

## 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 1966<sup>1</sup> from having nuclear weapons, and provided that arms control and disarmament of nuclear forces would be pursued through two-way negotiations<sup>2</sup>.

The NPT is currently signed by 191 countries and regions<sup>3</sup>. While some countries that had previously possessed nuclear weapons became signatories of this treaty as non-nuclear weapon states by abandoning these weapons<sup>4</sup>, 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, and February 2013<sup>5</sup>.

U.S. President Barack 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)<sup>6</sup> by the U.S. government. This in turn encouraged the international community to take initiatives towards nuclear disarmament and non-proliferation.

In April 2010, the presidents of the United States and Russia signed the New Strategic Arms Reduction Treaty (New START) to replace START I, which was put into effect in February 2011<sup>7</sup>. In addition, in June 2013, 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<sup>8</sup>. 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.

In the area of "nuclear security" which addresses terrorism activities that utilize nuclear and other radioactive materials, in April 2010, the first Nuclear Security Summit was held in Washington, D.C. The Summit adopted a Communiqué stating that measures should be taken to secure all vulnerable nuclear material in four years to reduce the threat of nuclear terrorism, among other matters. The second Nuclear Security Summit that was convened in Seoul in March 2012 adopted the Seoul Communiqué, which incorporates issues to be addressed by the international community to achieve nuclear security, such as the management, transportation, and illicit trafficking of

1 The United States, the former 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 February 2015

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 three 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 the treaty (United States, China, India, Pakistan, Iran, Israel, Egypt, and North Korea). Indonesia ratified the CTBT in February 2012. The United States participated in the Conference on Facilitating the Entry into Force of the CTBT in September 2011, following on from 2009 which marked the first time in 10 years that the United States participated in the Conference.

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 2015, the United States reported that it had 1,597 deployed strategic nuclear warheads and 785 deployed delivery vehicles, while Russia reported that it had 1,582 deployed strategic nuclear warheads and 515 deployed delivery vehicles. These numbers are as of March 1, 2015.

8 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.

nuclear materials, as well as nuclear forensics<sup>9</sup>. The third Nuclear Security Summit that was held in The Hague in March 2014 adopted a Communiqué, which included a statement that went so far as to say that the leaders encourage countries to minimize their stocks of highly enriched uranium and to keep their stockpile of separated plutonium to the minimum level, both as consistent with national requirements.

The fact that the international community has begun to

make steady and major strides toward nuclear disarmament and non-proliferation contributes to improving the international security environment, and is a welcome development. In contrast, China is deemed to have increased its inventory of nuclear warheads as well as developed and deployed their means of delivery<sup>10</sup>, 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<sup>11</sup>. Accordingly, biological and chemical weapons are attractive to states and non-state actors, such as terrorists, seeking asymmetric means of attack<sup>12</sup>.

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<sup>13</sup>.

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<sup>14</sup> 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<sup>15</sup>.

As for chemical weapons, Iraq repeatedly used mustard gas, tabun, and sarin<sup>16</sup> in the Iran-Iraq War. In the late 1980s, Iraq used chemical weapons to suppress Iraqi Kurds<sup>17</sup>. It is believed that other chemical weapons<sup>18</sup> that were used included VX, a highly toxic nerve agent, and easy-to-manage binary rounds<sup>19</sup>. In August 2013, sarin was used in the suburbs of Damascus, Syria, where Syrian troops clashed with antigovernment groups<sup>20</sup>. 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)<sup>21</sup> and a U.N. Security Council resolution<sup>22</sup>. In August 2014, the operation to destroy Syria's chemical weapons on the U.S. Navy transport vessel Cape Ray was completed<sup>23</sup>. Furthermore, OPCW has indicated that ISIL<sup>24</sup>, which is gaining strength in Iraq and Syria, may have utilized chlorine gas against Iraqi forces<sup>25</sup>.

