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Abstract

The three fundamental pillars that uphold the foundation for preserving and enhancing global nuclear security are: nuclear disarmament, the prevention of further nuclear weapon proliferation, and international cooperation to safeguard nuclear materials and strengthen international nuclear security culture. However, experts argue that when Russian president Vladimir Putin cut cooperative efforts to safeguard nuclear materials, he endangered the future of all international efforts for promoting global nuclear security. We argue that Putin's decision not only detrimentally erodes the third pillar of nuclear security, but Russia's recent actions in Ukraine also bring to bear more threatening ramifications.

Russia's aggression in Ukraine and the international community's lack of willingness to exert sufficient pressure on Russia to honor the promises made to Ukraine (in exchange for giving up nuclear weapons in the 1990s [*1*]) work against nonproliferation objectives and reach far beyond the geographic boundaries of the current conflict. In addition, they may disrupt both further nuclear disarmament and stimulate proliferation of nuclear weapons. The inaction and/or inability of the international community to resist or reverse Russia's illegal actions must alarm the government of any country who—acting on their trust in the international agreements—resists the push toward nuclearization. If binding diplomatic agreements are seen to only bind one party—the weaker party—that party will understandably hesitate to entrust *any* diplomatic document short of a binding treaty with clear and required enforcement mechanisms. This is especially true when a country's national security and ultimately its sovereignty is at stake. If any one of these nations move toward nuclear status, the atomic dominos will surely begin to tumble, and the

delicate nuclear equilibrium, a cooperative balance that defines today's global nuclear security landscape, will be lost.

I.   Introduction

Over the past several decades the world community, with few nation-state exceptions, has diligently strived to implement national and international agreements, protocols, treaties, and cooperative programs that support each of the three fundamental pillars of global nuclear security. Despite numerous challenges, these efforts have succeeded in moving the world community forward on its path to a safer and more secure future **[2]**.

According to experts **[3]**, in 1992 about 50 countries had in their possession weapons-usable nuclear materials. Due to successful international cooperation, by 2015 that number was cut in half. Australia, South Korea, and Taiwan had all pursued nuclear weapons programs in the past, but they abandoned the nuclear path in exchange for international agreements guaranteeing their security. Today, these three countries are signatories of the Non Proliferation Treaty (NPT) as non-nuclear weapons states.

South Africa was the first state to join the NPT after voluntarily abandoning its nuclear weapons program in 1991. This was a crucial first step in setting a clear course in realizing global nuclear threat reduction. However, it was just the first step. Following the collapse of the Soviet Union, newly independent countries (Ukraine, Belarus, and Kazakhstan) found themselves in possession of a large portion of the former Soviet nuclear arsenal, materials, and infrastructure. Almost overnight three new nuclear weapons states were born possessing thousands of nuclear weapons. The global community found itself in need of repeating the South African success story, but it was challenged by a much less stable geopolitical environment.

It was in this difficult environment that an intense multinational diplomatic effort produced what was later considered a hallmark in cooperative global nuclear threat reduction. Ukraine, Belarus, and Kazakhstan agreed to give up their nuclear arsenals in exchange for a set of explicit security assurances and economic assistance measures. In the case of Ukraine, these assurances came in the form of the agreement signed in 1994 known as the Budapest Memorandum.

The example set by these countries, who chose not to pursue their national security with nuclear arsenal, but chose instead to rely on international law for their ultimate security, was inspirational. The proliferation of nuclear weapons around the world has been curbed by such international agreements and also by the underlying trust that countries place in international law and collective security through cooperation.

Today, experts on nuclear security argue that recent the actions and policies of Russian president Vladimir Putin are placing in peril the future of international efforts to promote global nuclear security. The former US Senators Sam Nunn (D-GA) and Richard Lugar (R-IN), who have for years led extremely successful nonproliferation efforts, have explicitly stated that the actions of Russia toward Ukraine place in jeopardy the third pillar of global security: international cooperation aimed at safeguarding nuclear materials and strengthening nuclear security culture around the globe **[4]**. After more than two decades of productive partnership in securing dangerous nuclear materials and joint efforts to promote nuclear security and prevent nuclear terrorism, Nunn and Lugar draw the attention of the international community to the fact that Russia is actively walking away from cooperative efforts, adding that "common-sense cooperation [on nuclear security] has become the latest casualty of the spiraling crisis in relations among the US, Europe, and Russia" **[4]**. Cooperation with Russia in disarmament and

nonproliferation has been placed in peril by growing political tensions between the US and President Putin's administration [5].

