

## Chapter 1

# Nuclear Arms Control

---

**Modernizing Nuclear Forces and Creating  
a Positive Environment for Nuclear  
Disarmament**

ICHIMASA Sukeyuki

The nuclear arms control architecture since the Cold War has undergone considerable changes in recent years. In today's era called the "second nuclear age," it is not an overstatement to say that the post-Cold War wave of arms control has receded, and that the world has entered a new cycle of nuclear expansion driven by modernization of nuclear weapons. The Treaty between the United States of America and the Union of Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles (INF Treaty) was terminated in August 2019. Furthermore, there is no prospect for negotiations to extend the Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (New START), which is set to expire in 2021. These treaties have been meaningful, for example, in restraining a nuclear arms competition, bringing about transparency and predictability based on a strict verification regime. However, the security environment has transformed significantly amidst the proliferation of nuclear weapons and missile technologies. There are debates that the arms control framework should be expanded to include countries other than the United States and Russia, and that negotiations should cover not only the issues around the definition of strategic/tactical nuclear weapons and numerical caps on nuclear weapons but also the treatment of new strategic arms and missile defenses. Meanwhile, the international community places high expectations on US-Russia nuclear arms control for compliance with Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which stipulates negotiations in good faith on nuclear disarmament. Negotiations on a successor treaty, which has been declared as being aimed at the "21st-century model of arms control," have attracted international attention.

These circumstances have had reverberations on multilateral nuclear disarmament and non-proliferation efforts. The NPT failed to adopt the draft Final Document at the 2015 Review Conference, and expectations are building for a successful 2020 Review Conference on the milestone 25th anniversary of the indefinite extension of the NPT. On the other hand, new developments in nuclear disarmament have emerged, including the Treaty on the Prohibition of Nuclear Weapons (TPNW), which focuses on the humanitarian impact of nuclear weapons and seeks their total elimination. In the face of opposition from nuclear-weapon states and nuclear umbrella states, negotiations on the TPNW were held with the involvement of the civil society, and the treaty was adopted by the United

Nations (UN) General Assembly in July 2017. Amid concerns about a divided international community on nuclear disarmament approaches, nuclear-weapon states that have benefited from the indefinite extension of the NPT have also been required to engage in nuclear disarmament. In view of the multifarious security environment of various countries, the current situation calls into question how to constructively pursue discourse concerning new initiatives on nuclear disarmament, taking into account nuclear deterrence needs, the international community's concerns over delays in nuclear disarmament negotiations, nuclear risk reduction, and the humanitarian impact of nuclear weapons.

## 1. US-Russia Nuclear Arms Control: Developments and Challenges

### (1) Implications of Terminating the INF Treaty

The INF Treaty was a breakthrough agreement that was signed toward the end of the Cold War. In order to eliminate ground-launched ballistic and cruise missiles with ranges of 500 to 5,500 km and their launchers and verify compliance with the agreement, the treaty introduced verification measures with a high level of intrusiveness under the slogan, “trust but verify.” As time passed, however, US and Russian postures gradually diverged. In the mid-2000s when horizontal proliferation of intermediate-range missile technologies increased, Russia began to hint at withdrawing from the treaty, citing China's intermediate-range missiles and the United States' deployment of missile defense systems in Europe.<sup>1</sup>

In May 2013, the United States first conveyed concerns to Russia regarding its treaty violation, and Russia denied it.<sup>2</sup> In July 2014, the US Department of State (DOS) published a report stating that Russia's development of a ground-launched cruise missile (GLCM) is in violation of the INF Treaty.<sup>3</sup> In an April 2018 report, the DOS



Russia's GLCM, 9M729 (SSC-8) (Reuters/Kyodo News)

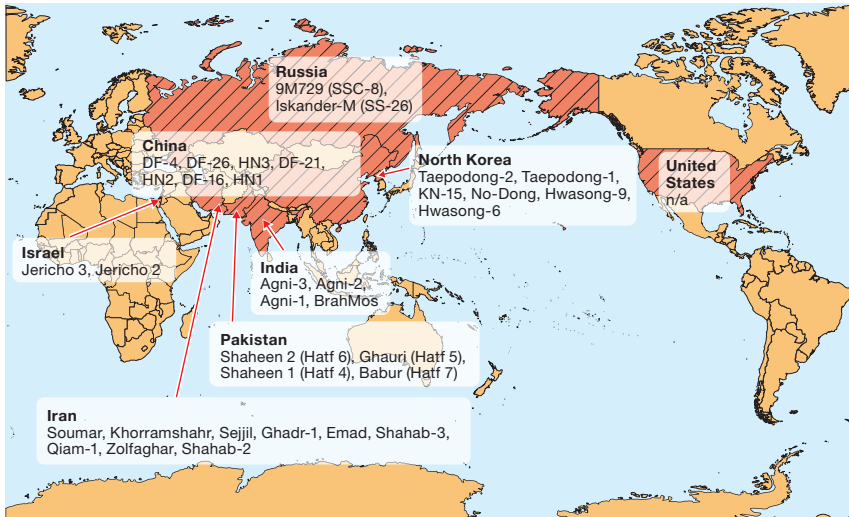
disclosed for the first time its analysis finding that this GLCM is 9M729 (SSC-8).<sup>4</sup> However, Russia refuted that it is not a violation of the treaty.<sup>5</sup> In December 2018, Mike Pompeo, US Secretary of State, issued a statement that the United States will inevitably have to withdraw from the INF Treaty unless Russia remedies its violation.<sup>6</sup> Conversely, Sergei Ryabkov, Deputy Minister of Foreign Affairs of the Russian Federation, condemned that the United States' SM-3 and Aegis Ashore were in breach of the treaty,<sup>7</sup> noting if the United States deploys ground-launched missiles, Russia will have to take retaliatory measures of all sorts, which could plunge them into a missile crisis that no one desires.<sup>8</sup> In addition, Vladimir Putin, President of the Russian Federation, raised alarm bells, stating that the United States' withdrawal from the INF Treaty may ruin the entire architecture of arms control and non-proliferation of weapons of mass destruction.<sup>9</sup> The situation could not be defused even after the United States suspended its obligations under the INF Treaty in February 2019. The treaty's termination became probable when Russia similarly suspended its obligations, too. In April, Donald Trump, President of the United States, instructed his administration staff to begin considering a new US-Russia-China "21st-century model of arms control," according to reports.<sup>10</sup> On August 2, the INF Treaty was terminated.

Such developments took place against the background of differences in the security environment between now and the time that the INF Treaty was concluded owing to missile technology proliferation, as well as a decline in the post-Cold War momentum to nuclear disarmament dubbed the "end of the arms control era," and an increasing dependence on nuclear deterrent.

