DISCUSSION PAPER

Assessing the Nuclear Threat in the Context of the Ukraine War

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Introduction

The threat of nuclear war came to the fore again with Russian President Vladimir Putin's statement on February 21, 2023, that Russia would suspend the New START agreement, the only remaining arms control treaty with the United States (Teslova, 2023).

With the Russian invasion of Ukraine in February 2022, a conventional war is taking place between the two countries for the first time since the Second World War in Europe. Russia has not been able to break the resistance in Ukraine as it had aimed, and it frequently threatens to use nuclear weapons.

The possibility of using nuclear weapons, voiced by Russia and met with harsh statements in the West, remains a cause for concern. Using nuclear weapons could also lead to an escalation of a regional conflict into a global war, drawing in other countries and potentially leading to a nuclear holocaust.

Nuclear weapons have significantly shaped international relations and global security since their development in the mid-20th century. These weapons, which harness the power of nuclear reactions to release massive amounts of energy, have been used as a deterrent against aggression and as a means of achieving military and political objectives. However, the possession and potential use of nuclear weapons also raise significant concerns about the potential for nuclear war and the devastating humanitarian and environmental consequences of a nuclear attack (Goldblat, 1997).

The development of nuclear weapons began during World War II as part of the Manhattan Project, a top-secret research program led by the United States to develop an atomic bomb. The first nuclear weapon was detonated on July 16, 1945, in a test code-named "Trinity" in New Mexico. Subsequently, the US air force dropped atomic bombs on the Japanese cities of Hiroshima and Nagasaki on August 6 and 9, 1945, killing over 200,000 civilians (Goldwhite, 1986).

After the war, the United States and the Soviet Union emerged as superpowers and the primary holders of nuclear weapons. This situation led to a nuclear arms race during the Cold War, with both countries amassing huge stockpiles of nuclear weapons and developing ever more powerful and sophisticated weapons. The fear of nuclear war between the two superpowers was a constant threat during this time, and the world came close to nuclear war on several occasions, most notably during the Cuban Missile Crisis in 1962 (Borger, 2022).

The possession of nuclear weapons has been used as a deterrent to prevent other countries from attacking or invading. The concept of mutually assured destruction, or MAD, holds that one country's use of nuclear weapons would destroy both the attacker and the defender, thus deterring a nuclear attack (McDonough, 2005). According to this theory, also called the nuclear deterrence theory, this concept gained credit for preventing a large-scale conventional war between the United States and the Soviet Union during the Cold War (Lebovic, 2023).

Moreover, nuclear weapons have also been used as leverage in diplomatic negotiations. The threat of nuclear retaliation has been used to prevent countries from taking certain actions or to extract concessions. Besides the Cold War, India's relations with Pakistan and China, the relations of the United States of America with Russia, and the foreign policy of Iran and North Korea regarding the nuclear program can be cited as examples (Barash, 2018).

