile system.

The deployment of ballistic missiles in a region where armed conflict is under way runs the risk of intensifying or expanding the conflict. Additionally, it has the risk of further heightening tension in a region where military confrontation is ongoing, leading to the destabilization of that region. Furthermore, ballistic missiles are used as a means of attacking from a distance or threatening another country that has superior conventional forces.

In recent years, along with the threat of ballistic missiles, analysts have pointed to the threat of cruise missiles as a weapon which is comparatively easy for terrorists and other non-state actors to acquire and which has the potential for proliferation.²⁶ Because cruise missiles are cheaper to produce compared to ballistic missiles and are easy to maintain and train with, many countries either produce or modify cruise missiles. At the same time, it is said that cruise missiles have a higher degree of target accuracy and that they are difficult to detect while in flight.²⁷ Moreover, because they are smaller than ballistic missiles, cruise missiles can be concealed on a ship to secretly approach a target, and present a serious threat if they carry WMDs in their warheads.²⁸

4 Growing Concerns about Transfer and Proliferation of WMDs and Other Technologies

Even weapons that were purchased or developed for self-defense purposes could easily be exported or transferred once domestic manufacturing becomes successful. For example, certain states that do not heed political risks have transferred WMDs and related technologies

to other states that cannot afford to invest resources in conventional forces and attempt to offset this with WMDs. Some of these states that seek WMDs do not hesitate to put their land and people at risk, and furthermore, due to their weak governance, terrorist organizations are

²⁴ See Part I, Chapter 3, Section 1 for ISIL.

²⁵ In a report by the joint investigation mechanism (JIM) involving the UN and OPCW, it was determined that the Syrian Government used chlorine gas in Talmenes (April 21, 2014), in Sarmin (March 16, 2015), and Qmenas (March 16, 2015). The report also found that ISIL used mustard gas in Marea (August 21, 2015). The U.S. Director of National Intelligence's "Worldwide Threat Assessment" of February 2016 referred to ISIL's contribution to this incident, and assessed that non-state actors are using chemicals in warfare in Syria.

²⁶ In the July 2006 conflict between Israel and Lebanon, it is believed that Hezbollah used a cruise missile to attack an Israeli naval vessel. Israel announced in March 2011 that it had uncovered six anti-ship cruise missiles among other items on cargo ships subject to inspection.

²⁷ United States Congressional Research Service, "Cruise Missile Proliferation" (July 28, 2005)

²⁸ The United States is concerned that the development and deployment of ballistic and cruise missiles by countries including China and Iran could pose a threat to U.S. forward-deployed forces.

active in their countries. Therefore, it is conceivable that in general, the possibility of actual use of WMDs would increase.

Moreover, since it is uncertain whether such states can effectively manage the related technology and materials, there is a concern that chemical or nuclear substances will be transferred or smuggled out from these states with high likelihood. For example, there is a danger that even terrorists who do not possess related technologies would use a dirty bomb²⁹ as a means of terrorist attack so long as they gain access to radioactive materials. Nations across the world share concerns regarding the acquisition and use of WMDs by terrorists and other non-state actors.³⁰

The proliferation of WMDs and other related technologies has been noted in numerous instances. For example, in February 2004, it came to light that nuclear-related technologies, mainly uranium enrichment technology, had been transferred to North Korea, Iran, and Libya by Dr. A.Q. Khan and other scientists in Pakistan. It has also been suggested that North Korea supported Syria's secret nuclear activities.³¹

Furthermore, there has been significant transfer and proliferation of ballistic missiles that serve as the means of delivery of WMDs. The former Soviet Union and other countries exported Scud-Bs to many countries and regions, including Iraq, North Korea, and Afghanistan. China and North Korea also exported DF-3 (CSS-2) and Scud missiles, respectively. As a result, a considerable number of countries now possess ballistic missiles. In addition, Pakistan's Ghauri and Iran's Shahab-3 missiles are believed to be based on North Korea's Nodong missiles. Further still, it has been suggested that North