In the post-Cold War era, horizontal proliferation of missile technology occurred across the globe as symbolized by the rise of China, which has become one of the world's largest missile holders. In particular, since the mid-1990s, China has built up its missile forces, including those that match INF definitions. Its DF-17 hypersonic glide vehicle (HGV), which is seen as a new means for delivery of nuclear weapons, was showcased for the first time in October 2019 at a military parade celebrating the 70th anniversary of China's founding.<sup>11</sup>

The momentum to nuclear disarmament, namely, discourse on a "world without nuclear weapons," subsided in many nuclear-weapon states. To the contrary, a wave of worldwide nuclear modernization, which had been underway behind the scenes, appears to be re-emerging. The TPNW negotiations discussed

Figure 1.1. Status of development and possession of noteworthy missiles with INF ranges by nuclear-weapon states, de facto nuclear-weapon states, and nuclear threshold states



Source: Compiled by the author based on the CSIS Missile Defense Project website “Missiles of the World.”

later have revealed that around one-fourth of the entire world depends on nuclear deterrent. Moreover, there is logic that the changes in the security environment have made Cold War-style arms control unfit for the status quo, and therefore, the termination of the INF Treaty was unavoidable. While President Trump’s proposal of a “21st-century model of arms control” involving China<sup>12</sup> may offer a new step toward a “world without nuclear weapons,” i.e., if and when China’s participation is realized in the future, the country itself has refused the proposition.

In connection with the INF Treaty’s termination, in July 2019, Vladimir Dzhubarov, First Deputy Chair of the Federation Council Committee on Foreign Affairs of the Russian Federation, indicated that if the United States deploys intermediate- and short-range missiles in Europe, Russia will follow suit.<sup>13</sup> On August 2, Mark Esper, US Secretary of Defense, stated that the United States has no plans to develop INF, and that for some time to come, it expects to enhance defense capabilities needed in the European and the US Indo-Pacific Command

(INDOPACOM) theaters.<sup>14</sup> On the other hand, Jens Stoltenberg, NATO Secretary General, affirmed on the same day that while NATO's nuclear deterrence must remain safe and effective, NATO need not take the same actions as Russia, does not want a nuclear arms race, and has no intention to re-deploy INF in Europe.<sup>15</sup> On August 3, in response to a question from the media on whether the United States is considering deployment of ground-launched intermediate-range missiles in Asia, Secretary Esper responded that he would like to deploy them and that while he personally would prefer within several months, these things take longer than expected.<sup>16</sup> On August 5, Scott Morrison, Prime Minister of Australia, said that his country had not been asked by the United States about deployment of missiles and was not considering it.<sup>17</sup> On August 6, Fu Cong, Director General of the Department of Arms Control and Disarmament of the Ministry of Foreign Affairs of China, stated that if the United States deploys INF in Japan, the Republic of Korea (ROK), and Australia, China will take a range of countermeasures.<sup>18</sup> On the same day, Secretary Esper noted that he has not yet asked any country about deployment of missiles in Asia, that it will be quite a long ways away, and that it will require a few years to actually be able to deploy some type of initial operational-capable missiles, whether they are ballistic or cruise missiles.<sup>19</sup> On August 7, at his press conference regarding a Japan-US defense ministerial meeting, Iwaya Takeshi, Minister of Defense, stated that there was no talk of deployment in Japan, saying Secretary Esper explained to him that the United States had not reached the stage of considering where to deploy missiles and that it was reviewing how it should respond to the situation. According to reports on August 18, Sergei Shoigu, Defense Minister of the Russian Federation, remarked that he thinks Russia will not take any actions as long as the United States does not deploy new missiles in Europe.<sup>20</sup> On August 22, Defense Minister Iwaya noted as follows: "Countries other than the United States and Russia, which had a treaty, are beginning to develop intermediate-range missiles and deploy operational missiles; a key challenge will be increasing transparency of military capabilities in East Asia," adding, "A new framework must be explored to prevent an excessive race in missile development."<sup>21</sup>

On August 18, the United States conducted a ground flight test of a GLCM, a variant of the Tomahawk with a range of more than 500 km, using the Mk41 Vertical Launching System (VLS).<sup>22</sup> As a response from Russia, which has already deployed the operational 9M729,<sup>23</sup> Deputy Foreign Minister Ryabkov

criticized the US flight test, and at the same time, announced that Russia does not wish an arms race and will not deploy new missiles as long as the United States does not deploy them first.<sup>24</sup> Geng Shuang, Deputy Director of the Foreign Ministry Information Department of the People's Republic of China, which has deployed the most missiles with INF ranges of any country, criticized the US action for triggering a new round of arms race.<sup>25</sup>

On September 25, it was reported that President Putin of Russia sent a proposal to the government of Germany for a moratorium on deploying INF in the European region, and that the President also asked several countries, including European member states of NATO, to freeze INF deployment in Europe and other regions.<sup>26</sup> Meanwhile, on October 3, Suga Yoshihide, Chief Cabinet Secretary, stated at his press conference, "The United States explained to us that there will be no immediate deployment and it is not considering specific deployment locations, and that the United States has not asked any ally about new missile acceptance or deployment."<sup>27</sup> On October 22, it was reported that Japan and the United States commenced consultations on possible deployment of intermediate-range missiles in Asia.<sup>28</sup> On November 28, Emmanuel Macron, President of France, who held a meeting with NATO Secretary General Stoltenberg, said France cannot accept the proposal for a moratorium on deploying missiles, while on the other hand advocated that European countries should discuss a new treaty with the United States and Russia.<sup>29</sup> On December 6, Sergey Lavrov, Minister of Foreign Affairs of the Russian Federation, remarked that if the United States deploys missiles, Russia will respond with a mirror reaction.<sup>30</sup> On December 12, the United States announced that it conducted a flight test of a ground-launched ballistic missile, the first since the termination of the INF Treaty, and that it was successful.<sup>31</sup> In regard to the US announcement, Dmitry Peskov, Deputy Chief of Staff of the Presidential Executive Office, Presidential Press Secretary of the Russian Federation, said the test made clear the INF Treaty was terminated because of US policy.<sup>32</sup>

No conclusive information has come to light about the high-profile deployment of intermediate-range missiles. There were notable moves by China and Russia to restrain deployment. For example, at a China-ROK foreign ministers' meeting on December 4, Wang Yi, State Councilor and Minister of Foreign Affairs of China, allegedly warned Kang Kyung-wha, Minister of Foreign Affairs of the ROK, not to have US intermediate-range missiles deployed in the ROK.<sup>33</sup> At a

bilateral foreign ministers' meeting on December 19, Foreign Minister Lavrov of Russia, too, raised concerns with Motegi Toshimitsu, Minister for Foreign Affairs, that deployment of intermediate-range missiles in Japan and elsewhere may enable the missiles to reach the Ural region in central Russia, according to reports.<sup>34</sup>

Intermediate-range missiles proliferated worldwide while the United States and Russia were restrained by the INF Treaty. From a strategic viewpoint, it is understandable that some observers believe measures are necessary to address this issue. Against the backdrop of the proliferation of intermediate-range missiles, there is also the view that regional deterrent will newly increase if the United States and Russia, which had been bound by the INF Treaty, re-deploy nuclear forces or intermediate-range missiles with conventional warheads. The INF Treaty for verifiable elimination, while its violation was not remedied, is now obsolete, and verification and inspection information accumulated over 30 years has been reset. Going forward, it is anticipated that both the United States and Russia will further rely on their own intelligence in place of verification, inspection and national technical means (NTM). A drop in transparency is inevitable, and a rise in uncertainties related to the size and deployment status of nuclear forces will cause security concerns about a decline in strategic stability.

