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.

Additionally, regarding the New Strategic Arms Reduction Treaty which was signed by the presidents of the United States and Russia in April 2010, and took effect in February 2011, the Trump administration expressed its intention to continue to implement this Treaty. Similarly, the United Kingdom also stated in the Strategic Defence 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 that 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. The Trump administration has indicated it will promote cooperation with allies, partners and international institutions to combat nuclear terrorism.

The Trump administration indicates concerns in the 2018 NPR that Russia is improving its delivery capabilities, including ground-launched cruise missiles in violation of the Intermediate-Range Nuclear Forces (INF) Treaty. It also criticizes Russia for rebuffing United

---

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 2018
4. South Africa, Ukraine, Kazakstan, 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 six nuclear tests. North Korea’s nuclear tests constitute a major challenge to the NPT.
6. 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. The United States reported that it had 1,350 deployed strategic nuclear warheads and 652 deployed delivery vehicles, while Russia reported that it had 1,444 deployed strategic nuclear warheads and 527 deployed delivery vehicles. These numbers are as of February 5, 2018.
7. 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.
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. Biological and chemical weapons are attractive to states and non-state actors, such as terrorists, seeking asymmetric means of attack.

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.

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 guidelines 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.

As for chemical weapons, Iraq repeatedly used mustard gas, tabun, and sarin in the Iran-Iraq War. In the late 1980s, Iraq used chemical weapons to suppress Iraqi Kurds. It is believed that other chemical weapons that were used included VX, a highly toxic nerve agent, and easy-to-manage binary rounds. In August 2013, sarin was used in the suburbs of Damascus, Syria, where Syrian troops clashed with anti-government groups. 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 were undertaken 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) and a UN Security Council resolution. 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.

In August 2015, in order to identify users of chemical weapons in Syrian civil war, the UN Security Council adopted a resolution that establishes a Joint Investigative Mechanism of the UN and OPCW, and investigations under this mechanism have been carried out. In November 2016, the term of this investigative mechanism was deployed their means of delivery, 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.

---

8 With regard to negotiations for reducing the number of nuclear weapons, in December 2017 Russian Foreign Ministry Director of Nonproliferation and Arms Control Mikhail Ulyanov indicated his intent to discuss with the United States the possibility of extending the New Strategic Arms Reduction Treaty by five years and stated Russia’s position that all countries with nuclear weapons, not just the United States and Russia, should participate in future treaties on reducing or restricting nuclear weapons.
9 See Part I, Chapter 2, Section 3-2 for China’s ballistic missile development.
10 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.
11 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 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.
14 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 Mustard gas is a slow-acting blister agent. Tabun and sarin are fast-acting nerve agents.
16 In particular, it has been reported that a chemical weapons attack against a Kurdish village in 1988 killed several thousand people at once.
17 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.
18 Iraq (joined the Chemical Weapons Convention CWC) in February 2009.
20 (The 33rd and 34th) meeting of the Executive Council of OPCW.
21 UN Security Council Resolution 2118.
22 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.
extended for one more year, and efforts have continued to be made to ensure that chemical weapons would not be used ever again by identifying those responsible for the use of chemical weapons. This joint investigation mechanism has specified persons responsible for six incidents of chemical weapons use in Syria. It has been reported that four of these are attributed to the Syrian Army, while the remaining two incidents were initiated by ISIL.23, 24

In particular, the report published in October 2017 finds that the Syrian government was responsible for the use of sarin once again in Khan Sheikhun, Syria in April 2018.25 In the same month, the United States, United Kingdom and France launched missile strikes on chemical weapons related facilities in Syria after they determined the Assad regime had used chemical weapons.26

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. In addition, 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. Furthermore, 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.

The United Kingdom criticized Russia over its highly likely involvement in the use of Novichok, a military-grade chemical weapon developed by Russia, in the attack on a former Russian intelligence agent that occurred in the United Kingdom in March 2018. As punishment, countries including European countries and the United States expelled Russian diplomats.

3 Ballistic Missiles and other 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 accurate 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.27 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.28 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.29
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 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 some terrorists who do not possess related technologies would use a dirty bomb 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.

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.

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 ballistic missile-related trade with Syria and Myanmar.

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. Some also point out that North Korea conducts ballistic missile tests at its export destination and make use of its results.

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. 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.\textsuperscript{36}

### 5 Iran’s Nuclear Issues

The nuclear issues of Iran are a serious challenge to the international non-proliferation regime. In 2002, it was 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. 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 E3+3 (U.K., France, Germany, U.S., China, and Russia) 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.\textsuperscript{37}

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.\textsuperscript{38}

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. Subsequently, the IAEA has repeatedly confirmed that Iran is complying with the agreement. However in May 2018 President Trump stated that with the current agreement, Iran can still be on the verge of a nuclear breakout in a short period of time even if Iran fully complies with the agreement, and also the agreement fails to address Iran’s development of ballistic missiles. He then announced that the United States will withdraw from the agreement and start work aimed at re-imposing sanctions. President Trump has said he will work with allies to find a real, comprehensive and lasting solution to Iran’s nuclear threat. Thus, the future moves of the United States will be closely monitored.

---

\textsuperscript{36} 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.

\textsuperscript{37} First step measures include the limited relaxation of sanctions by the E3+3, provided that for six months, Iran: (1) retains half of its existing uranium enriched to approximately 20% as oxide and dilutes the remaining half to less than 5%; (2) does not enrich uranium over 5%; (3) does not advance activities at uranium enrichment facilities and heavy water reactors; (4) accepts enhanced monitoring by the IAEA.

\textsuperscript{38} 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 two-thirds majority vote of both the House of Representatives and the Senate necessary to override the President’s veto. Thus, the disapproval of the agreement was avoided.