Korea conducted missile-related trade with Syria and Egypt until recently.³²

North Korea has made rapid strides in the development of its ballistic missiles with only a few test launches. It is believed that an underlying factor of this fact was North Korea's imports of various materials and technologies from outside of the country. It is also noted that North Korea transfers and proliferates ballistic missile airframes and related technologies, and that it promotes the further development of missiles using funds procured by such transfer and proliferation.³³

The international community's uncompromising and decisive stance against the transfer and proliferation of WMDs and other technologies has put significant pressure on countries engaged in related activities, leading some of them to accept inspections by international organizations or abandon their WMD and other programs altogether.³⁴ Meanwhile, it is pointed out that, in recent years, states of proliferation concern have sustained their proliferation activities by averting international monitoring, through illicitly exporting WMDs and other technologies overseas by falsifying documentation, diversifying transport routes, and utilizing multiple front companies and intermediaries. Additionally, intangible transfer of technology has arisen as a cause for concern. Namely, states of proliferation concern have obtained advanced technologies which could be adapted for the development and manufacturing of WMDs and other technologies via their nationals—researchers and students who have been dispatched to leading companies and academic institutions in developed countries.³⁵

29 Dirty bombs are intended to cause radioactive contamination by spreading radioactive materials.

30 Based on these concerns, the UN Security Council adopted Resolution 1540 in April 2004, which sets forth the decision that all UN member states would refrain from providing support to non-state actors that attempt to develop, acquire, manufacture, possess, transport, transfer, or use WMDs and their means of delivery, as well as adopt and enforce laws that are appropriate and effective for prohibiting these activities. The International Convention for the Suppression of Acts of Nuclear Terrorism also entered into force in July 2007.

31 DNI "Worldwide Threat Assessment" from January 2014 states, "North Korea's assistance to Syria in the construction of a nuclear reactor (destroyed in 2007) illustrates the reach of the North's proliferation activities." The International Atomic Energy Agency (IAEA) report of May 2011 states that the destroyed reactor was very likely a nuclear reactor that Syria should have declared to the IAEA.

32 The February 2016 report of the Panel of Experts of the UN Security Council Democratic People's Republic of Korea (DPRK) Sanctions Committee states North Korea attempted to export principal components of liquid propellants and replacement parts likely for Scuds, to Syria and Egypt until recently.

33 In addition, concerning the proliferation of WMDs and ballistic missiles by North Korea, the "Worldwide Threat Assessment" of the U.S. Director of National Intelligence of January 2014 pointed out that "North Korea's export of ballistic missiles and associated materials to several countries, including Iran and Syria, and its assistance to Syria's construction of a nuclear reactor, destroyed in 2007, illustrate the reach of its proliferation activities." Moreover, in the report entitled "Military and Security Developments Involving the Democratic People's Republic of Korea," which was published by the U.S. DoD in March 2014, it was pointed out that North Korea uses various techniques to circumvent measures taken by each country on the basis of UN Security Council resolutions, including sending cargo through multiple front companies and intermediaries.

34 Extensive behind-the-scenes negotiations began in March 2003 between Libya and the United States and the United Kingdom. In December 2003, Libya agreed to dismantle all of its WMDs and to allow an international organization to carry out inspections. Later, in August 2006, Libya ratified the IAEA Additional Protocol. Meanwhile, after the military activity against Libya by a multinational force, in March 2011, North Korea denounced the military attacks against Libya, saying that attacking after disarmament was an "armed invasion."

35 The February 2016 report of the Panel of Experts of the UN Security Council DPRK Sanctions Committee states that over the past 20 years since 1996, North Korea has dispatched more than 30 engineers to the Centre for Space Science and Technology Education in Asia and the Pacific, which receives technical support from the UN Office for Outer Space Affairs. These engineers participate in research programs concerning topics such as satellite communications, space science and atmospheric chemistry, and satellite navigation systems. The report notes that such knowhow regarding space science and satellite systems contributes to improving North Korea's ballistic missile technology.