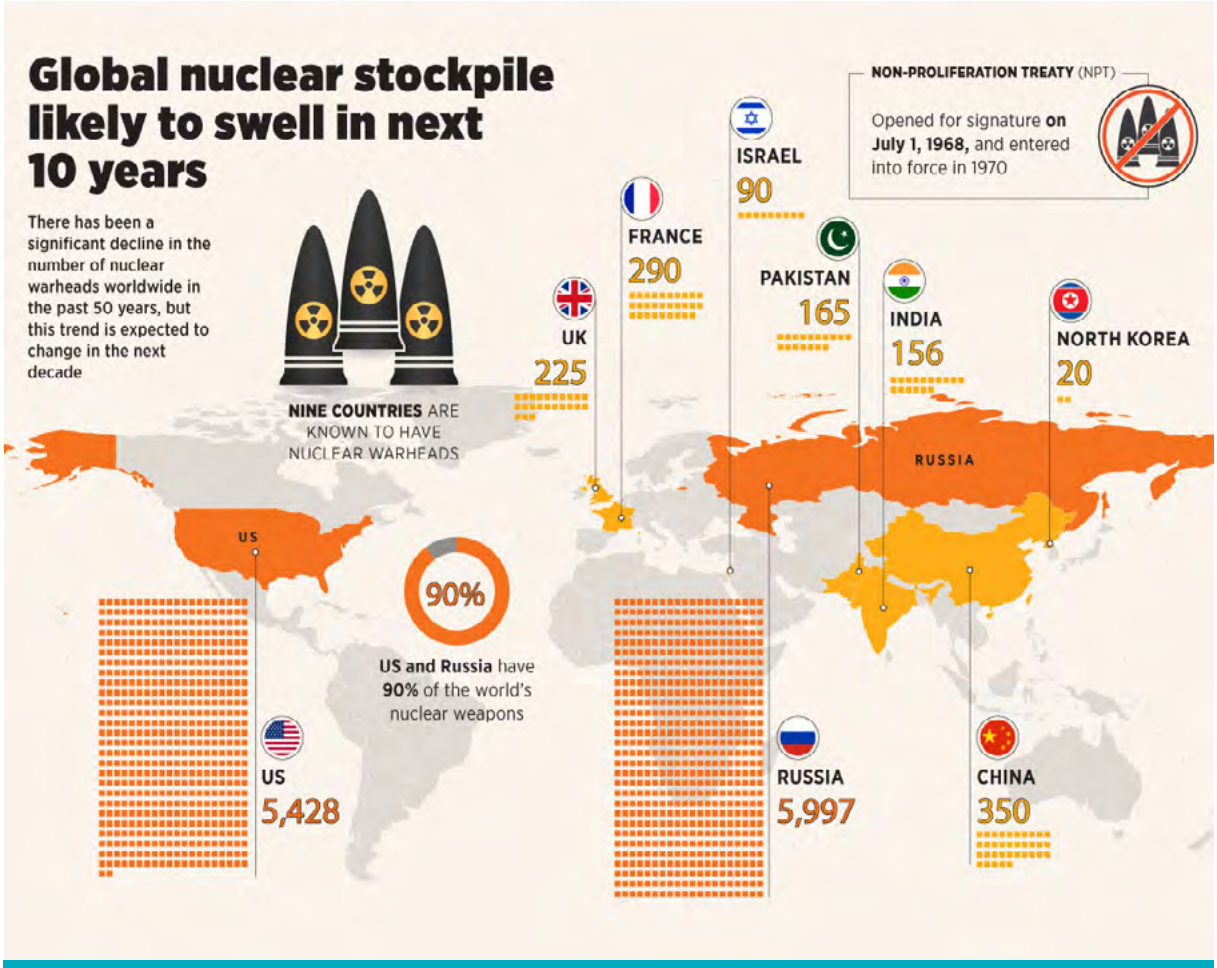
The possession and potential use of nuclear weapons also raise significant concerns. The use of nuclear weapons would have devastating humanitarian and environmental consequences. The immediate effects of a nuclear explosion, such as blast, heat, and radiation, would kill and injure large numbers of people. The long-term effects, such as radioactive fallout, would also significantly impact health and the environment.

The Nuclear Club

Despite progress in reducing nuclear weapon arsenals since the Cold War, the world's combined inventory of nuclear warheads remains very high: nine countries possessed roughly 12,700 warheads as of early-2022. These countries are the United States, Russia, China, France, the United Kingdom, India, Pakistan, Israel, and North Korea. These countries are often referred to as the nuclear club (Hans et al., 2015).

Russia and the United States own approximately 90 per cent of all nuclear warheads. Each government has around 4,000 warheads in their military stockpiles; no other nuclear-armed state sees a need for more than a few hundred nuclear weapons for national security. China, France, and the United Kingdom have smaller arsenals, each possessing a few hundred warheads. India and Pakistan are the two countries that have engaged in a nuclear arms race, with each possessing around 100-200 warheads. Israel is widely believed to possess nuclear weapons, although it has never officially confirmed or denied this (Hans et al., 2015).

North Korea is the most recent addition to the nuclear club, having conducted its first nuclear test in 2006. It is also the only country to have conducted nuclear tests in the 21st century. North Korea's nuclear program has been a source of concern for the international community, as it has been accused of developing nuclear weapons in violation of international law (Hans et al., 2015).



(Elmurod Usubaliev - Anadolu Agency)

Although it is defined as a nuclear weapon as a general title, it is very important to distinguish between nuclear weapons powers and their diversity. These weapons are evaluated under two headings, strategic and tactical, in terms of size, explosive power and range power (Eckel, 2022).

A tactical nuclear weapon is a type of nuclear weapon that is designed to be used in military operations, typically against enemy targets located relatively close to the battlefield. Unlike strategic nuclear weapons, designed to be used against an enemy's cities or other large targets, tactical nuclear weapons are intended to be used in more limited scenarios, such as against enemy troop concentrations, tanks, or other military assets (Rathbun, 2022).