The agreement between US and Russia, the cornerstone of the joint efforts, expired in 2013, and as of December 2014 the Russian government has officially refused to continue cooperating with the US in securing and safeguarding dangerous materials, putting an apparent abrupt end to a successful cooperation between the two former rivals [6]. According to Nunn and Lugar, such actions "send a dangerous message to the international community and represent a major setback in the global effort to secure nuclear materials" [4].

Apart from a halt in cooperation between two countries, other troubling news regarding nuclear security came from Russia last year: according to official US-produced 2014 compliance report [7], Russia is in violation of the Intermediate-Range Nuclear Forces (INF) Treaty, which was signed by the US and the Soviet Union in 1987 and eliminated an entire class of nuclear arms in Europe including ballistic and cruise missiles with intermediate ranges between 500 and 5,500 kilometers [8]. Today, the US administration claims that Russia is violating the treaty by testing a ground-launched cruise missile [9]. President Obama has responded to the claimed violation with a letter to President Putin which stated, according to the *New York Times*, that Russia started testing the missiles in 2008, and that the issue was officially addressed by the State Department to Russian officials in 2013 [9].

We argue that in addition to the clear erosion of the third pillar of nuclear security, there are more threatening ramifications resulting from the recent actions of Russia in Ukraine. Both further nuclear disarmament and prevention of the proliferation of nuclear weapons around the world are placed in jeopardy by Putin's actions in the escalating conflict with Ukraine. The ramifications from this crisis may disrupt each key pillar of global nuclear security.

In reaching this conclusion, we review the history of the denuclearizing of Ukraine, examine the Budapest Agreement and its consequences, and examine the ongoing Russian-Ukrainian conflict and the issues of nuclear weapons that have been brought to life during the conflict, as well as the reaction of the international community to these events. The consequences of these factors are detrimental to nonproliferation objectives, reaching far beyond the geographic boundaries of the current conflict.

II.   Nuclear Ukraine and the Budapest Agreement

In late 1991 when the Soviet Union collapsed, the newly independent country of Ukraine found itself in possession of the third largest nuclear weapons arsenal in the world. The Soviet nuclear heritage in Ukraine included 176 long-range ballistic missiles, 42 strategic bombers armed with more than 1,800 nuclear warheads, and a well-developed nuclear infrastructure [10]. With such vast nuclear arsenal in possession of the newly formed state, experiencing serious political and economic hardships was viewed as a serious security concern on both sides of the Atlantic as well as in Russia [2].

With the encouragement of the international community, Ukrainian leadership made a historic decision to denuclearize in exchange for security assurances, economic assistance, and technical assistance through the Nunn-Lugar Cooperative Threat Reduction program. In 1994 Ukraine, Russia, the US, and the UK entered into an agreement to remove former Soviet nuclear weapons from Ukraine, later becoming known as the Budapest Memorandum. According to the Memorandum, Ukraine committed to full nuclear disarmament including: joining the NPT as a

non-nuclear weapon state, acceding to the Strategic Arms Reduction Treaty, and transferring all of its nuclear warheads to Russia for elimination within a specific timeframe **[11]**.

Ukraine's actions were not without significant commitments, however, by the other three signatories. US, Russia, and the UK have pledged to the following (emphasis by the authors):
- "to respect the independence and sovereignty and the existing borders of Ukraine
- **to refrain from the threat or use of force against the territorial integrity or political independence of Ukraine, and that none of their weapons will ever be used against Ukraine except in self-defense or otherwise in accordance with the Charter of the United Nations**
- to refrain from economic coercion designed to subordinate, to their own interest, the exercise by Ukraine of the rights inherent in its sovereignty and thus to secure advantages of any kind
- reaffirm, in the case of Ukraine, their commitment not to use nuclear weapons against any non-nuclear-weapon state party to the NPT except in the case of an attack on themselves, their territories or dependent territories, their armed forces, or their allies by such a state in association or alliance with a nuclear-weapon state" **[1]**

Moreover, Ukraine insisted on including additional security measures and guarantees: the signatories have pledged "to seek immediate United Nations Security Council action to provide assistance to Ukraine, as a non-nuclear-weapon State party to the Treaty on Nonproliferation, if Ukraine should become a victim of an act of aggression or an object of a threat of aggression in which nuclear weapons are used **[1]**."

The Budapest Agreement and the tri-lateral negotiations with Russia and the US provided what—at that time—seemed reliable security assurances as well as expanded economic assistance **[10]**. In return for giving up its nuclear arsenal, Ukraine was compensated with: substantial economic and technical assistance, nuclear fuel, and other assistance through the Nunn-Lugar program.