5

Iran's Nuclear Issues

The nuclear issues of Iran are a serious challenge to the international non-proliferation regime. Since the 1970s, Iran has been pursuing a nuclear power plant construction project with cooperation from abroad, claiming that its nuclear-related activities are for peaceful purposes in accordance with the NPT. In 2002, however, Iran's covert construction of facilities including a large-scale uranium enrichment plant was exposed by a group of dissidents. Subsequent IAEA inspection revealed that Iran, without notifying the IAEA, had been engaged for a long time in uranium enrichment and other activities potentially leading to the development of nuclear weapons. In September 2005, the IAEA Board of Governors recognized Iran's breach of compliance with the NPT Safeguards Agreement. Since 2003, Iran has continued with its uranium enrichment activities despite resolutions adopted by the IAEA Board and the UN Security Council urging Iran to stop its uranium enrichment and other activities.

However, with Hassan Rouhani winning the presidential election in Iran in June 2013, the discussions with the EU3+3 were advanced, resulting in the announcement of the Joint Plan of Action (JPOA) towards the comprehensive resolution of nuclear issues in November 2013. The execution of the first step measures of the JPOA commenced in January 2014.³⁶

On April 2, 2015, consultations held in Lausanne,

Switzerland resulted in an agreement regarding the key parameters of the final agreement. On July 14, 2015, the final agreement concerning the nuclear issues of Iran, the Joint Comprehensive Plan of Action (JCPOA), was announced in Vienna. Following this, on July 20, 2015, UN Security Council Resolution 2231 approving the JCPOA was adopted. In the agreement, it was decided that Iran would reduce its enriched uranium stockpile and number of centrifuges, ban the production of weapons grade plutonium, and accept IAEA inspections, among other measures, in exchange for ending the sanctions of previous UN Security Council resolutions and the U.S. and EU's nuclear-related sanctions.³⁷

Subsequently, the JCPOA reached its adoption date on October 18, 2015, 90 days after the Security Council resolution was adopted. On January 16, 2016, the IAEA released a report confirming Iran's completion of the necessary preparatory steps to start the implementation of the JCPOA. Accordingly, the United States suspended its nuclear-related sanctions against Iran. In addition, the EU terminated some of its sanctions, and the sanctions imposed by previous UN Security Council resolutions concerning the nuclear issues of Iran ended, in accordance with UN Security Council Resolution 2231. In the future, it will be important for Iran to steadily fulfill its agreed upon obligations and for the IAEA to monitor and verify Iran's actions.

³⁶ First step measures include the limited relaxation of sanctions by the EU3+3, provided that for six months, Iran: (1) retains half of its current inventory of enriched uranium with a concentration of approximately 20% as oxide and dilutes the remaining half to less than 5%; (2) does not enrich uranium to a level of 5% or greater; (3) does not make any further advances of its activities conducted in uranium enrichment facilities and heavy-water reactors; and (4) accepts enhanced monitoring by the IAEA and so on.

³⁷ The major nuclear-related restrictions on Iran in the JCPOA include the following: with regard to uranium enrichment, limiting the number of centrifuges for uranium enrichment to 5,060 or less, keeping the level of uranium enrichment at up to 3.67%, and restricting Iran's enriched uranium stockpile to 300 kg; and with regard to plutonium production, redesigning and rebuilding the Arak heavy water reactor to not produce weapons grade plutonium and shipping spent fuel out of Iran, and not engaging in reprocessing spent fuel including R&D and not constructing reprocessing facilities. According to then U.S. Secretary of State Kerry, with this agreement Iran's breakout time (the time it takes to manufacture nuclear fuel for a single nuclear weapon) will be extended from 90 days or less before the JCPOA to a year or more. Furthermore, the JCPOA is an agreement pertaining to nuclear issues and does not suspend or lift sanctions related to international terrorism, missiles, human rights, among other issues. In response, Prime Minister Benjamin Netanyahu of Israel, in his address to the UN General Assembly in October 2015, strongly criticized the Iranian nuclear agreement for making war more likely. In the United States, while the Republican Party that makes up the majority of Congress had been opposed to the agreement, the motion of disapproval was not supported by at least two-thirds of both the House of Representatives and the Senate necessary to override the President's veto. Thus, the disapproval of the agreement was avoided.