

PISM REPORT

NATO NUCLEAR ADAPTATION

RATIONALES FOR EXPANDING THE FORCE POSTURE IN EUROPE



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THE POLISH INSTITUTE OF INTERNATIONAL AFFAIRS

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MAIN CONCLUSIONS AND RECOMMENDATIONS

- NATO's nuclear deterrent is fulfilling its role today, but Alliance countries should do more than they have already announced to increase the likelihood that it will not fail in the future. Already in the late 2020s, several factors may come together that increase the risk of Russia taking more aggressive actions against the Alliance than those to date, including intentionally or unintentionally causing a conflict.
- Russia is intensifying its attempts to intimidate NATO countries with nuclear weapons. If Russia wins or even avoids defeat in its war against Ukraine, it may be encouraged to continue to use nuclear threats as a tool to support aggression. While such threats have not deterred NATO countries from providing massive support to Ukraine, Russia may conclude they have still helped to limit and delay the Western response.
- NATO's deterrence of Russia will be complicated by the growing danger of U.S. involvement in a conflict with China. Russia could calculate that in such a situation, the U.S. would not be willing to risk nuclear escalation in Europe and other NATO members would not dare to defend their allies.
- Most importantly, NATO countries should communicate more clearly that even in the most extreme situation they will not be intimidated by nuclear threats. The clearest way to send such a signal would be to expand NATO nuclear force posture in Europe. The NATO nuclear adaptation process that started after 2014 did not include such changes. This allowed for maintaining unity of the Alliance and consensus on gradual strengthening of other elements of nuclear deterrence, including effectiveness of existing forces, their modernisation, or improving joint communication. Yet, Russia apparently took this restraint and many NATO countries' sensitivity to nuclear issues as a sign of susceptibility to nuclear threats.
- Expansion of NATO nuclear posture in Europe would also serve the goal of strengthening the ability to promptly respond to a limited nuclear attack. The availability of U.S. intercontinental weapons for such a task might decrease in case of a war in the Indo-Pacific or Russian advances in ballistic missile defence.
- NATO should increase the number of countries possessing F-35 aircraft certified for delivery of U.S. nuclear bombs, and preferably also hosting the latter. In addition to providing a stronger demonstration of Alliance unity and resolve, such moves would also increase the odds that a sufficient number of planes and bombs would survive a Russian attack and then could launch a successful counterattack.
- Including Poland in nuclear sharing, as one of the NATO member states most at risk of Russian aggression, would have high political significance. Deploying nuclear bombs in Poland would likely be much more controversial within the Alliance than just certifying Polish F-35s for nuclear operations, but it would also strengthen deterrence to a greater extent, both symbolically and operationally.
- NATO countries should also deploy more capable and survivable regional-range nuclear delivery systems than the F-35 with nuclear bombs, which will be a more time-consuming step. Nuclear-armed sea-launched cruise missiles deployed on U.S. submarines, which are currently being discussed in the U.S., would fulfil this role. Nevertheless, they would not obviate the need for other NATO allies to sooner or later update their contribution to the nuclear mission. NATO should discuss such options as early as possible.

INTRODUCTION

Russia's 2022 invasion of Ukraine and the accompanying nuclear threats did not prompt NATO to make fundamental changes in its approach to nuclear deterrence. The Alliance is to continue to focus on increasing the effectiveness of existing nuclear forces, their modernisation, strengthening conventional support, and improving strategic communications, exercises and training.¹ While the communiqué from the summit in Vilnius in July and the new NATO strategy from 2022 do not rule out taking additional steps, there has been little reaction by the allies to Poland's appeals to include it in the group of NATO countries that host U.S. nuclear weapons and provide aircraft for their delivery.² The reluctance to change this area is partly because nuclear deterrence remains a sensitive topic for many allies for various reasons, but also because it has so far endured its greatest test since the Cold War. Russia has not attacked NATO countries in retaliation for their massive military aid to Ukraine. Nor has it launched a nuclear attack on Ukraine, which NATO countries warned it not to do.