At the time, Ukraine's decision to give up their nuclear arsenal was widely discussed both domestically and abroad **[12]**. Members of the Ukrainian parliament protested the decision of President Kuchma to relinquish nuclear weapons, claiming that nuclear weapons are the only real shield from Russia's aggression and territorial ambitions **[13]**. Some of the Western experts, including J. Mearsheimer, advocated against Ukraine giving up its nuclear weapons, arguing that they are the only real guarantee for the security of the state: "It is imperative to maintain peace between Russia and Ukraine. That means ensuring that Russia, who has a history of bad relations with Ukraine, does not move to reconquer it. Ukraine cannot defend itself against nuclear-armed Russia with conventional weapons, and no state, including the US, is going to extend to it a meaningful security guarantee. Ukrainian nuclear weapons are the only reliable deterrent to Russian aggression" **[12]**.

However, the skeptical voices were overpowered by the advocates of denuclearization within the Ukrainian government and abroad.

During a two-year operation, all 1900 warheads were removed from Ukrainian territory. On June 1, 1996, the last nuclear warheads from Ukraine arrived in Russia for dismantling **[2]**.

The Budapest Agreement and the removal of the nuclear arsenal from the territory of Ukraine was widely considered a major success both for the international efforts to strengthen global nuclear security and for Ukraine's self-interest.

In 2014, however, this evaluation was called into question. Russia's aggression toward her sovereign neighbor, eventual annexation of the territory of Crimea, and subsequent indirect and direct destabilization that led to armed conflict in Eastern Ukraine belied not only a value of the particular memorandum, but also the broader confidence in diplomatic security assurances and the guarantees of international law.

III. Russia/Ukraine conflict

The current conflict in Ukraine is rooted in the 2014 Euromaidan Revolution that started with mass protests in Kiev and other Ukrainian cities after pro-Russian President Viktor Yanukovych failed to sign an association agreement with the EU. This unexpected and unpopular decision led to protests by a large part of Ukrainian population who hoped for stronger ties with the West. The protests spread to other parts of Ukraine and turned violent when the Ukrainian Special Forces clashed with the protesters at the Maidan Square in Kiev, resulting in about a hundred civilian deaths [*14*]. The protests led to President Viktor Yanukovich's impeachment and exile in Russia and the formation of the new government in Kiev [*14*]. West-leaning politician Petro Poroshenko was elected president in May 2014.

The Ukrainian revolution was perceived by Russia with great hostility. President Putin publically accused the EU and the US of staging the protests which he saw as ousting the legitimate government and promoting the anti-Russian agenda [*15*]. The new government of Ukraine that was formed after presidential and parliamentary elections has been repeatedly called "illegitimate" by the Russian authorities.

The Crimean crisis that led to the annexation of the Crimean peninsula by the Russian Federation took place in the aftermath of the revolution. In late February 2014, after mass rallies in support of unification with Russia were held across Crimea, the Russian military intervention in Ukraine started with unmarked military personnel taking control of the governmental buildings in Sevastopol, forcing the Ukrainian armed forces out of the region and installing the pro-Russian government [*16*]. A legally dubious referendum on the status of Crimea soon followed and, based on the claimed 96.77% vote, the newly independent Republic of Crimea was admitted into Russian Federation [*17*]. The referendum was not recognized by the majority of the international community—including the US and the EU countries.

During the confrontation in Crimea, the Russian president consistently claimed that there were "no Russian troops in Crimea", describing the unmarked military forces with heavy weaponry to be members of the local militia groups [*18*]. In April during a televised address to the nation, Putin publically admitted the presence of the Russian troops in Crimea when he stated, "We had to take unavoidable steps so that events did not develop as they are currently developing in southeast Ukraine… Of course our troops stood behind Crimea's self-defense forces" [*19*]. After the revolution in Kiev, Putin has been consistently proclaiming Russia's right to protect its interests as well as protecting rights of the Russian-speaking population of Eastern Ukraine. Putin's rhetoric has changed in the past year from talk of protecting Russian citizens in Crimea to a much wider population of "Russian speakers" in other regions of Ukraine [*20*].

Figure 1. Map of Ukraine **[21]**.

From February 2014, major anti-government and pro-Russian protests took place across Eastern Ukraine bordering with Russia. Protests in the Donetsk and Luhansk regions turned into an armed separatist insurgence calling for separation from Ukraine. The Ukrainian government responded with a military counter-offensive against the insurgents.

On July 17, 2014, an international passenger flight of Malaysian Airlines was shot down and crashed near Donetsk, on a separatists-controlled territory, killing 283 passengers and 15 crew members. The US and German intelligence services claimed that that plane was shot down by mistake by the pro-Russian separatists. Meanwhile, the Russian government blamed Ukrainian military **[21]**. The final investigation of the crash continues.