China is seen as unlikely to participate in the "21st-century model of arms control" for some time.<sup>35</sup> But if the model is pursued, the creation of a more effective agreement will rest on the question of how to maintain or make appropriate revisions to elements such as: classification of weapons according to ranges and verifications with high intrusiveness; and balance with the reduction margin and inventory caps. While China may modernize and enhance its nuclear forces, its inventory is no more than about one-twentieth that of the United States and Russia. Meanwhile, only China and Russia possess the HGV, which has gained attention as a delivery vehicle for nuclear weapons. A challenge will be how to put this on the arms control agenda. The exterior appearance of missiles may not reveal whether nuclear warheads are mounted on missiles with certain payloads deployed by nuclear-weapon states. For this reason, the United States' Conventional Prompt Global Strike (CPGS) concept involving non-nuclear weapons may be contested during the negotiations. Furthermore, if China participates in the negotiations, it may seek revisions to the definition of strategic arms (strategic nuclear weapons, non-strategic nuclear weapons, or tactical



nuclear weapons), which was set forth based on the geographical separation between the United States and Russia. This matter also concerns the negotiations on a successor treaty of New START. Moreover, the inclusion of more nuclear-weapon states in a nuclear arms control agreement itself will reduce nuclear risk and contribute to strengthening strategic stability and should be welcomed. It is expected that the agreement will be succeeded and not overlook the important lessons and know-how regarding arms control that the United States and Russia have accumulated over many years, including mutual verifications between the two countries.

## **(2) The Outlook for New START**

New START was signed between the US and Russian leaders in April 2010 and entered into force in February 2011. It has a duration of ten years and is set to expire in 2021 if the United States and Russia do not agree to extend it. The treaty: (1) reduces the number of deployed warheads to 1,550 or less, (2) reduces the total number of deployed intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and heavy bombers to 700 or less, and (3) reduces the total number of deployed and non-deployed ICBM and SLBM launchers as well as deployed and non-deployed heavy bombers to 800 or less in seven years, respectively. The treaty's verification regime is worthy of mention. It stipulates not only use of NTM but also biannual notifications concerning declared databases, ten annual Type One inspections of deployed and non-deployed strategic systems, and eight annual Type Two inspections of non-deployed strategic systems and their elimination and conversion. This stands in contrast to the Treaty between the United States of America and the Russian Federation on Strategic Offensive Reductions (Moscow Treaty, entered into force 2003), which contained no detailed verification provisions and relied on the verification provisions of the Treaty between the United States of America and the Union of Soviet Socialist Republics on Strategic Offensive Reductions (START I).

In terms of treaty compliance, the United States announced in September 2017 that it had achieved the levels required under the treaty, namely, 660 deployed ICBMs, SLBMs, and heavy bombers; 1,393 warheads on deployed ICBMs, SLBMs, and heavy bombers; and 800 deployed and non-deployed launchers of ballistic missiles, SLBM launchers, and heavy bombers.<sup>36</sup> Likewise,

Russia announced in February 2018 that it had achieved the required levels, namely, 527 deployed ICBMs, SLBMs, and heavy bombers; 1,444 warheads on deployed ICBMs, SLBMs, and heavy bombers; and 779 deployed and non-deployed launchers of ballistic missiles, SLBM launchers, and heavy bombers.<sup>37</sup>

As the expiration date for New START approaches, the fate of negotiations on a successor treaty or on the extension of New START has drawn attention in recent years. As of October 2018, Foreign Minister Lavrov of Russia stated that his country was ready for consultations on extending the treaty and would wait for a reply from the United States.<sup>38</sup> In May 2019, Tim Morrison, senior director on the US National Security Council, stated that President Trump will determine whether or not to extend the treaty at some point in 2020.<sup>39</sup> In August, Andrea Thompson, Under Secretary for Arms Control and International Security, US DOS, stated that discussions are ongoing between the relevant US and Russian agencies on what new weapons they have developed or are developing would fall under the New START parameters.<sup>40</sup> In the same month, Presidential Press Secretary Peskov of Russia noted that while President Putin has raised the issue of extension with President Trump, the United States has not responded, and that global strategic stability would be undermined if they lose the only agreement that substantially regulates the area of nuclear weapons.<sup>41</sup> The prospects remain uncertain for successor treaty negotiations and the treaty's extension in the immediate term. Since the ratification of the treaty, the United States had issues with its exclusion of Russia's tactical nuclear weapons, which outnumber those of the United States, and stockpile of nuclear warheads.<sup>42</sup> Barack Obama, former President of the United States, showed motivation for negotiating a successor treaty that covers these arsenals. On the other hand, Russia has expressed concerns over US missile defenses and non-nuclear strategic arms, such as the CPGS concept.<sup>43</sup> Indeed, in 2011, Deputy Foreign Minister Ryabkov made reference to concluding a legally binding missile defense-related treaty.<sup>44</sup> In 2013, then President Obama proposed in his Berlin speech to further reduce US deployed strategic nuclear weapons by up to one-third, and subsequently mentioned removing US tactical nuclear weapons deployed in Europe. Nevertheless, the response from Russia was cold. Yury Ushakov, Aide to the President, noted the need for discussions engaging other countries possessing nuclear weapons and opposed moves that would distort the balance in the system of strategic deterrence and undermine the efficacy of Russian nuclear forces.<sup>45</sup>

On the future outlook for New START, in August 2019, Defense Secretary Esper stated that, in light of Russia's development of new strategic arms after New START was concluded, the United States should consider if the treaty will continue to serve US interests while keeping strategic stability in mind. In doing so, the Defense Secretary said the United States should take into account the possibility of multi-lateralizing the treaty for avoiding a future arms race, as well as the pros and cons of including non-strategic nuclear weapons in the treaty.<sup>46</sup> In the following month, John Bolton, National Security Advisor, was dismissed<sup>47</sup> and left the administration. He previously criticized it would be inappropriate to extend New START as it cannot effectively address new strategic arms like HGV possessed by China and Russia,<sup>48</sup> and had expressed his intention to involve China and focus on negotiations for reaching a more comprehensive agreement that covers new weapons not regulated by the treaty. While it depends on what category of nuclear weapons and their delivery vehicles are envisioned for the "21st-century model of arms control" pursued by the United States, the dismissal of National Security Advisor Bolton may have some impacts on White House policy. Meanwhile, at the Eastern Economic Forum in September, President Putin of Russia referred to the "21st-century model of arms control" advocated by the United States. On this occasion, President Putin criticized the United States for still not ratifying the Comprehensive Nuclear-Test-Ban Treaty (CTBT), while showing understanding toward China's contention that its nuclear forces are smaller in scale than those of the United States and Russia, and therefore, China's arsenal of nuclear weapons and their delivery vehicles is too small for reduction. President Putin also quoted himself as asking President Trump how new hypersonic weapons will be included in an arms control agreement when the two met on the margins of the G20 Osaka Summit, and said that Russia has not received a clear answer from the United States.<sup>49</sup> Under these circumstances, on November 27, Deputy Foreign Minister Ryabkov underscored that Russia is open to extending the treaty for less than