However, it would be very risky for NATO countries to treat the current state of affairs as evidence that the current approach to strengthening nuclear deterrence will be sufficient to maintain its effectiveness within the coming decade. The challenges it faces are growing. The invasion of Ukraine proved that Russia is becoming increasingly aggressive, and how severe and risky are the miscalculations that Russian leadership can make. It underestimated the West's determination and it remains an open question what conclusions Russia will ultimately draw from the war. So far, it has continued to wage it, present a hostile attitude towards NATO, expand its nuclear forces, and attempt nuclear intimidation, as evidenced by, among other moves, the announced deployment of nuclear weapons to Belarus. At the same time, the balance of power in the Indo-Pacific is changing unfavourably for the United States. There is a rising risk of a conflict in the region, which would divert American attention and military resources from Europe, including parts of its nuclear forces.

THE NUCLEAR FORCES OF NATO COUNTRIES AND RUSSIA

In NATO, the U.S. possesses the vast majority of the Alliance's nuclear weapons (around 3,700 warheads, with around half deployed and the other half in reserve), with France and the U.K. having much smaller arsenals (295 and up to 260 warheads, respectively).³ NATO members recognise the "strategic" nuclear forces of these three nuclear powers, particularly those of the U.S., as "the supreme guarantee" of the security of the Alliance.⁴ American "strategic" nuclear forces are based in the U.S. and comprise bombers and silo- and submarine-launched missiles, all of which have intercontinental range. Shorter-range nuclear delivery systems are often referred to as "non-strategic", "theatre", or sometimes as "regional". Currently, the only U.S. systems of such type are tactical aircraft capable of carrying B61 nuclear bombs. Since these aircraft can also perform conventional tasks, they are called dual-capable aircraft (DCA). The U.S. has an estimated 200 B61 nuclear bombs, with around 100 deployed in Europe.⁵ Much smaller than the U.S. arsenal, the British and French nuclear forces are postured mostly to deter attacks against the two countries by the threat of massive retaliation, although neither exclude nuclear use in other situations. The U.K., like the U.S., openly declares the possibility

¹ "Vilnius Summit Communiqué," NATO, 11 July 2023, www.nato.int, para. 44-46.

² "Poland Applies to Join NATO Nuclear Sharing Programme," *The First News*, 30 June 2023, www.thefirstnews.com.

³ H.M. Kristensen et al., "Status of World Nuclear Forces," Federation of American Scientists, 31 March 2023, <https://fas.org>.

⁴ "NATO 2022 Strategic Concept," NATO, 29 June 2022, www.nato.int, para. 29.

⁵ H.M. Kristensen et al., *op. cit.*

of employing nuclear weapons in defence of NATO allies.⁶ France has suggested in a more veiled way that it could use nuclear weapons to defend its “European partners”.⁷ Both the U.K. and France possess submarine-launched intercontinental-range ballistic missiles, while France also deploys shorter-range air-launched cruise missiles.⁸

The U.S. and its allies prepare for the potential use of American nuclear weapons deployed in Europe within the framework of the “NATO nuclear mission”. Under bilateral nuclear-sharing arrangements, these weapons remain under U.S. custody and control, but the U.S. president may decide in wartime to release them for use by allies. NATO does not inform publicly where American nuclear bombs are stationed, but it is widely believed that they are located at six bases in five NATO countries, that also operate aircraft capable of delivering these bombs: Belgium, Germany, Italy, the Netherlands, and Türkiye.⁹ Other NATO members may provide conventional support for them, such as fighter escort (as does Poland).¹⁰ Moreover, all of them can take part in collective decision-making about various aspects of the NATO nuclear mission, including the launch of joint operation and planning.¹¹ By its own choice, France does not participate in the Alliance’s nuclear mission and related consultations and planning.