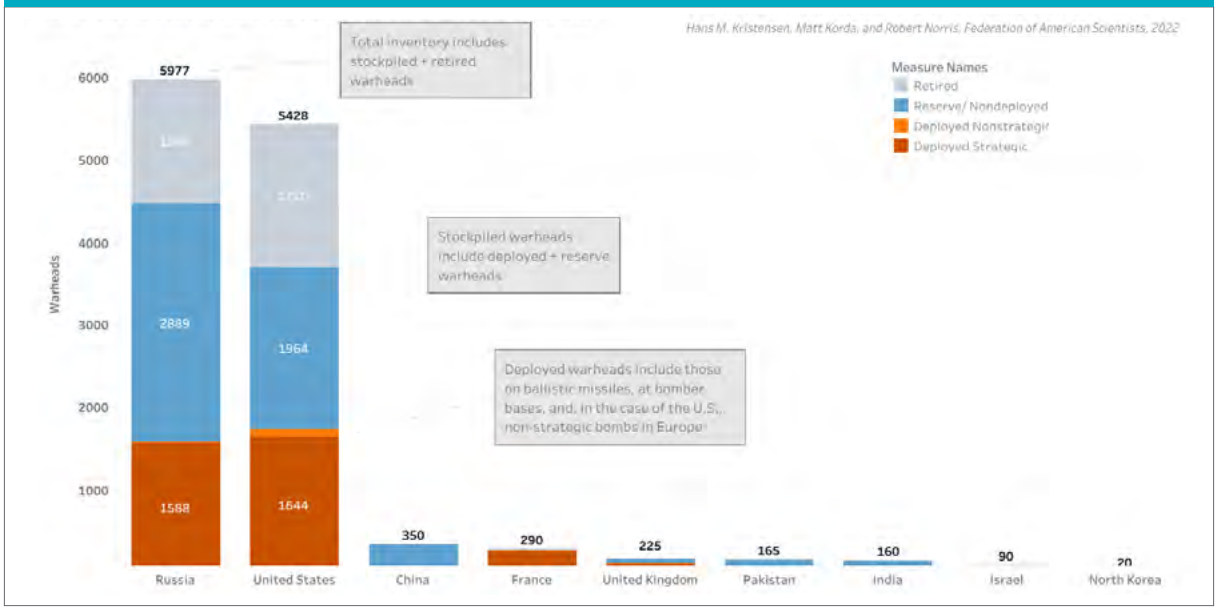
Tactical nuclear weapons typically have a lower explosive yield than strategic nuclear weapons, ranging from less than a kiloton up to fifty kilotons. They are often delivered by artillery, short-range missiles, or aircraft and may be designed to produce a relatively small blast radius to minimise collateral damage (Rathbun, 2022).

Unlike tactical nuclear weapons, strategic nuclear weapons are powerful, long-range weapons designed to deter or respond to a nuclear attack. The explosive power or "yield" of a standard strategic nuclear weapon can range roughly from 500 kilotons to 1 megaton, the equivalent of 1 million tons of TNT (Eckel, 2022). Another issue that needs to be addressed regarding tactical and strategic nuclear weapons is that the New START agreement only limits strategic nuclear weapons (Schumann, 2023).

Each nation's precise number of nuclear weapons is a carefully guarded state secret. Thus, the projections made here are highly uncertain. The majority of nuclear-armed governments seldom ever disclose the number of their nuclear arsenals. Nonetheless, the level of privacy varies greatly between nations. According to the Federation of American Scientists (FAS) report, more than 9,400 of the 12,700 nuclear warheads are now stored in military arsenals and may be used by missiles, aircraft, ships, and submarines. The remaining warheads, which are still largely intact and awaiting disassembly, have been decommissioned. 3,730 of the 9,440 warheads in military stocks are being used by operational troops (on missiles or bomber bases). Some 2,000 warheads from the US, Russia, the UK, and France are on high alert and prepared for deployment at a moment's notice (Federation of American Scientists, 2022).

However, at this point, another discussion is the use of these weapons and to what extent they work or not. Nuclear weapons are highly complex devices that rely on numerous intricate systems and components to function correctly. Over time, the reliability and effectiveness of these systems and components can deteriorate due to factors such as aging, exposure to environmental conditions, and changes in technology. As far as is known, a live nuclear warhead was last tested by China in 1966 using a live missile system. So far, no country has tested a nuclear warhead sent by an intercontinental ballistic missile (Baraniuk, 2023).

Estimated Global Nuclear Warhead Inventories, 2022



According to a report by ICAN (2021), $72,6 billion was spent on nuclear weapons in 2020 worldwide, an inflation-adjusted increase of $1,4 billion from 2019. The United States spent around 52% ($37,4 billion), accounting for approximately 3,4% of its GDP. The other four largest spenders on nuclear weaponry were China ($10,1 billion), Russia ($8 billion), the United Kingdom ($6,2 billion), and France ($5,7 billion). In addition to these nations, India, Israel, Pakistan, and North Korea invested in nuclear weapons in 2020, accounting for approximately 7,2% of global spending (Kakkonen, 2021).