Meeting between President Trump and President Putin at the Osaka G20 Summit  
(UPI/Newscom/Kyodo News Images)

five years.<sup>50</sup> On December 22, Foreign Minister Lavrov stated that if New START will be extended, Russia is ready to include the RS-28 Sarmat and the Avangard HGV under the treaty's regulations.<sup>51</sup> On the other hand, on December 24, President Putin stated that Russia will continue to strengthen its nuclear forces as long as US-Russia consultations do not make progress. Defense Minister Shoigu also referred to deploying Avangard by the end of the week.<sup>52</sup> On December 25, Deputy Foreign Minister Ryabkov revealed that the two sides were coordinating toward holding discussions on bilateral strategic stability in a third country in a few weeks' time.<sup>53</sup>

The significance of New START is as was presented by the US DOS in February 2018. In short, New START is significant because compliance with the treaty enhances the security of the United States and its allies and makes strategic relations between the United States and Russia more stable, transparent, and predictable. This will be critically important when trust in the relationship deteriorates or the threat of miscalculation and misperception rises.<sup>54</sup> However, some note that, even if the United States and Russia agree to extend New START and it is extended until 2026, this alone will not directly resolve the issues that led to setbacks in the successor treaty negotiations, such as treatment of missile defense, the CPGS concept, and tactical nuclear weapons, and that the extension will not necessarily produce a constructive outcome for the negotiations involving China.<sup>55</sup>

### **(3) The Second Nuclear Age: Modernization of Nuclear Forces and New Strategic Arms**

The second nuclear age has long been discussed in the context of the international nuclear security environment. Paul Bracken calls the "second nuclear age" a post-Cold War situation in which independent nuclear decisions are made in key regions and globally, led by the world major powers, in contrast to the first nuclear age epitomized by Cold War US-Soviet nuclear confrontations.<sup>56</sup> Rod Lyon notes that there are three variants of the second nuclear age discourse: (1) the second nuclear age discussion that flourished from 1995 to around 1998 warning of nuclear proliferation to rogue status, and by extension, the potential failure of the nuclear deterrence doctrine; (2) the second nuclear age discussion in around 2004 contending that nuclear proliferation chains will undermine nuclear non-proliferation norms; and (3) the second nuclear age discussion from

around 2015 to the present reflecting the modernization of nuclear forces and their increasing strategic importance.<sup>57</sup> All of these discussions are closely linked to nuclear deterrence and concern issues related to horizontal and vertical nuclear proliferations—precisely challenges of nuclear non-proliferation under the NPT regime and of nuclear arms control agreements among nuclear-weapon states.

In actuality, the recent situation of nuclear weapon modernization backs up the second nuclear age discussion elaborated above. Russia develops arsenals, such as the new sea-launched cruise missile (SLCM) Kalibr, the short-range ballistic missile (SRBM) system Iskander-M (SS-26), and the 9M729 (SSC-8) that was alleged to be in violation of the INF Treaty. In the March 2018 State of the Union address, President Putin announced development of new weapons, such as the RS-28 Sarmat ICBM, the Avangard HGV, the Burevestnik nuclear-powered cruise missile, and the Poseidon nuclear-powered unmanned underwater vehicle carrying thermonuclear warheads. China, too, develops and possesses arsenals, such as the DF-21 and DF-15 ground-launched medium-range ballistic missiles (MRBMs) and the DF-16 SRBM, the DF-26 intermediate-range ballistic missile (IRBM), short-range cruise missile (SRCM), and the HN1, HN2, HN3, and DF-17 intermediate-range cruise missiles (IRCMs). In the Nuclear Posture Review (NPR) of February 2018, the United States expresses that it will maintain its policy of modernizing nuclear weapons, that as a short-term plan it will develop a lower-yield nuclear warhead for the SLBM, and that as a long-term plan it will develop SLCM.<sup>58</sup> In January 2019, it was reported that the United States produced a new model of low-yield nuclear warhead.<sup>59</sup> In August, the United States referred to developing a low-flying long-range cruise missile (LRCM) and a ballistic missile.<sup>60</sup>

Nuclear tests have also drawn attention. In May 2019, in his address at the Hudson Institute in the United States, Robert Ashley, Director of the Defense Intelligence Agency, cast doubt on Russia's adherence to the nuclear testing moratorium based on the zero-yield standard, which prohibits explosions that produce self-sustaining, supercritical chain reaction.<sup>61</sup> Russia immediately objected, saying the remark was a groundless defamation, and emphasized it is in compliance with the ratified CTBT.<sup>62</sup> The Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) Preparatory Commission issued a statement that it had not detected signs of nuclear testing.<sup>63</sup> Meanwhile, radiation leakage from a small explosion in August in northern Russia that resulted in fatalities<sup>64</sup> gained

attention as a possible indication of new nuclear weapon development in the country.

It is a fine line between modernization of aging nuclear forces and a new nuclear arms race. If removal from a nuclear arms control treaty leads to loss of transparency and ability to prevent nuclear expansion, this may pave the way for a more unstable and unpredictable international security environment. From the perspective of reducing nuclear risk, it is time to once again review the balance between deterrence and security on the one hand and nuclear arms control and nuclear disarmament on the other hand.

#### **(4) US and Russia Nuclear Arms Control Obligations under NPT Article VI**

The INF Treaty and New START are arms control treaties between the United States and Russia, along with being treaties that have come under the spotlight in the global context. The conclusion of the INF Treaty eliminated certain delivery vehicles in a verifiable manner. It also generated the trend for the subsequent START I and Presidential Nuclear Initiatives, including reduction, abolition, and strengthened control of tactical nuclear weapons, and heightened the post-Cold War international momentum to nuclear disarmament. On the other hand, New START curbed the nuclear arms race by introducing numerical caps on nuclear weapons and their delivery vehicles and contributed to improving the security environment by creating transparency and predictability under a verification regime. As with US-Russia nuclear arms control and nuclear disarmament treaties, both refer to the obligations under Article VI of the NPT in their preamble, i.e., negotiations in good faith on nuclear disarmament.