The U.S. has been deploying nuclear weapons in Europe and cooperating with Allies under nuclear-sharing arrangements since the 1950s. Both forms of cooperation serve an important political role, which is to demonstrate NATO solidarity and resolve, in particular the U.S. commitment to use nuclear weapons in defence of NATO members, as well as the willingness to share the risk and financial and political costs of nuclear deterrence. Nevertheless, the U.S. nuclear arsenal in Europe is much smaller than it was during the Cold War when it peaked at more than 7,000 warheads and included various delivery vehicles.¹² Such a large force was mainly due to the fact that the Alliance envisioned their use to stop a potential invasion of numerically superior forces of the Soviet Union and its satellite states. Nowadays, it is NATO states that together possess larger conventional forces than Russia. Accordingly, the military role of U.S. nuclear weapons in Europe is mainly considered one means of response to a limited nuclear attack as they can be detonated with a relatively low yield. U.S. nuclear strategies have long assumed that proportional retaliation would be a much more credible option of response than large-scale counterattacks, as it would carry a lower risk of the enemy responding with a massive attack against the U.S. and/or its allies.

Russia maintains a rough quantitative parity with the U.S. in intercontinental-range nuclear forces, but, after the Cold War, it has preserved many more shorter-range (non-strategic/theatre/regional) nuclear weapons. According to most publicly available estimates, they number around 2,000 warheads.¹³ It is generally believed that most of them have a lower yield than the warheads for intercontinental-range missiles. Russian strategists describe regional nuclear systems as a means of deterring a conventionally stronger enemy from conflict and

⁶ “Integrated Review Refresh 2023,” HM Government, March 2023, www.gov.uk, p. 33; “2022 Nuclear Posture Review,” U.S. Department of Defense, 27 October 2022, www.defense.gov, p. 9.

⁷ “Speech of the President of the Republic on the Defense and Deterrence Strategy,” Palais de l’Élysée, 7 February 2020, www.elysee.fr.

⁸ France considers all nuclear weapons as “strategic”.

⁹ H.M. Kristensen, M. Korda, “Nuclear Notebook: United States nuclear weapons, 2023,” *Bulletin of Atomic Scientists*, vol. 79, no. 1, 2023, p. 43. There are doubts whether Türkiye still assigns its aircraft for potential delivery of U.S. nuclear bombs and has crew trained for that purpose.

¹⁰ See, e.g.: B. Sieniawski, “Poland announces nuclear deterrence exercise,” *EurActiv*, 14 October 2022, www.euractiv.com.

¹¹ See: “NATO’s Nuclear Sharing Arrangements,” NATO, February 2022, www.nato.int/factsheets.

¹² J. Cox, “Nuclear deterrence today,” *NATO Review*, 8 June 2020, www.nato.int.

¹³ See, e.g.: “Nuclear Posture Review 2022,” *op. cit.*, p. 4; H.M. Kristensen *et. al.*, “Status of World Nuclear Forces,” *op. cit.*

its escalation, as well as a means of terminating the fighting on Russian conditions. Over the years, they have discussed various concepts of their use, paying the most attention to selective and gradual strikes. They would first and foremost serve the goal of coercing the enemy by demonstrating that, if it does not concede, Russia will be willing to conduct further and more destructive nuclear attacks. Russian concepts also include using regional nuclear systems for strictly military purposes, both on a limited scale (e.g., against key air bases) and massively against enemy forces, to prevent a Russian defeat.¹⁴

Russian official policy allows nuclear use only in defensive purposes, listing the conditions as: an attack with weapons of mass destruction or launch of ballistic missiles against Russia and/or its allies, attacks on Russian nuclear forces and their command and control systems, and aggression with the use of conventional weapons threatening the very existence of the Russian state.¹⁵ In practice, however, Russia has been using nuclear threats to support its aggressive actions. During the first attack on Ukraine in 2014, Russia tried to discourage NATO countries from providing aid to Ukraine by signalling that if tensions escalated, Russia would be willing to use nuclear weapons. This was conveyed by various comments, nuclear forces exercises, and bomber flights near NATO borders.¹⁶ Russia stepped up such nuclear intimidation before and during the 2022 full-scale invasion of Ukraine. At its beginning, Vladimir Putin warned that countries that would “stand in the way” of Russia would face consequences they “have never seen”. Three days later, Putin publicly ordered the nuclear forces to be put in “a special mode of combat service” (although it later turned out to encompass minor changes in the functioning of command posts). Subsequently, the Russian authorities have warned in various ways that increasing military aid for Ukraine might lead to escalation, even nuclear war. They have also suggested that Russia might launch a nuclear attack against Ukraine as it was liberating its territory, especially in autumn of 2022.¹⁷