Russia's nuclear arsenal is larger than NATO's nuclear arsenal. The United States, The United Kingdom and France have 5943 nuclear warheads, while this figure is 5977 for Russia. In terms of tactical nuclear weapons, according to the report by the Bulletin of The Atomic Scientists, Russia has 1912 tactical nuclear weapons, this number is 200 for the United States (Eckel, 2022). According to some unofficial claims, the USA keeps about 100 of these weapons in their air bases in Europe. As a factsheet from the Centre for Arms Control and Non-Proliferation details, the bases in question are Kleine Brogel in Belgium, Büchel in Germany, Aviano and Ghedi in Italy, Volkel in the Netherlands, and Incirlik in Türkiye (Armstrong & Richter, 2022). These locations are directly concerned in the event of a possible nuclear war.

At this point, the concept of deterrence as a concept that protects the world from the threat of nuclear war and the concept of game theory in terms of the position that countries will take come to the fore.

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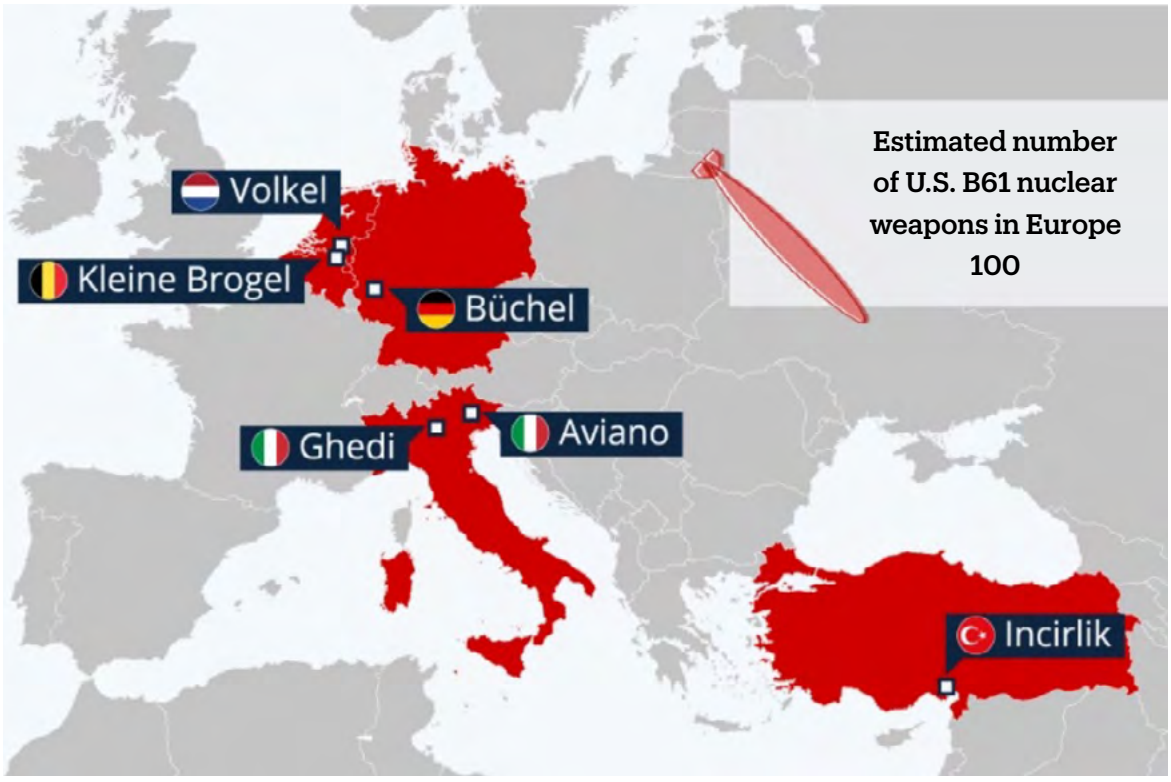
Where U.S. Nuclear Bombs are Stored in Europe

Bases in Europe where U.S. -owned B61 nuclear gravity bombs are stored



Source: Center for Arms Control and Non-Proliferation

How is Deterrence Achieved?

Deterrence theory argues that possessing nuclear weapons can prevent war by creating a credible threat of retaliation. The theory assumes that rational actors would be deterred from using nuclear weapons, as the resulting destruction would be too catastrophic to justify any potential gains (Moon, 2021).