The clashes between the separatists and the Ukrainian military turned into an ongoing armed conflict in the eastern region of Donbass. A temporary ceasefire, signed in Minsk, Belarus in September 2014, was repeatedly violated and eventually collapsed in early 2015 with an escalation of fighting. Another ceasefire was agreed upon in February 2015 with assistance from Germany, France, and Belarus. Despite the agreement calling for unconditional ceasefire, at the time of the writing of this article, fighting continues in Eastern Ukraine.

One key consideration in understanding the full contextual landscape of the crises is the direct or indirect role the Russian Federation played in the conflict. According to various international sources, the armed separatist movement in Eastern Ukraine is heavily financed and assisted by Russia **[22]**. The Ukrainian military reports intensive movement of troops and equipment from Russia to aid the separatists. Russian soldiers captured in Eastern Ukraine, testimonies by human rights groups, and statements by the separatist leaders indicate that Russian military personnel is directly involved in the fighting **[23]**. During the World Economic Forum in Davos, Switzerland, Ukrainian president Poroshenko claimed that Russia has more than 9,000 soldiers and 500 tanks, heavy artillery, and armored personnel carriers in Eastern Ukraine **[24]**.

During a recent visit to Ukraine, the US Army's top commander in Europe, Lt. Gen. Ben Hodges, told reporters that in recent months Russia has doubled the military support for the pro-Russian separatists in Ukraine: "When you look at the amount of Russian equipment that the proxies were using prior to the Minsk agreements, that amount has doubled beginning in December into the hundreds" [*25*]. Russia has continuously denied any involvement in Eastern Ukraine.

On February 25, 2015, US Secretary of State John Kerry responded in the affirmative when asked if Russia was lying about not having weapons or troops in Eastern Ukraine, adding that "Russia has engaged in a rather remarkable period of the most overt and extensive propaganda exercise that I've seen since the very height of the Cold War" [*26*].

The armed conflict between the Ukrainian Army and the pro-Russian separatists in Eastern Ukraine continues, causing heavy civilian and military casualties. Since the beginning of the armed conflict in Eastern Ukraine following Russia's annexation of Crimea, more than 4,800 people have been killed and over 1.2 million have fled their homes [*24*].

In recent remarks made by Vladimir Putin, he insisted that the Ukrainian Army "is not an army, but a foreign legion, in this case a foreign NATO legion, which, of course, doesn't pursue the national interests of Ukraine," adding that the goal of those troops is not to pursue the national interests of Ukraine, but instead "achieving the geopolitical goals of restraining Russia" [*27*]. The use of such rhetoric might indicate Russia's groundwork to justify future involvement of the Russian troops in Ukraine and the possibility of open fighting between the Russian troops and Ukrainian forces.

IV.   Nuclear weapons discussions in Ukraine

As a response to the escalating conflict with Russia, some within the Ukrainian political circles started to look beyond an immediate call for western help and toward a more proactive means of guaranteeing their national security, i.e. regaining its nuclear weapons status. Various powerful political actors, including a number of MPs in Ukraine, advocated for regaining Ukraine's nuclear status as the only guarantee of Ukraine's national security, publically calling the Ukrainian decision to give up nuclear weapons the most severe geopolitical mistake [*28*].

Mustafa Dzhemilev, a member of the Ukrainian Parliament since 1998, said that he had spoken directly with Mr. Putin and told him that because of Russia's breaking of the Budapest Memorandum, "...such arrangements will not be trusted by anyone anymore and that each country that has financial capacity to acquire its own nuclear weapons will be aspired to go down that path, and Ukraine is no exception" [*29*]. Former minister of foreign affairs Vladimir Ogryzko recently stated, "Ukraine needs to announce that it is walking away from the NPT and immediately restart the full nuclear cycle and manufacturing of all the components of the weapons" [*30*]. In an interview with *USA Today* in March, Ukrainian MP Pavlo Rizanenko has expressed similar ideas, "[T]here's a strong sentiment in Ukraine that we made a big mistake. In the future, no matter how the situation is resolved in Crimea, we need a much stronger Ukraine. If you have nuclear weapons, people don't invade you" [*31*].

In response to seizure and blockage of the strategic sites in Crimea by the Russian troops, the Ukrainian Parliament (Verkhovna Rada) made an official appeal to country-signatories of the Budapest Memorandum, claiming that Russia's actions directly violate the agreement by "taking steps aimed at encroaching on Ukraine's territorial integrity and supporting separatism." The Parliamentary appeal urged the signatories to take "practical steps to reaffirm their obligations, enshrined in the Memorandum, according to the principles of the CSCE (Conference on Security

and Cooperation in Europe) Final Act, to respect Ukraine's independence, sovereignty, and existing borders," and asked the guarantors to seek immediate aid for Ukraine from the UN Security Council in case of escalation of conflict with Russia.

A bill calling for the termination of the membership in the NPT and for the restoration of the nuclear weapons program was introduced in the Ukrainian Parliament in February 2014. This legislative effort, however, failed to be passed.