The NPT, which forms the core of today's international nuclear order, has a backbone consisting of a political transaction known as a "grand bargain": in exchange for non-nuclear weapon states' acceptance of nuclear non-proliferation obligations, nuclear-weapon states engage in nuclear disarmament and promote peaceful uses of nuclear power.<sup>65</sup> In the second half of the 1960s when the NPT was negotiated, the Non-Aligned Movement sought Negative Security Assurances (NSA) from nuclear-weapon states and their clear engagement in nuclear disarmament. At the time, NSA took the form of non-legally binding pledges made through the UN Security Council. As for nuclear disarmament, negotiations in good faith on nuclear disarmament were stipulated under Article

VI of the NPT. In addition, such engagement of nuclear-weapon states has been confirmed in Nuclear-Weapon-Free Zones (NWFZ). In 1995, 25 years after the NPT's entry into force in 1970, nuclear-weapon states promoted the indefinite extension of the treaty under the provision of Article X, Paragraph 2 of the NPT. Against the backdrop of the CTBT negotiations at the Conference on Disarmament (CD), the 1995 Review and Extension Conference made three decisions (1. extension of the NPT, 2. strengthening the review process for the treaty, and 3. principles and objectives for nuclear non-proliferation and disarmament) and adopted a resolution on the Middle East, and the indefinite extension of the NPT was agreed. This not only fixed the definition of nuclear-weapon state stipulated in Article IX, Paragraph 3 of the NPT into the future, but also made the negotiations in good faith on nuclear disarmament under Article VI an indefinite requirement.

## **2. Multilateral Nuclear Disarmament, Nuclear Non-Proliferation Efforts, and Discourse concerning New Initiatives on Nuclear Disarmament**

### **(1) Challenges for the 2020 NPT Review Conference**

The “grand bargain” has become a focal point of the NPT Review Conference, which continues to be held every five years since the NPT's indefinite extension. Ahead of the 2020 NPT Review Conference, what attracted attention at the 2019 session of the Preparatory Committee for the NPT Review Conference were Cluster 1 (nuclear disarmament) discussions regarding nuclear disarmament obligations and the points at issue pertaining to the legal prohibition of nuclear weapons.<sup>66</sup> At the session, a number of states parties noted the slow pace of progress on NPT Article VI obligations related to the signing and ratification of the CTBT, commencement of negotiations on the Fissile Material Cut-off Treaty (FMCT), as well as the uncertain outlook of the termination of the INF Treaty and New START.<sup>67</sup> In response, the United States noted the deterioration of the international security environment in recent years, and stated that, while Washington cannot offer a universal NSA, it would not threaten to use nuclear weapons against non-nuclear weapon states that comply with their nuclear non-proliferation obligations. Regarding the criteria for the use of nuclear weapons, the United States said that it would consider their use only in extreme

circumstances to defend the vital interests of the United States or those of its allies and partners, and that it would maintain effective deterrence against non-nuclear attacks that could constitute extreme circumstances. In order to pursue a world without nuclear weapons as a long-term goal, it stressed the need to find a remedy for the current security environment that makes nuclear deterrence necessary.<sup>68</sup> Meanwhile, the United States did not articulate about the extension of New START, prospects for a successor treaty, or arms control issues related to intermediate-range missiles following the termination of the INF Treaty. Russia, on the other hand, distributed a working paper regarding future practical nuclear disarmament measures and creating prerequisites for their implementation. In this context, Russia vowed that it did not want New START to have the same fate as the INF Treaty, and supported the extension of New START upon solving the problem related to the considerable amount of strategic arms unilaterally excluded from accountability under the treaty. Furthermore, taking into account the role that nuclear weapons play in the security of many countries, Russia criticized the United States' missile defenses, CPGS concept, deployment of weapons in outer space, and nuclear sharing policy with NATO countries.<sup>69</sup>

Concerning the legal prohibition of nuclear weapons, Austria and Brazil as well as other Asian, African, and Latin American countries and regional groups expressed support for the TPNW, adopted in 2017, in response to nuclear-weapon states' concerns that the TPNW would weaken the NPT regime and their calls for developing a nuclear disarmament environment centered around improving the security environment. Based on these discussions, the Preparatory Committee for the NPT Review Conference's recommendations drafted by the chair included the need for a legally-binding norm to prohibit nuclear weapons<sup>70</sup> but were not adopted by consensus.<sup>71</sup>

In 2020, on this milestone year of 25 years since the NPT's indefinite extension, there are a number of difficult challenges, including North Korean nuclear issues, issues related to the United States' withdrawal from the Joint Comprehensive Plan of Action (JCPOA) on Iran, as well as non-nuclear disarmament challenges such as the establishment of the Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction. The 2019 session of the Preparatory Committee for the NPT Review Conference achieved agreement on procedural matters, while on the other hand discussions on nuclear disarmament have seen a deepening rift between nuclear-weapon/nuclear



umbrella states and non-nuclear weapon states. Some observers have sternly noted that discussions outside of the NPT framework and diplomatic efforts are necessary.<sup>72</sup>

## **(2) Prospects for the TPNW's Entry into Force and Apprehension of a Divided International Community**

The adoption of the Final Document at the 2010 NPT Review Conference, which expressed “its deep concern at the catastrophic humanitarian consequences of any use of nuclear weapons,” led to the holding of the sessions of the Preparatory Committee for the NPT Review Conference in 2012 and beyond and to the holding of the International Conference on the Humanitarian Impact of Nuclear Weapons since 2013 in Oslo, Nayarit, and Vienna. In particular, the Vienna conference in 2014 was attended by the United States and the United Kingdom and discussed the impact of nuclear weapons explosions and of nuclear testing, risk drivers for nuclear weapons use, scenarios and capabilities regarding nuclear weapons use, and international norms and the humanitarian impact of nuclear weapons.<sup>73</sup> Additionally, the conference issued a “humanitarian pledge”<sup>74</sup> supported by 127 states. Subsequently, pursuant to the 2015 UN General Assembly resolution (A/RES/70/33), the Open-ended Working Group (OEWG) taking forward multilateral nuclear disarmament negotiations held discussions on the legal prohibition of nuclear weapons in the absence of nuclear-weapon states. The 2015 NPT Review Conference discussed the inhumane nature of nuclear weapons and released a joint statement on the humanitarian consequences of nuclear weapons with the support of 159 states, including Japan. In 2016, TPNW negotiations were conducted following the adoption of the resolution by the General Assembly on taking forward multilateral nuclear disarmament negotiations (A/RES/71/258). On July 7, 2017, the TPNW was adopted at the UN General Assembly by a vote of 122 states in favor and was opened for signature. This means approximately two-thirds of all countries in the world supported the multilateral TPNW, which prohibits development and possession of nuclear weapons as well as using and threatening to use nuclear weapons. However, as of December 2019, the TPNW has been signed by 80 states and ratified by 34 states and has not yet reached the 50 states required for entry into force.