NATO'S NUCLEAR ADAPTATION

Russia's 2014 aggression against Ukraine raised concerns within NATO about whether Russia would attack a NATO member in the future, while threatening or using nuclear weapons to deter allies from helping each other. The Alliance has since made clear progress in nuclear adaptation, but this process has been difficult and limited in scope. Unlike Russia, NATO countries have not deployed or do not plan to deploy additional types of nuclear delivery systems, nor have they announced deployment of nuclear weapons to additional locations in Europe. How controversial such ideas would be within the Alliance is illustrated by the reaction of some allies to the U.S. withdrawal from the INF Treaty, which banned ground-launched intermediate-range (500-5,500 km) missiles. Although Russia secretly developed and deployed such nuclear-capable missiles, and the U.S. has not announced work on nuclear missiles of this class, there was immediate opposition within NATO to their hypothetical deployment in Europe.¹⁸

¹⁴ See: M. Kofman, A. Fink, J. Edmonds, “Russian Strategy for Escalation Management: Evolution of Key Concepts,” *CNA Research Memorandum*, April 2020, www.cna.org.

¹⁵ “Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence,” The Ministry of Foreign Affairs of the Russian Federation, 8 June 2020, <https://mid.ru>, para. 4, 17-19.

¹⁶ See: J. Durkalec, “Nuclear-Backed ‘Little Green Men’: Nuclear Messaging in the Ukraine Crisis,” *PISM Report*, 29 July 2015, www.pism.pl.

¹⁷ See: L. Horowitz, M. Stolze, “Nuclear rhetoric and escalation management in Russia's war against Ukraine: A chronology,” *SWP Working Paper*, August 2023, www.swp-berlin.org.

¹⁸ “Germany would oppose new nuclear missiles in Europe: Foreign Minister,” *Reuters*, 27 December 2018, www.reuters.com.

Restraint in NATO's nuclear adaptation is due to several factors. For a quarter century after the Cold War, most NATO countries did not see Russia as a threat, and the topic of nuclear deterrence was marginalised in the Alliance. The number of nuclear weapons in Europe was being reduced, and as recently as 2010 some Alliance members were expressing interest in the complete withdrawal of U.S. nuclear weapons (primarily Germany, as well as Belgium and the Netherlands, among others). The shift towards strengthening nuclear deterrence has been a major challenge for many governments, not least because they feared the reaction of their societies, among which nuclear weapons are highly controversial. This is linked to the experience of the mass anti-nuclear movements from the Cold War—especially protests against the deployment of U.S. intermediate-range missiles in the 1980s—and the still considerable activity of pro-disarmament organisations. Adaptation was, and still is, also affected by differences in assessments of the degree of threat from Russia and concerns about “provoking” it. Moreover, it has been U.S. policy under presidents Barack Obama and Joe Biden to seek to “reduce the role of nuclear weapons”, in part to help persuade other countries to cooperate in reducing nuclear dangers, including preventing nuclear proliferation.

NATO declares it has taken steps to increase the ability to perform the joint nuclear mission. According to publicly available, and rather general, information, this has included raising the readiness level of dual-capable aircraft in Europe and increasing their resilience to attacks, adapting exercises, strengthening conventional support, and improving decision-making capabilities.¹⁹ The latter has been supported by actions to increase awareness on nuclear issues among NATO members, such as having tabletop exercises on nuclear scenarios.²⁰ Moreover, at the 2023 summit in Vilnius, the Alliance declared it is updating nuclear planning. This suggests that only recently the Alliance has resumed work on joint plans for use of nuclear weapons that were terminated after the Cold War.²¹

Since 2014, NATO countries have made few changes in their nuclear posture. In 2018, the Trump administration decided to lower the yield on a small number of submarine-launched Trident ballistic missiles in order to broaden options for proportionate response to a limited nuclear attack. In 2021, the U.K. increased the cap on the number of its nuclear warheads from 225 to 260 (it earlier had planned to reduce it to 180). A new development has been the improvement of infrastructure for storing B61s at Lakenheath base in the U.K., announced in U.S. budgetary documents for 2023-2024. The U.S. withdrew nuclear weapons from this site in the early 2000s, but still deploy dual-capable aircraft there. U.S. budget documents mentioned the “potential” deployment of personnel tasked with maintenance of nuclear weapons. Taken together with restrained U.S. and NATO nuclear policy, this leads to the conclusion that they are most likely to facilitate a hypothetical deployment of nuclear weapons in a crisis, rather than their permanent stationing.²²