Experts argue that the chances of Ukraine making a decision to regain its nuclear weapons status despite the recent heated rhetoric are very doubtful [*13*], pointing out that the economic price of acquiring nuclear weapons would be too great a financial burden for Ukraine to bear. According to Gary Samore, the former coordinator for weapons of mass destruction on President Obama's National Security Council, "Ukraine "does not have a plausible near-term scenario for developing nuclear weapons" [*13*].

Of primary concern, however, is not whether or not Ukraine may withdraw from the NPT and re-acquire a nuclear arsenal. The primary concern is what may be the ramifications of the violation of the Budapest Agreement and the West's inability to keep its stated commitments on future nuclear negotiations.

V.   International reaction to the conflict

From the beginning of the conflict in Crimea in February 2014, Russia's actions in Ukraine were heavily criticized by the international community. Despite strong international condemnations, sanctions, and repeated public statements of disapproval, Russia's territorial gains remain intact and there have been few indications that Western opposition has impacted Putin's policy regarding Ukraine.

On March 17, as the pro-Russian protesters together with the Russian military were taking over administrative buildings and gaining control over government in Crimea, President Obama condemned Russia's actions and warned of the consequences, "we'll continue to make clear to Russia that further provocations will achieve nothing except to further isolate Russia and diminish its place in the world. The international community will continue to stand together to oppose any violations of Ukrainian sovereignty and territorial integrity, and continued Russian military intervention in Ukraine will only deepen Russia's diplomatic isolation and exact a greater toll on the Russian economy" [*32*].

On March 27, 2014 after Russia had signed the Treaty on Accession of the Republic of Crimea to Russia, the UN General Assembly approved a non-binding resolution, proclaiming the annexation of Crimea illegal and affirming its commitment to the "sovereignty, political independence, unity and territorial integrity of Ukraine within its internationally recognized borders" [*33*]. The resolution had 100 votes in its favor, 11 votes against, and 58 countries abstained from the vote, showing a broad international consensus in condemning Russia's actions.

The vast majority of the international community has not recognized Crimea as part of Russia. Only 7 member states of the UN have made public statements recognizing it. Notably these are: Russia, Syria, Venezuela, North Korea, Cuba, Afghanistan, and Nicaragua.

Various world leaders have publically called the Russian annexation of Crimea illegal. For example, British prime minister David Cameron said, "No amount of sham and perverse democratic process or skewed historical references can make up for the fact that this is an

incursion into a sovereign state and a land grab of part of its territory with no respect for the law of that country or for international law" [*34*]). President Obama confirmed that the Crimean referendum was conducted against the law stating, "[it] violates the Ukrainian constitution and occurred under duress of Russian military intervention, would never be recognized by the US and the international community" [*35*].

The annexation of Crimea by Russia and the consequential crisis in the Eastern Ukraine have pushed various countries to introduce sanctions against Russian individuals and entities viewed as heavily involved in the crisis [*36*]. The first round of sanctions against Russia was introduced by the US, EU, and Canada in March 2014, and included travel bans and an asset freeze. Japan, Australia, and several other countries have proclaimed similar sanctions. The second round was introduce by the EU and the US in late April, expanding the list of individuals and imposing a ban on business transactions with a number of Russian companies [*37*].

The most impactful third round of sanctions was a response to the escalation of fighting between the Ukrainian military and the Russian backed separatists in July 2014. The EU and the US jointly expanded the sanctions, targeting vital sectors of the Russian economy including finance, energy, and defense. The expanded list included trade bans placed on major Russian energy firms (Rosneft and Novatek), banks, arms makers, and additional individuals and entities [*38*]. A number of countries soon followed the lead of the US and EU and joined the expanded sanctions.

Angela Merkel, the German Chancellor, defended introducing the sanctions against Russia by claiming that Russia's aggression toward Ukraine is violating the terms of the Budapest Memorandum. "I'm sure that the united European reaction to Russia's actions is the right one. The fact that Russia violated guarantees of Ukraine's territorial integrity and sovereignty, legally secured by the Budapest Memorandum 1994, cannot be left without consequences," Merkel said in December 2014 [*39*].

Vladimir Putin, however, has publicly discounted claims that Russia breached the Budapest Agreement. According to Putin, the post-revolution Ukraine is a "new state… with which we have signed no binding agreements" [*13*]. In addition, Russian officials have repeatedly called the new Ukrainian government "illegitimate", thus relieving themselves from following previous diplomatic agreements.