North Korea is an example of a country that is still presumed to possess these chemical weapons and which

- 9 Nuclear forensics aims to provide evidence for the prosecution of perpetrators of illicit trafficking or malicious use, through identification of the source of detected nuclear and other radioactive materials.
- 10 See Part I, Chapter 1, 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 Means of attack to strike the opponent's vulnerable points. At the same time, they 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, 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 Iraq joined the Chemical Weapons Convention (CWC) in February 2009.
- 19 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.
- 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 U.N. Security Council Resolution 2118
- 23 According to the 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 addition, U.N. Secretary-General Ban Ki-moon reported to the Security Council that 97.8% of Syria's chemical weapons have been disposed of as of October 22, 2014 (Letter dated October 27, 2014 from the U.N. Secretary-General addressed to the President of the Security Council).
- 24 See Part I, Chapter 2, Section 1 for ISIL
- 25 On February 10, 2015, OPCW Director-General Ahmet Üzümcü formally acknowledged that Iraqi authorities had notified the OPCW of ISIL's use of chlorine gas against Iraqi soldiers in October 2014. The Director-General has also noted that while the OPCW has no evidence of actual possession, it has received information that ISIL has made attempts to obtain chemical weapons.

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, have shown that the threat of the use of WMDs by terrorists is real and that these weapons could cause serious damage if used in cities.

### 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, in addition to 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<sup>26</sup>. 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<sup>27</sup>. 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<sup>28</sup>.

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

In addition, since there is a concern that such states may not be able to effectively manage the related technology and materials, the high likelihood that chemical or nuclear substances will be transferred or smuggled out from these states has become a cause for concern. For example, there is a danger that even terrorists who do not possess related technologies would use a dirty bomb<sup>29</sup> 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<sup>30</sup>.

The proliferation of WMDs and other related

<sup>26</sup> 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.

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

<sup>28</sup> 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.

<sup>29</sup> Dirty bombs are intended to cause radioactive contamination by spreading radioactive materials.

<sup>30</sup> With these concerns, the U.N. Security Council adopted Resolution 1540 in April 2004, which sets forth the decision that all U.N. 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.

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<sup>31</sup>.

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.

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<sup>32</sup>. 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. Furthermore, 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.

## 5 Iran's Nuclear Issues

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.

In September 2009, it was revealed that Iran had failed to abide by the reporting duties based on the Safeguards Agreement with the IAEA and was constructing a new

uranium enrichment plant near Qom in central Iran. Moreover, in February 2010, Iran began enriching uranium to increase the enrichment level from below 5% to up to around 20%, saying that the reason was to supply fuel to a research reactor for medical isotope production. In December 2011, Iran started the enrichment process at the above-mentioned new enrichment plant<sup>33</sup>. The IAEA has expressed concerns that these Iranian nuclear activities may have military dimensions including those related to the development of a nuclear payload for a missile<sup>34</sup>. The IAEA notes that it has been unable to obtain confirmation that the activities are for peaceful use purposes since Iran has not permitted IAEA personnel to access military facilities, which are suspected to have been involved in the experiments using high explosives, and has not offered other necessary cooperation to dispel these concerns.

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 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."

33 The IAEA Director General estimated in a report published in February 2014 that Iran had so far produced a total 447 kg of enriched uranium with a concentration of around 20%, out of which the country had stored 160 kg in the form of uranium hexafluoride. Furthermore, the IAEA Report by the Director General released in May of the same year contend that in accordance with the first step measures elaborated later, Iran diluted to less than 5%, or converted into oxide, a total of approximately 409 kg of uranium hexafluoride enriched up to 20%. Uranium 235 with a concentration of 20% or more is defined as highly enriched uranium, which is generally used for research purposes. If this substance is used for weapons, a concentration ratio is usually 90% or greater.

34 In November 2011, the IAEA published a report describing possible military aspects of Iran's nuclear program in detail by referring to information regarding the explosion of high explosives.