Deterrence theory is based on two principles: the first is that nuclear weapons are the ultimate weapon, with the power to destroy entire cities and regions. The second is that possessing nuclear weapons creates a balance of power that prevents either side from launching a nuclear attack. This balance of power is often referred to as MAD (Moon,2021).

Proponents of the deterrence theory argue that possessing nuclear weapons has prevented a major war between nuclear powers since the end of World War II. However, critics argue that the theory is flawed, as it assumes that all actors are rational and that no accidents or miscalculations will occur (Moon,2021).

International agreements relating to nuclear weapons

International agreements limiting nuclear weapons have been established to reduce the risk of nuclear war and promote disarmament. These agreements aim to limit the spread of nuclear weapons and reduce the number of weapons held by nuclear powers.

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is a cornerstone of international agreements limiting nuclear weapons. The NPT aims to prevent the spread of nuclear weapons and promote disarmament. The treaty has been signed by 191 countries and has been in force since 1970 (Zolkaffly et al., 2019).

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) is another international agreement that limits nuclear weapons. The CTBT prohibits all nuclear test explosions and is intended to prevent the development of new nuclear weapons. The treaty has been signed by 185 countries and has been in force since 1996 (Zolkaffly et al., 2019).

One of the conclusions of the 2010 NPT review conference was a resolution 'that the US and Russia commit to seek the early entry into force of the new START'. The original START was signed by the US and Soviet Union in July 1991, building on earlier arms reduction and limitation treaties between the two superpowers. After the dissolution of the Soviet Union, the 'Lisbon Protocol' was signed to include Ukraine, Kazakhstan, and Belarus in this treaty. The Soviet Union had 3200 nuclear warheads in these three member countries, weapons that were either scrapped or sent to Russia (Kaysen et al., 2019). Considering that nuclear weapons have a function that reduces the risk of conflict between states possessing these weapons, Ukraine's decision to disarm poses a national security risk for the country's security.

START II and III never entered into force. Signed in 1993 by the US and Russia, the START II treaty aimed to decrease the number of warheads possessed by both countries even further and ban the use of ICBMs with the capability to fire at multiple targets simultaneously (Kaysen et al., 2019).

The New START treaty, officially named 'Measures for the Further Reduction and Limitation of Strategic Offensive Arms', was signed by the US and Russia in April 2010 and entered into force in February 2011. This treaty commits the signatories to reduce their number of deployed nuclear warheads to 1,550 with a limit of 800 deployed and non-deployed ICBM launchers, SLBM launchers and heavy bombers. A drawback of this new treaty is that it does not address both countries' substantial stockpile of nuclear weapons or set out what should be done with the excess warheads and delivery vehicles (Kaysen et al., 2019).

However, in his statement on February 21, 2023, Vladimir Putin said Russia would halt its participation in the New START agreement. President Joe Biden described Russia's decision to suspend the New Start nuclear arms treaty as a big mistake (Harper, 2023). In addition to these agreements, in October 2022, NATO conducted a deterrence exercise with its European allies. In a post on the social media account of the NATO Allied Air Command (AIRCOM), it was stated that the air forces of the allied countries are currently testing their nuclear deterrence capabilities in the "Steadfast Noon" exercise. It was stated that dozens of warplanes participated in the exercise, and military manoeuvres were held in the northwest of Europe (Cam, 2022).

When the mutual explanations and efforts to turn the deterrent effect in their favour are considered within the game theory framework, the steps the parties can take in the future are seen more clearly.

"I will See You and Raise You."

"Whoever tries to impede us, let alone create threats for our country and its people, must know that the Russian response will be immediate and lead to the consequences you have never seen in history." *Vladimir Putin, February 24, 2022*

Russia is one of the world's largest nuclear powers, with a significant arsenal of nuclear weapons and a complex strategic posture. Its nuclear program dates to the Soviet era, and it has continued to invest heavily in its nuclear capabilities in recent years. Russia has also been modernising its nuclear arsenal in recent years by developing new nuclear weapons systems such as the Avangard hypersonic missile and the Poseidon underwater drone. This drive has sparked renewed concerns about a new arms race and the potential for nuclear conflict. A 2020 document titled "Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence" states that the Russian President decided to use nuclear weapons (Bugos, 2020).

In light of all this information, Russia's nuclear war threat and attitudes towards this threat can be examined as follows:

• On February 28, 2022, President Putin ordered Russia's nuclear forces to switch to a "special combat mission mode", a state of high alert (The Guardian, 2022). Putin's statement can be considered a warning to the states that supported Ukraine at the beginning of the war. However, in addition to the economic sanctions against Russia, NATO, and the European Union, primarily the United States of America, provided military support to Ukraine (Glaud, 2022).