Further, regardless of the strong comments made by various Western politicians denouncing Russia for breaking its obligations under the Budapest Agreement, the current crisis in Ukraine has revealed a serious problem with international security agreements. The Budapest Memorandum was a political document, not a treaty, and did not include an enforcement mechanism [*10*]. According to Christopher Swift from Georgetown University, the Memorandum's commitments "are legally binding, but a violation by one of the signatories does not create casus belli for any party to that agreement" [*40*]. In an interview with *Bloomberg Business*, Swift explained, "there is nothing in the Budapest Memorandum that automatically triggers a collective defense obligation by an outside power in the event that someone invades Ukrainian territory or subverts its sovereignty" [*40*].

According to US Rep. Doug Lamborn, this argument was reinforced by the assistant Secretary of State for European and Eurasian Affairs, Victoria Nuland, while briefing members of Congress in March 2014. Lamborn stated, "She said it was a political treaty, not a NATO-type binding treaty, and so you make political noises and objections and that's all you can do" [*13*].

VI. Consequences for global nuclear security

The aggressive actions of Russia in Ukraine, together with the unwillingness of the international community to exert sufficient pressure on Russia to honor the promises made to Ukraine in exchange for giving up nuclear weapons in the 1990s, will have tremendous ramifications not only for the third pillar of global nuclear security as previously discussed, but also on the first two pillars: nuclear disarmament, and further state proliferation of nuclear capabilities.

Russian President Vladimir Putin wrote to the American public in the context of US policy toward Syria in a *New York Times* opinion piece from September 2013, "If you cannot count on international law, then you must find other ways to ensure your security... This is logical: If you have the bomb, no one will touch you" **[41]**. Putin's actions toward Ukraine proved this logic to be valid.

The future actions of any nation cannot be predicted with certainty and a plethora of variables would certainly shape the calculation of whether or not one chose the path of nuclearization. The fact, however, that doubts now cloud the assurances which have been effective in containing proliferation to date is reason enough to cautiously consider the possibilities.

The first primary pillar of nuclear security is the difficult diplomatic push toward disarmament. Until the events in Crimea, Ukraine's voluntary disarmament along with that of Kazakhstan and Belarus were hallmarks of this endeavor. As German Chancellor Merkel has recently said, however, "After Russia has violated the agreement, what country will be ready to follow Ukraine and to abandon nuclear weapons?" Merkel added, "A country will see what has happened in Ukraine, and it will think that the renunciation of nuclear weapons would make it weaker and more vulnerable to attacks of this kind" **[39]**.

This sentiment was echoed by Alexander Lukashenko, president of Belarus, a former Soviet Union country that also relinquished its nuclear weapons arsenal in the mid-1990s. He recently called the decision to abandon nuclear weapons "the most severe failure of his presidency," saying that possession of nuclear weapons guarantees protection from the outside pressure **[42]**.

Lukashenko later added that he views the violation of the territorial integrity of Ukraine as a breach of the Budapest agreements: "In 1994, this guarantee was given before my eyes to preserve the existing borders... [US and UK] as guarantors of the fact that if we abandon nuclear weapons, we are guaranteed full security, the so-called "nuclear umbrella." And that we all (I emphasize) will remain independent states within those boundaries that existed at that time. It is therefore unacceptable that a state violates the territorial integrity that was guaranteed and captures part in the territory of a state" **[42]**.

Disturbingly, a recent public opinion poll conducted by an independent pollster in Belarus demonstrated public support for this attitude. According to the poll, 36% of Belarusians support re-nuclearizing its defense capability in response to events in Ukraine and the new international environment (Independent Institute for Socio-Economic and Political Studies). Taking into consideration the fact that Belarus has been heavily affected by the Chernobyl disaster and was known for strong anti-nuclear attitudes, a third of its population today supporting acquiring nuclear weapons proves that the ongoing crisis has an effect on public views about nuclear weapons and national security beyond the borders of Russia and Ukraine. Although 36% is not a convincing majority, in a country scarred by the legacy of history's most devastating nuclear accident, it must be considered noteworthy.

One non-NPT nuclearized country that may view the Ukraine events as a reason to further stall or oppose efforts to denuclearize is North Korea (DPRK). Between 2003 and 2009, six party talks took place (among North Korea, South Korea, the US, Russia, China, and Japan) aimed at finding a way to move North Korea away from its pursuit of nuclear weapons. These talks failed and the DPRK is estimated to have 4 to 8 nuclear weapons **[43]**. According to the Nuclear Threat Initiative (NTI), North Korea has also expanded its centrifuge program and restarted its previously shut down plutonium reactor at its Yonbygon site. North Korean leader Kim Jong Un has indicated his intention of increasing the country's nuclear deterrence and has even added its nuclear status to that country's constitution.