As was already stated, all nuclear-weapon states and nuclear umbrella states disapproved the TPNW since the negotiations. For example, in July 2017,

five nuclear-weapon states noted in a statement that accession to the TPNW is incompatible with the policy of nuclear deterrence, which has been essential to keeping the peace in Europe and Northeast Asia for more than 70 years.<sup>75</sup> In September, NATO criticized that a treaty that will not engage nuclear-weapon states will not be effective, will not contribute to reducing nuclear arsenals, and will not only not contribute to a country's security and to international peace and stability but will also risk creating divisions in the international community, notwithstanding the fact that a unified approach is required as nuclear proliferation and security threats increase more than ever.<sup>76</sup> Japan has also presented a path forward based on a practical approach toward the elimination of nuclear weapons. Japan expressed the view that, with the engagement of nuclear-weapon states and upon building confidence and trust among states, agreeing on measures to reduce nuclear weapons, and creating an enabling security environment, an effective and meaningful treaty should be made for the elimination of nuclear weapons as the final building block after reaching a "minimization point" at which the number of nuclear weapons is sufficiently low. While showing understanding that the TPNW negotiations are an outcome of the frustration toward the slow pace of nuclear disarmament and a sincere desire to urgently achieve progress, Japan expressed that it cannot participate in the negotiations, which will not involve nuclear-weapon states, may divide the international community, and which will likely not lead to a resolution of real security issues.<sup>77</sup>

There are deep-rooted divisions between these discussions on the humanitarian impact of nuclear weapons and the discourse on security realities. Both discuss security; however, humans (humanity) are the subject of the former, whereas states (nuclear-weapon states, allies, and partners) are the subject of the latter. The debates have not stopped even after the TPNW negotiations have ended. At the annual International Atomic Energy Agency (IAEA) General Conference in September 2019, five nuclear-weapon states jointly noted the TPNW's harmful impact on the non-proliferation regime and reaffirmed that they will neither sign nor be bound by the treaty.<sup>78</sup> In order to avoid a further deepening of this divide in nuclear disarmament discourse, interested countries have recently raised issues in the lead-up to the 2020 NPT Review Conference. Below, the proposals for the following are described: Creating an Environment for Nuclear Disarmament (CEND) initiative, Stockholm Initiative on Nuclear Disarmament, and Group of Eminent Persons for Substantive Advancement of Nuclear Disarmament (EPG).

CEND was proposed by the United States in 2018 at CD under the name of “Creating the Conditions for Nuclear Disarmament (CCND)”<sup>79</sup> and was unveiled by its current name at the 3rd Preparatory Committee for the 2020 NPT Review Conference in the following year, 2019. At the CEND Working Group (CEWG) kickoff meeting in July 2019 also attended by NPT non-member states, Christopher A. Ford, Assistant Secretary of State for International Security and Nonproliferation, US DOS, sought a realistic and new disarmament discourse under the current security environment, along with diplomatic dialogue for exploring solutions to making progress on nuclear disarmament. Namely, he asked participants to discuss three topics: (1) reducing perceived incentives for states to retain, acquire, or increase their holdings of nuclear weapons; (2) multilateral and other types of institutions and processes to bolster non-proliferation efforts and build confidence in, and further advance, nuclear disarmament; and (3) interim measures to address risks associated with nuclear weapons and to reduce the likelihood of war among nuclear-armed states.<sup>80</sup>

The Stockholm Initiative was launched in June 2019 at the Stockholm Ministerial Meeting on Nuclear Disarmament and the Non-Proliferation Treaty, which adopted a joint declaration of 16 states including Japan. The declaration advocates an ambitious and realistic “steppingstones approach” for compliance with NPT Article VI, based on the engagement of states that attended the 1995, 2000, and 2010 NPT Review Conferences. Specifically, it notes transparent and responsible declaratory policies, measures to reduce the role of nuclear weapons in doctrines and policies, ways of enhancing transparency and of reducing risks of any uses of nuclear weapons, strengthened NSA, work on nuclear disarmament verification, and the importance of FMCT. In particular, the declaration notes that the extension of New START could be a key contribution to preserving strategic stability.<sup>81</sup>

In April 2019, the EPG, comprised of Japanese and foreign experts, submitted the Kyoto Appeal to Kono Taro, Minister for Foreign Affairs, and made it public. In October, Professor Shiraishi Takashi, EPG Chair, submitted the Chair’s Report of the Group of Eminent Persons for the Substantive Advancement of Nuclear Disarmament to Wakamiya Kenji, State Minister for Foreign Affairs. The Kyoto Appeal urges, among other items: (1) sustaining bilateral and multilateral nuclear arms control treaties, including monitoring and verification; (2) compliance with obligations under nuclear arms control and disarmament

treaties; (3) restoring civility and respect as well as practices of cooperation on nuclear arms control and threat reduction; and (4) respecting the contribution of civil society in cultivating innovative ideas and in nurturing mutual understanding and cooperation. In addition, the Kyoto Appeal proposes 11 items for the 2020 NPT Review Conference, including that nuclear-weapon states explain and share information regarding their nuclear doctrines, deterrence policies, risk reduction measures, and security assurances to non-nuclear weapon states through the P-5 (five nuclear-weapon states) process.<sup>82</sup> The Chair's Report lists actions that can be started before the 2020 NPT Review Conference, including resuming Russia-US engagement for nuclear forces reduction, as well as nuclear risk reduction measures and information sharing by nuclear-weapon states and explaining the consistency between their nuclear posture/policy and international humanitarian law. The report also presents actions that can be taken between 2020 and 2025, including US-Russia-China discussions on mitigating security dilemmas and assessing the impact that emerging technologies, such as artificial intelligence, can have on strategic stability and arms control.<sup>83</sup>

### **(3) The Humanitarian Impact of the Use of Nuclear Weapons and the Perspective of Nuclear Deterrent-Based Security**

Since around 2015, there have been increasing opportunities for discussing the humanitarian impact of nuclear weapons, including at the Preparatory Committee for the NPT Review Conference, the New Agenda Coalition (NAC), and international meetings led by humanitarian initiative countries. Such discussions have provided an impetus for the civil society and brought about major changes in international politics, resulting in the adoption of the TPNW. Nevertheless, nuclear weapons still have a significant presence in today's international security environment that has long been called the second nuclear age. In recent years, along with the modernization of nuclear weapons, countries are beginning to enter a new cycle of the race to develop nuclear weapons, according to some observers.<sup>84</sup> Nuclear weapons, which have both political and military dimensions, are deemed necessary in countries that benefit from their deterrent effect with respect to security. On the other hand, it cannot be denied that use of nuclear weapons, including by mistake or accident, could have direct and indirect impact on surrounding countries beyond the countries concerned. Therefore, reviews have been undertaken in the past as to how such threats should be eliminated.<sup>85</sup>

Cross-regional discussions are ongoing regarding practical efforts to achieve a world of decreased nuclear risks from a mid- to long-term perspective.<sup>86</sup>

On the other hand, according to nuclear deterrence logic, the presence of nuclear weapons offers a source of power for dissuading the opponent's actions. Increasing the survivability of nuclear weapons and strengthening second-strike capability will further enhance the nuclear deterrent. Additionally, in the sense of readying for an uncertain future, the notion that there is still high political demand for nuclear deterrent applies not only to NATO, which emphasizes the Nuclear Alliance, but also to security in Northeast Asia where the Cold War structure remains and where nuclear issues still shake up the region.