• Russia threatened to use other nuclear weapons on April 20, 2022. On this date, Russia conducted the first test launch of a new long-range intercontinental ballistic missile (ICBM), the RS-28 Sarmat (Satan 2). Putin said the new missile could defeat all missile defence systems and should cause countries that threaten Russia to "think twice" (Beachum et al., 2022). However, the United States Department of defence stated that it sees this occurrence as a routine test, not a threat, and that Russia informed them within the framework of New START (Reuters, 2022).

• After Germany provided weapons and tanks to Ukraine, President Putin announced on April 27, 2022, that Russia would respond to any military provocation from outside Ukraine only with urgent and decisive action, made possible by Russia's significant nuclear arsenal (Wolfgang, 2022). However, the German parliament agreed to supply heavy weapons to Ukraine one day later, on April 28, 2022 (Rogers, 2022).

• On May 4, 2022, the US Senate held a briefing called the "Hearing on Nuclear Preparedness in the Midst of the Russia-Ukraine War." At this meeting, it was stated that current US nuclear defence capabilities are operating at the minimum acceptable operational capacity level with Russian stockpiles (C-Span, 2022). Two days after this announcement, Russian foreign ministry spokesperson Alexei Zaitsev stated that Russia would not use nuclear weapons in Ukraine (Reuters, 2022).

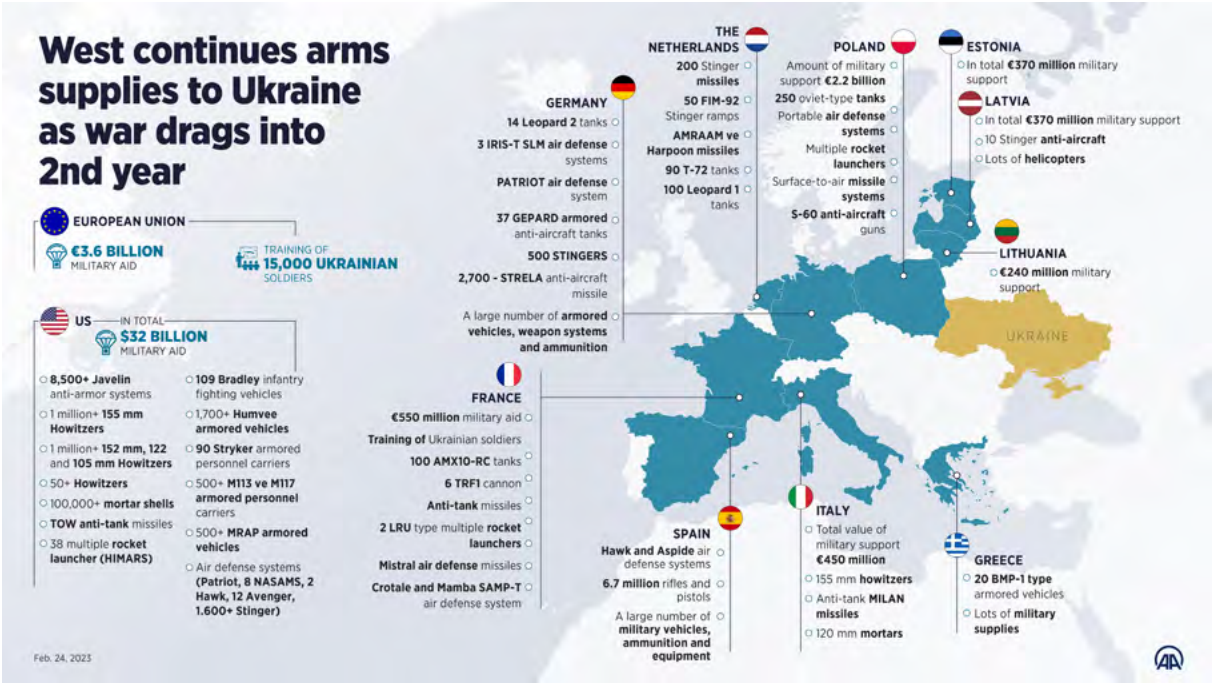
• On September 17, 2022, US President Joe Biden warned Russia not to use tactical nuclear or chemical weapons in Ukraine and stated that such a situation would have consequences. On September 21, 2022, Russian President Vladimir Putin said that Russia would use all means at its disposal to defend the country's territory, stating that their statement was not a bluff, and accused NATO of nuclear blackmail and threatening to use nuclear weapons against Russia. In addition, Putin said in his statement that Russia's nuclear weapons are more advanced than NATO's (TRT World, 2022).