Despite these actions, as recently as January 2015, Kim indicated that he may be willing to negotiate a temporary nuclear moratorium with a focus on that country's efforts to develop long-range, nuclear-warhead-capable missiles **[44]**. While likely another in a long series of diplomatic false flags, the US has indicated cautious willingness to return to the six party talks. In all likelihood, a factor that will be in the minds of all negotiators regarding the veracity of any diplomatic offers or assurances will be the failure of the Budapest Memorandum.

Consequences arising from the Ukraine crisis reach beyond those countries that are already members of the nuclear club and will directly impact the second pillar of global nuclear security: the prevention of further state controlled proliferation of nuclear capabilities. At an emergency meeting of the G7 regarding the escalating conflict in Ukraine, Canadian Prime Minister Steven Harper charged President Putin with violation of the Budapest Memorandum and warned that Russia's takeover of Crimea will have consequences beyond Ukraine or even Europe, saying that "by breaching that guarantee, President Putin has provided a rationale for those elsewhere who needed little more than that already furnished by pride or grievance to arm themselves to the teeth" **[45]**.

An estimated 30 nations have the ability and/or resources to acquire nuclear capabilities **[46]**. Many of these including Japan, South Korea, Turkey, and Saudi Arabia have chosen to not pursue a nuclear course because of the security guarantees afforded them under international agreements such as the NPT and bilateral security agreements.

Currently, the most potentially volatile of these countries is Iran. As intense negotiation between the US and Iran move toward a yet-to-be defined future, and as a series of meetings between Iran and some of the six powers—the US, Russia, China, Britain, France, and Germany—is pending, Iran is being asked to rely on the assurances and guarantees of the world community, assurances it now must view through the prism of broken and ignored assurances made to Ukraine.

If Iran chooses to proceed on the nuclear path, other countries in the region will be obliged to either trust security agreements from the international community or pursue a weapons program of their own. The key element to this choice is the degree of confidence they have in, again, the assurances that have been found impotent in the case of Ukraine.

More broadly, it is not beyond the scope of reason to expect, at a minimum, discussion at significant levels of a number of governments about whether or not relying on the promises of a nuclear umbrella is sufficient for national self-preservation. If any one of these nations moved toward nuclear status, the atomic dominos would surely begin to tumble, and the delicate nuclear equilibrium that defines global nuclear security today would be a status of the past.

In addition, the risk of increased state-sponsored nuclear programs leads inevitably to increased opportunity for non-state acquisition of nuclear material. Further proliferation of nuclear weapons among nation-states will raise the threat of non-state nuclear terrorism, nuclear smuggling, and other related issues to a level that will seriously threaten the security of the US and its allies. As Shultz, Perry, Kissinger, and Nunn argued in a *Wall Street Journal* article, "the growing number of nations with nuclear arms and differing motives, aims, and ambitions poses very high and unpredictable risks and increased instability" [*47*].

VII. Conclusions

No international effort to reverse the annexation of Crimea or to stop Russia's continued destabilization of the broader Easter Ukraine region has been successful. In fact during a March 8, 2015 meeting of EU foreign ministers, it was decided that despite Russia's refusal to withdraw from the illegally acquired Crimea region and despite its refusal to admit to or cease its destabilizing efforts in Eastern Ukraine, the EU will refrain from imposing additional sanctions on Russia. The basis of this decision is that the recently signed Minsk ceasefire agreement has resulted in a slowing of fatalities. Spain's Minister of Foreign Affairs Jose Manuel Garcia-Margallo summarized this sentiment by saying, "In my opinion, we must not make any other steps, we have to give peace a chance" [*48*]. The message to the Ukrainian government, Russia, and to the world community is clear: Russia's utter disregard of the Budapest Memorandum will be allowed; his acquisition of Crimea will stand and his aggressive disregard of the UN Charter's Article 5 will be ignored.

To the government of any country who has resisted the push toward nuclearization based on international agreements, the inactions and/or inability of the international community to resist or reverse Russia's illegal actions must cause great concern. If binding diplomatic agreements are seen to only bind one party—the weaker party—that party will understandably be very hesitant to place full faith in any diplomatic document short of a binding treaty that has clear and required enforcement mechanisms. This is especially true when the stakes are a country's national security and, ultimately, its sovereignty.

Today, non-nuclear weapons states see an international community wherein aggression is contained not by international law and agreements, but only by the restraint that the possession of nuclear weapons demand. These states read the logic suggested by Putin in his previously mentioned opinion piece to the American public that having nuclear weapons assures a nation's security more than international law, and they see this logic played out through Russia's actions in Crimea and Eastern Ukraine.

Although many factors may dictate that these states remain non-nuclear, the very possibility that they may attempt nuclearization should be considered as part of the broad global nonproliferation dialogue. Some experts may say that this possibility is too remote to be considered a factor when discussing future endeavors and/or strategies supporting nonproliferation. However, when examining a matter that if realized would lead to the erosion of nuclear global equilibrium, logical possibilities, even those considered remote, should be carefully examined and monitored.