However, after the INF Treaty's termination was decided in August 2019, European member states of NATO that wavered about INF deployment in the 1980s have made their stance clear: they do not want INF re-deployed in their territories like during the Cold War. By no means is it desirable for the world to be split on the 50-year NPT regime, creating an upheaval since the Cold War era. At the same time, given the current situation referred to as the second nuclear age, countries which have enjoyed the benefits of the indefinitely extended NPT must take another look at the "grand bargain" and confirm the obligation to pursue negotiations in good faith on nuclear disarmament. The future direction of the counter discourse on security and nuclear disarmament is drawing attention. In this context, a multifaceted consideration must be given to the humanitarian impact of the use of nuclear weapons, nuclear deterrence, disarmament, nuclear risk reduction, and the humanitarian dimension, bearing in mind the destructive impact of nuclear weapons on the global environment and scientific studies. Accordingly, a new discourse is sought for nuclear disarmament that takes into account many standpoints.

### Two Ways of Looking at Reduction of Nuclear Weapons

Nuclear weapons play no small part in international politics. Under such circumstances, the inventory of nuclear weapons in the world numbering over 70,000 during the Cold War has decreased considerably. For example, the total number of nuclear weapons including estimates was 13,865, according to "World Nuclear Forces" in *SIPRI Yearbook 2019* published by the Stockholm International Peace Research Institute whose *Yearbook* attracts much attention every year.<sup>87</sup> The number alone suggests that, as a result of the reduction, overkill due to use of

nuclear weapons has become less of a concern, and that the world has moved further away from a nuclear arms race, which has placed an economic burden on nuclear-weapon states.

On the other hand, such efforts to reduce nuclear weapons are still at a halfway point to eliminating nuclear weapons. The Bulletin of the Atomic Scientists' Doomsday Clock was set at two minutes to midnight in 2018.<sup>88</sup> This record worst setting is the same as when the United States and the Soviet Union successfully conducted thermonuclear tests in 1953. The Bulletin gives reasons, including North Korea's nuclear development, the termination and an uncertain future of nuclear arms control agreements, and the modernization of nuclear weapons. In addition, a study presents that even with the current reduced number of nuclear weapons in the world, an all-out nuclear war between nuclear powers can cause a nuclear winter to occur globally.<sup>89</sup> At present, US and Russian nuclear forces, which have come under the spotlight with the termination of the INF Treaty and the uncertain future of New START, still make up approximately 93% of the world's nuclear arsenals.<sup>90</sup> In this way, how one views the reduction in nuclear weapons varies depending on whether one is pursuing elimination of nuclear weapons, or initially seeking the creation and maintenance of a stable strategic environment through practical nuclear deterrence.

#### NOTES

- 1) Daryl Kimball and Kingston Reif, "The Intermediate-Range Nuclear Forces (INF) Treaty at a Glance," Arms Control Association, August 2019.
- 2) US Department of State, "Fact Sheet: Timeline of Highlighted US Diplomacy regarding the INF Treaty Since 2013," July 30, 2019.
- 3) US Department of State, "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," July 31, 2014, p. 8.
- 4) US Department of State, "2018 Report on Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments," 2018, p. 12.
- 5) US Department of State, "INF Myth Busters: Pushing Back on Russian Propaganda regarding the INF Treaty," July 30, 2019.
- 6) CNBC, December 5, 2018.
- 7) TASS, November 26, 2018.
- 8) TASS, December 19, 2018.
- 9) TASS, December 18, 2018.
- 10) *Washington Post*, April 25, 2019.
- 11) AP News, October 1, 2019.
- 12) Bloomberg, June 28, 2019.
- 13) Sputnik Japan, July 6, 2019.
- 14) US Department of Defense, "Secretary of Defense Esper Media Engagement en Route to Sydney, Australia," August 2, 2019.

- 15) NATO, “Secretary General: NATO Response to INF Treaty Demise Will Be Measured and Responsible,” August 2, 2019.
- 16) Reuters (Japanese edition), August 5, 2019.
- 17) AFP-JJI, August 5, 2019.
- 18) Reuters, August 6, 2019.
- 19) Bloomberg (Japanese edition), August 7, 2019.
- 20) Reuters, August 18, 2019.
- 21) Japanese Ministry of Defense, “Boei Daijin Kisha Kaiken” [Press Conference by the Defense Minister], August 22, 2019.
- 22) US Department of Defense, “DOD Conducts Ground Launch Cruise Missile Test,” August 19, 2019; “Update: US Tests Ground-Launched Missile Concept Previously Banned under INF,” *Jane’s Defence Weekly*, August 22, 2019.
- 23) NATO, “NATO and the INF Treaty,” August 2, 2019.
- 24) Reuters, August 20, 2019.
- 25) Ibid.
- 26) TASS, September 25, 2019.
- 27) Jiji Press (online edition), October 3, 2019.
- 28) *Asahi Shimbun* (online edition), October 22, 2019.
- 29) Reuters, November 28, 2019.
- 30) Reuters, December 6, 2019.
- 31) US Department of Defense, “DOD Tests Prototype Conventionally-Configured Ground-Launched Ballistic Missile,” December 12, 2019.
- 32) *Newsweek*, December 13, 2019.
- 33) *Yomiuri Shimbun*, December 6, 2019.
- 34) NHK News Web, December 24, 2019.
- 35) *Washington Post*, October 23, 2018.
- 36) US Embassy & Consulates in Russia, “Fact Sheet: Key Facts about New START Treaty Implementation,” February 5, 2018.
- 37) TASS, February 5, 2018.
- 38) TASS, October 22, 2018.
- 39) *Asahi Shimbun* (online edition), May 30, 2019.
- 40) US Embassy & Consulates in Russia, “Telephonic Press Briefing with Andrea L. Thompson, Under Secretary of State for Arms Control and International Security Affairs,” August 13, 2019.
- 41) Sputnik International, October 26, 2019.
- 42) *Washington Free Beacon*, June 18, 2019; “Keynote: Thomas Donilon 2011 Carnegie International Nuclear Policy Conference,” Carnegie Endowment for International Peace, March 29, 2011.
- 43) Jonathan Pearl, “After New START: Challenges and Opportunities for 21st Century Arms Control,” *Bulletin of the Atomic Scientists*, February 18, 2011.
- 44) Tom Z. Collina, “Russia Makes New Proposal on Missile Defense,” *Arms Control Today*, April 2011.