• On September 27, former Russian President Dmitry Medvedev threatened a nuclear attack against Ukraine (Davis & Faulconbridge, 2022). On October 5, Polish President Andrzej Duda said that Poland was in talks with the United States to gain access to a nuclear arsenal on its territory (Anadolu Agency, 2022). With this statement, a NATO country neighbouring Russia used its high deterrent effect. On October 6, US President Joe Biden stated regarding the threats to use nuclear weapons in Ukraine, for the first time since the Cuban Missile Crisis, that there is a direct threat to use nuclear weapons (Anadolu Agency, 2022).

• Finally, the most serious step regarding nuclear deterrence came from Russia. On February 21, 2023, Putin announced that Russia would suspend its participation in New START, the last remaining nuclear weapons agreement between Russia and the United States (Teslova, 2023). US President Biden, conversely, said that Russia did not infer from the suspension

of New START that they were considering using nuclear weapons. Biden stated that he is confident they can solve this problem and said that arms control agreements are in the interests of both sides and the world. On the other hand, NATO urged Russia to abide by the New START nuclear agreement to maintain international stability (TRT World, 2023).

Trying to isolate Ukraine, Russia used its nuclear power as a threat even before the war started. The threat levels increased. However, Russia did not break Ukraine's resistance or prevent Western military aid from reaching Ukraine. During this process, the West did not cut off its military aid to Ukraine and appeared dismissive of the Kremlin's threats.



Why does the West not take Russia's Threat Seriously?

President Vladimir Putin's repeatedly threatened to resort to the nuclear option. He then decided to suspend the New START agreement. Such circumstances brought serious concerns about how the conflict in Ukraine could evolve. Still, for the West, it was business as usual, and military assistance continued to pour into Ukraine (Eruygur & Teslova, 2023). Several factors explain the Western dismissive stance towards Russia's nuclear threats.

First, the West views the war differently than Russia. Moscow considers the arms assistance to Ukraine as NATO interference in its sphere of influence (Burdeau, 2022). On the other hand, the US State Department (2023) defines Ukraine as a regional strategic partner that should be supported. Meanwhile, Western strategy-makers accept Russia's description of the conflict in Ukraine as a "local war situation." In this context, George Mason University Schar School of Policy and Government professor Mark N. Katz evaluates the Western perspective as follows: "If Putin's forces are not doing so well against Ukraine, it is hard to see how they can do better by escalating the conflict by attacking any NATO member" (Jackson, 2023).

Another point is that these threats should be interpreted via diplomatic lingo. Discourses and actions, which are two levels of communication, have an extremely important place in coercive diplomacy. In the specific conditions of the crisis, sometimes the actions are supported by strong discourses, and sometimes strong statements need actions to be compelling. Discourses

and actions complement and reinforce each other. The opponent can perceive threats of coercive power as a bluff. When punitive threats are supported by action, they become more credible, and the opponent must determine effective courses of action, including the resort to coercive power (Jakopsen, 2022). In this context, the fact that Russia did not take any concrete steps after the nuclear threat statements reinforced the impression among Western strategists that the Kremlin is bluffing. This is why the US and other Western allies have repeatedly crossed Putin's supposed red lines.

Another factor is that Putin often expressed his nuclear threats without tying them to specific demands or timeframe that would lead the West to believe that the threat is immediate, at least in terms of using strategic nuclear weapons. Additionally, there is a big difference in military power between NATO and Russia. Save for the modernisation of military equipment and armies, NATO's budget for nuclear weapons is about six times higher than the Russian army's expenditures (Kakkonen, 2021). This gap reinforces the Western view that its nuclear deterrence still prevails.

While Russia's use of strategic nuclear weapons in Ukraine is highly debatable, questions remain as to whether it could use tactical nuclear weapons (Faulconbridge, 2022). A controversial issue in this framework is whether these tactical weapons are still active and in working order (Baraniuk, 2023). While it is estimated that Russia owns about 2,000 tactical warheads, According to the Bulletin of Atomic Scientists, many are in storage and have not yet been paired with firing systems. Another stat that assuages Western strategists' concerns is that between 20 and 60 per cent of Russian missiles either misfired or did not hit the intended target (Baraniuk, 2023).