The failure of the Budapest Memorandum has the long-term potential to result in the erosion of each of the three basic pillars of nuclear nonproliferation. For this reason it is incumbent on the international community to diligently and pro-actively work to see that this possible eventuality does not rise into reality.

In order to achieve this, the international community should consider the development of a systematic three-level monitoring endeavor:

Technical monitoring: As more and more nations develop nuclear power programs, the challenge of effectively safeguarding against weapons proliferation becomes even more difficult than the current regime. The IAEA is responsible for monitoring civilian programs in NPT signatory states through their safeguards agreements, yet the tools the inspectors can bring to bear are limited and have weaknesses in detecting the diversion of materials.

This is especially important in the uranium enrichment industry where essentially all enrichment has transitioned to gas centrifuge enrichment plants **[49]** which are smaller, more difficult to detect, and easier to reconfigure for proliferation than the older gaseous diffusion technology. Improving the technology available to the inspector during the on-site inspections as well as developing higher-fidelity, remote monitoring systems is critical to strengthening the confidence that the host nation is meeting its commitments under the NPT.

One of the key challenges for the international community is early detection of proliferation activities. While it would be ideal if the IAEA could be the agent of those discoveries, the reality is that the IAEA will likely never have the resources or authority to conduct the sort of information gathering necessary to fully meet that mission. Intelligence organs of nation-states will continue to play an important role in detecting possible proliferant activities as well as potential transfers/losses to sub-state actors. IAEA member states may or may not choose to share some of that information with the IAEA, which then puts a burden of veracity assessment on the Agency that also requires better technical capabilities both in terms of assessing the information provided as well as any inspections that are warranted.

Policy/Political monitoring: In addition to the need for enhanced technical monitoring, there exists a need to more systematically track policy discussions and public discourse relating to nuclear policy and security threats taking place within those states capable of moving toward nuclear status. The rise in discourse among non-nuclear weapon states (NNWS) centering on the "humanitarian consequences" **[50]** does not negate the possibility of a shift in debate toward assuring self-preservation through nuclearization rather than international agreements. Increased monitoring and analysis of related public policy dialogue would aid in recognizing such shifts at their onset. Benchmarking the current opinions of policy makers and elected officials from the various NNWS would further clarify any future trends that differ from the status quo.

This monitoring would include statements by elected officials and policy makers as well as news coverage of the nuclear proliferation and security issues in countries of interest recognizing that such discussion must be analyzed as either being meant for purely internal rhetorical consumption or meant for actual policy implementation.

Public Opinion Monitoring: Research on state behavior has demonstrated that there are external and internal pressures that compel governments to make choices both in foreign policy realm and on national security issues. Domestic public opinion is creating boundaries within which national governments operate; thereby, it restrains political options for decision makers. At the same time, in order to generate support for policies and to boost popular support, governments can manipulate domestic public opinion. As the example of the Pakistani nuclear program has demonstrated, popular support for certain policy choices that the government presents to domestic publics under the auspices of enhancing national security (obtaining nuclear weapons to guarantee security from outside threats in the Pakistani case) can overrun external pressures that run counter to these policy choices.

Thus, maintaining the present global security equilibrium based on current international agreements depends—to a great extent—on domestic public opinion in key countries; specifically, it depends on attitudes about national security and outside threats. Monitoring international public opinion in countries that have the capability to alter the global nuclear security equilibrium will allow for better understanding of the public opinion climate in the selected countries, and it will give an opportunity to predict situations where the governments of those states can choose an option of going nuclear.

As stated in the beginning of this paper, the success of global nuclear security rests on the strengths of three primary pillars. The decision by a single, currently non-nuclear state to start a nuclear weapons program based on the erosion of these pillars could trigger a domino effect in which other nations seek security assurance via nuclear weapons rather than through international agreements. The resulting furthering proliferation of nuclear weapons would greatly increase the risk of eventual nuclear conflict and also raise the threat of non-state nuclear terrorism, nuclear smuggling, and other related issues to a level that will seriously threaten the security of the US and its allies.

As the global community looks toward the next chapter in its nonproliferation efforts, it should recognize that the actions and inactions of that community in relation to the trustworthiness of its international agreements can serve to weaken those primary pillars thereby jeopardizing global security. The breaking of the Budapest Agreement is a matter of history. It is the impact of this fact that is yet-to-be-determined. It is the hope of the authors, however, that the three levels of monitoring discussed above would serve as harbingers, if regrettably, of a sliding away from the stable and secure path of nuclear nonproliferation that is essential to our future global security.

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