- 45) *Washington Post*, June 19, 2013.
- 46) US Department of Defense, "Secretary of Defense Esper Media Engagement en Route to Sydney, Australia."
- 47) Kingston Reif and Shannon Bugos, "US-Russian Nuclear Arms Control Watch," Arms Control Association, September 13, 2019.
- 48) *Washington Free Beacon*, June 18, 2019.
- 49) President of Russia, "Plenary Session of the Eastern Economic Forum," September 5, 2019.
- 50) Kingston Reif and Shannon Bugos, "Moscow Sends Warning on New START," *Arms Control Today*, December 2019.
- 51) *Sankei Shimbun*, December 23, 2019.
- 52) *Nikkei Shimbun*, December 25, 2019.
- 53) *Nikkei Shimbun*, December 26, 2019.
- 54) US Department of State, "Press Statement: New START Treaty Central Limits Take Effect," February 5, 2018.
- 55) Iain King, "The New Start Arms Control Treaty: Extend it, Go for More, or Let it Lapse?" Center for Strategic & International Studies, July 19, 2019.
- 56) Paul Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics*, Times Books, 2012, pp. 1-2.
- 57) Rod Lyon, "Re-envisioning the Second Nuclear Age," Australian Strategic Policy Institute, February 19, 2015.
- 58) US Department of Defense, *Nuclear Posture Review*, February 2018, p. XII.
- 59) *Guardian*, January 28, 2019.
- 60) US Department of Defense, "Secretary of Defense Esper Media Engagement en Route to Sydney, Australia."
- 61) Rebeccah L. Heinrichs, "Transcript: The Arms Control Landscape ft. DIA Lt. Gen. Robert P. Ashley, Jr." Hudson Institute, May 31, 2019.
- 62) Reuters, May 30, 2019.
- 63) 47NEWS, May 30, 2019.
- 64) *New York Times*, August 12, 2019.
- 65) Akiyama Nobumasa, "Kakuheiki Fukakusan Joyaku (NPT) no Naritachi" [The Origin of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)], Akiyama Nobumasa, ed., *NPT Kaku no Gurobaru Gabanansu* [NPT: Nuclear Global Governance], Iwanami Shoten, 2015, p. 22.
- 66) Alicia Sanders-Zakre, "Reporting on the 2019 NPT PrepCom," Arms Control Association, May 10, 2019; "NPT PrepCom 2019: Live CNS Updates," Middlebury Institute of International Studies at Monterey James Martin Center for Nonproliferation Studies (CNS), April 29, 2019.
- 67) Ibid.
- 68) NPT Prepcom, "Statement by the United States in Cluster 1: Nuclear Disarmament Third Session of the Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Ambassador Robert Wood, US Permanent Representative to the Conference on Disarmament," New York, May 2, 2019.



- 69) NPT Prepcom, “Statement by the Delegation of the Russian Federation at the Third Session of the Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (General Debate),” New York, April 29, 2019.
- 70) Chugoku Shimbun Hiroshima Peace Media Center, “Kakugunshuku meguri Umaranu Mizo: NPT Jikkosei Iji e Kadai” [Unbridgeable Nuclear Arms Control Divide: Challenges for Maintaining the NPT’s Effectiveness], May 13, 2019.
- 71) *Asahi Shimbun* (online edition), May 11, 2019.
- 72) Nagasaki University Research Center for Nuclear Weapons Abolition, “RECNA NPT Blog 2019 Dai 10 Go (Sokatsu) (2) 2020 nen ni Mukete: Kienai Fuan” [RECNA NPT Blog 2019 No. 10 (Summary) (2) Toward 2020: An Unending Anxiety], May 12, 2019.
- 73) Japanese Ministry of Foreign Affairs, “Dai 3 Kai Kakuheiki no Jindoteki Eikyo ni kansuru Kaigi” [Third Conference on the Humanitarian Impact of Nuclear Weapons], December 25, 2014.
- 74) Federal Ministry Republic of Austria, “Vienna Conference on the Humanitarian Impact of Nuclear Weapons,” December 8–9, 2014; Federal Ministry Republic of Austria, “Formal Endorsements and/or Expressions of Support for the Humanitarian Pledge,” April 7, 2016.
- 75) United States Mission to the United Nations, “Joint Press Statement from the Permanent Representatives to the United Nations of the United States, United Kingdom, and France following the Adoption,” July 7, 2017.
- 76) NATO, “North Atlantic Council Statement on the Treaty on the Prohibition of Nuclear Weapons,” September 20, 2017.
- 77) Japanese Ministry of Foreign Affairs, “Statement by H.E. Mr. Nobushige Takamizawa, Ambassador Extraordinary and Plenipotentiary, Permanent Representative of Japan to the Conference on Disarmament at the High-level Segment of the United Nations Conference to Negotiate a Legally Binding Instrument to Prohibit Nuclear Weapons, Leading towards their Total Elimination,” March 27, 2017.
- 78) Kyodo News (online edition), September 20, 2019.
- 79) NPT Prepcom, “Creating the Conditions for Nuclear Disarmament: Working Paper Submitted by the United States of America (NPT/CONF.2020/PC.II/WP.30),” April 18, 2018.
- 80) US Department of State, “Inaugurating a New and More Realistic Global Disarmament Dialogue, Remarks Dr. Christopher Ashley Ford, Assistant Secretary Bureau of International Security and Nonproliferation, 1st Plenary Meeting of the Creating the Environment for Nuclear Disarmament Working Group,” July 2, 2019.
- 81) Japanese Ministry of Foreign Affairs, “Stockholm Ministerial Meeting on Nuclear Disarmament and the Non-Proliferation Treaty (NPT),” June 11, 2019; Government Offices of Sweden, “The Stockholm Ministerial Meeting on Nuclear Disarmament and the Non-Proliferation Treaty: Ministerial Declaration, Stockholm,” June 11, 2019.
- 82) Group of Eminent Persons for Substantive Advancement of Nuclear Disarmament, “Kyoto Appeal: Appeals for the 2020 Review Process for the Treaty on the Non-Proliferation of Nuclear Weapons (NPT),” Ministry of Foreign Affairs Japan, April 2019.
- 83) Japanese Ministry of Foreign Affairs, “Kakugunshuku no Jisshitsuteki na Shinten no tame no

- Kenjinkaigi' Gicho Repoto no Teishutsu" [Submission of the Chair's Report of the Group of Eminent Persons for Substantive Advancement of Nuclear Disarmament], October 21, 2019.
- 84) Alexey Arbatov, "Mad Momentum Redux? The Rise and Fall of Nuclear Arms Control," *Survival*, Vol. 61, No. 3, June-July 2019, p. 9.
  - 85) Gareth Evans and Kawaguchi Yoriko, "Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers," Report of the International Commission on Nuclear Non-proliferation and Disarmament, November 2009, pp. 230-231; Group of Eminent Persons for Substantive Advancement of Nuclear Disarmament, "Kyoto Appeal."
  - 86) Japanese Ministry of Foreign Affairs, "Foreign Minister Taro Kono Exchanged Views with the Heads of States of the Non-Proliferation and Disarmament Initiative," April 24, 2018.
  - 87) Shannon N. Kile and Hans M. Kristensen, "SIPRI Yearbook 2019: 6. World Nuclear Forces," Stockholm International Peace Research Institute, June 2019.
  - 88) Gayle Spinazze, "It is Still 2 Minutes to Midnight," *Bulletin of the Atomic Scientists*, January 24, 2019.
  - 89) Joshua Coupe, Charles G. Bardeen, Alan Robock and Owen B. Toon, "Nuclear Winter Responses to Nuclear War between the United States and Russia in the Whole Atmosphere Community Climate Model Version 4 and the Goddard Institute for Space Studies ModelE," *JGR Atmospheres*, July 23, 2019, pp. 8522-8543.
  - 90) Hans M. Kristensen and Matt Korda, "Status of World Nuclear Forces," Federation of American Scientists, May 2019.