The international community expresses strong concerns, saying that there lacks concrete proof of Iran's claim that it had no intent to develop nuclear weapons and that all of its nuclear activities were for peaceful use purposes. The international community has demanded that Iran suspend all of its enrichment-related and reprocessing activities through a series of U.N. Security Council resolutions<sup>35</sup> and IAEA Board of Governors resolutions.

Regarding this issue, the United States and the European Union (EU) have taken individual measures to strengthen sanctions against Iran. In December 2011, the United States enacted a bill that would prohibit foreign financial institutions, which conduct significant transactions with the Central Bank of Iran or other Iranian financial institutions, from opening or maintaining bank accounts in the United States. The EU started to ban imports of Iranian crude oil and petrochemical products in January 2012. Iran, meanwhile, started negotiations with the IAEA toward resolving pending problems. In April 2012, Iran resumed talks with the EU3+3 (United Kingdom, France, Germany, United States, China, and Russia) on its nuclear program, but no major progress was made under the former Ahmadinezhad administration.

However, with Hassan Rouhani winning the presidential election in Iran in June 2013, the discussions with the EU3+3 were advanced under the new administration with the consent of the supreme leader, Ali Hosseini Khamenei. This resulted 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<sup>36</sup>.

In regard to this, Prime Minister Benjamin Netanyahu of Israel has expressed strong opposition to the relaxation of sanctions against Iran, stating in November 2013 that an agreement allowing Iran to enrich uranium is a "historic mistake."

Although the aim was to reach an agreement on the comprehensive measures including the final step by

July 20, 2014 – the last day of the six-month period for the execution of the first step measures, significant gaps between the two sides on core issues resulted in failure to reach an agreement<sup>37</sup>. It was agreed that the negotiations would be extended by four months to November 24, 2014. In this process, the United States has expressed concerns over the number of centrifuges in Iran's possession<sup>38</sup>, while the Iranian side has presented its view that it needed to significantly increase its uranium enrichment capabilities<sup>39</sup>.

It is said that the scale of Iran's permitted uranium enrichment capacity has remained one of the core points of contention in subsequent consultations. In November 2014, the EU3+3 and Iran affirmed that they would continue to execute the JPOA on uranium enrichment agreed upon in November 2013, and announced that the negotiations to reach the final comprehensive agreement would be re-extended through June 30, 2015. Subsequently, on April 2, 2015, the EU3+3 announced that the key parameters of the Joint Comprehensive Plan of Action (JCPOA) were agreed upon as an outcome of the consultations held in Lausanne, Switzerland. It was agreed that work would be under way to draft the JCPOA, including the technical details, through June 30.

35 U.N. Security Council Resolution (UNSCR) 1696 adopted in July 2006, UNSCR 1737 in December 2006, UNSCR 1747 in March 2007, UNSCR 1803 in March 2008, and UNSCR 1929 in June 2010.

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 On July 18, 2014, a statement was released at the joint press conference held by EU High Representative Catherine Ashton and Minister of Foreign Affairs Mohammad Javad Zarif of Iran saying that, "While we have made tangible progress on some of the issues and have worked together on a text for a Joint Comprehensive Plan of Action, there are still significant gaps on some core issues which will require more time and effort." On the same day, U.S. Secretary of State John Kerry stated that, "On all these issues there is still work to do and differences to resolve, but we have made real progress. Still, there are very real gaps on issues such as enrichment capacity at the Natanz enrichment facility. This issue is an absolutely critical component of any potential comprehensive agreement."

38 On July 15, 2014, Secretary of State Kerry stated, "We have made it crystal clear that the 19,000 (centrifuges) that are currently part of their program is too many...And so all I will say to you is that we will continue to press."

39 Iran's supreme leader Khamenei, upon noting that the West's aim is to make Iran accept capacity equivalent to 10,000 centrifuges of the older type, asserted, "Our officials say we need capacity equivalent to 190,000 centrifuges. We might not need this this year or in the next two or five years but this is essential for our country."