Finally, an issue raised in the West is that the Chinese factor should not be ignored in Russia's resort to the nuclear option. Dr Heather Williams, a nuclear expert at Kings College London, argues, "Russia is heavily dependent on Chinese support, but China has a 'no use first' nuclear doctrine. So, if Putin had used them, it would have been incredibly difficult for China to stand by him, and if he had used them, he would probably have lost China" (BBC, 2022).

Three-way Nuclear Deterrence

The concept of nuclear deterrence, in which countries use the threat of nuclear weapons to prevent attacks by other countries, has been a cornerstone of global security since the end of World War II (Moon,2021). Traditionally, nuclear deterrence has been a two-way relationship between two major nuclear powers, such as the United States and Russia. However, in recent years, there has been increasing discussion of the concept of a three-way nuclear deterrence relationship that includes China.

The position of China, which is the third largest nuclear power with 350 nuclear warheads and 10.1 billion spending in 2019, has become an important issue in a possible Russia-Western nuclear tension (Moon, 2021). China's declared position towards the Ukraine war is one of non-involvement. On February 24, 2023, China called for a comprehensive ceasefire in Ukraine, touting its own peace plan that urged all parties to "exercise restraint, avoid fanning the flames... and prevent the crisis from... spiralling out of control" (Askew, 2023).

However, besides the cooling US-China relations, the West remains alert towards China's stance in the Ukraine war. The Wall Street Journal reports that multiple Chinese state-owned and non-state companies have exported military and dual-use technology items to Russian defence companies. According to the Journal's review of Russian import and transhipment records compiled by US think tank C4ADS, these transactions include $1.2 million worth of SU-35 jet fighter components sold by Chinese state-owned aerospace firm AVIC International Holdings Corp, whose parent company Aviation Industry Corporation of China (AVIC) is included on the US Treasury Department's Non-SDN Chinese Military-Industrial Complex Companies List. China also exported over $128 million in computer chips and chip components to Russia between April and October 2022 (U.S.-China Economic and Security Review Commission, 2023).

This context obliges the West to remain attentive to China's position in any nuclear tensions with Russia. On the bright side, Chinese President Xi Jinping and then Ukrainian President Viktor Yanukovych signed the agreement on December 5, 2013, promising that China's nuclear powers would protect Ukraine from nuclear threats. The bilateral agreement defined

the two states as "strategic partners" (Gertz, 2022). Moreover, China has reaffirmed its "no first use" nuclear weapons policy at the United Nations, even as signs of a build-up emerge from the top leadership's report to the ongoing 20th Communist Party congress in Beijing (Xie, 2022). In this sense, there is some optimism that China will not participate in a nuclear attack if it is not the intended target of a similar attack. In this sense, Russia will not receive any support from China if it uses nuclear weapons (BBC, 2022).

Conclusion

Nuclear weapons have played a significant role in shaping foreign policy since their development in the mid-20th century. A state's possession of nuclear weapons is often considered a means of deterring potential aggressors, as the potential destruction caused by a nuclear strike is significant. The development of nuclear weapons also led to the concept of mutually assured destruction (MAD), in which a country would not use nuclear weapons against another country that also possesses nuclear weapons, as the retaliation would destroy both countries. This concept helped to prevent the outbreak of nuclear war during the Cold War.

While the war in Ukraine continues with all its violence, Russian President Vladimir Putin continues to sabre-rattle, making nuclear threats. He announced on February 21, 2023, that Russia would suspend the New START agreement, the only remaining arms control agreement with the United States. The West views Putin's nuclear threats mostly as a bluff. However, Russia continues to raise the tone of its threats within the nuclear deterrence framework. Besides the threats, the Kremlin took three concrete actions: The nuclear attack exercise carried out on February 19, 2022, before the war even started, the RS-28 Sarmat missile test carried out on April 20, 2022, and finally, the suspension of New START. On the other hand, the only concrete deterrent action of NATO against Russia's threats was the nuclear deterrence exercise held in October 2022.

While the West did not take Russia's threats seriously, the military aid pouring to Ukraine has never stopped. Consequently, Russia, could not reach its goals in Ukraine. For some experts, this may increase the chances of using tactical nuclear weapons in the theatre of war, even if on a limited scale. These stakes become higher if the war turns in favour of Ukraine, considering that Russia has more nuclear warheads than NATO.

It has become necessary for NATO prepare for the possibility of the use of nuclear weapons. In the case of Russia using nuclear weapons in Ukraine, NATO has options such as not acting militarily, responding with nuclear weapons or engaging in conventional warfare. The only certain thing is that if nuclear weapons are used, there will be no winner in the war, ushering new era with serious consequences for the entire world.

(Sefa Karacan - Anadolu Agency)

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