NATO countries were planning modernisation of the nuclear forces even before 2014, although Russia's aggressive actions contributed to obtaining the consent of countries participating in nuclear sharing to replace dual-capable aircraft with newer ones. This issue

¹⁹ J. Durkalec, “NATO strategy to counter nuclear intimidation,” in: A. Gilli (ed.), *Recalibrating NATO Nuclear Policy*, NDC Research Paper, June 2020, pp. 7-9; “Transcript: Webinar: Perspectives on Nuclear Deterrence in the 21st Century,” Chatham House, 20 August 2020, www.chathamhouse.org, p. 5.

²⁰ J. Durkalec, “NATO strategy...,” *op. cit.*, p. 9.

²¹ “Vilnius Summit Communiqué,” *op. cit.*, para. 45. Cf. “The Alliance's Strategic Concept (1999),” NATO, 24 April 1999, www.nato.int, para. 64.

²² M. Korda, H. Kristensen, “Increasing Evidence that the US Air Force's Nuclear Mission May Be Returning to UK Soil,” Federation of American Scientists, 28 August 2023, <https://fas.org>; “NATO ostrzega. Wzrosło ryzyko użycia broni jądowej w Europie,” *Wirtualna Polska*, 1 October 2023, <https://wp.pl>.

has been particularly controversial in Germany, which approved the purchase of new jets only after Russia invaded Ukraine in 2022. Like Belgium, the Netherlands, and Italy, along with the U.S., Germany is purchasing American-made F-35A multirole aircraft, which are to be delivered in a version certified to carry upgraded B61-12 nuclear bombs from 2024.²³ In the next couple of years, the B61-12 will replace older variants of B61 bombs in Europe. Bases that host them have been undergoing modernisation. Replacement of U.S. “strategic” nuclear delivery systems is to begin in the second half of this decade, while France and the U.K. plan to start it in 2030s.

Since the 2016 Warsaw summit, joint declarations and communiques of NATO members have been pointing to Russia’s destabilising nuclear activities and also devoting more attention to the Alliance’s nuclear deterrence. They again are clearly recognising the role of U.S. nuclear weapons in Europe and allied dual-capable aircraft as part of deterrence posture, after such references were absent from NATO public documents from 2010 to 2014. Since 2016, joint declarations have also included a warning that “any employment of nuclear weapons against NATO would fundamentally alter the nature of a conflict” and that the “Alliance has the capabilities and resolve to impose costs on an adversary that would be unacceptable and far outweigh the benefits that any adversary could hope to achieve.”²⁴ This strengthened language in NATO communiques is included in its new strategy from 2020 and has served as the basis for more frequent public remarks on nuclear issues by the Secretary General and other representatives of NATO structures.

The Alliance has also made efforts to more clearly demonstrate its nuclear capabilities. Since 2020, it has been informing about its annual exercises of a nuclear mission—conducted already before 2014—with the participation of dual-capable aircraft and support. In 2021, NATO declassified the name of the exercise, *Steadfast Noon*, and it has been announcing them in advance since 2022. Since 2016, NATO has been publicising visits made to bases of British and French nuclear forces by representatives of NATO member states and international structures. The U.S. has been sending its bombers, some of them capable of carrying nuclear weapons, to Europe since 2014, and with growing frequency. U.S. submarines with nuclear ballistic missiles occasionally surface in European waters.²⁵

Smaller changes have occurred in the individual communication of NATO member states on nuclear weapons-related issues. This is an important measure of enhancing and complementing the message from joint communiqués towards Russia, also of explaining nuclear policy to publics of Allied member states. However, many allies still rarely speak publicly about nuclear deterrence. Public communication on this issue remains mainly the domain of nuclear weapons states, especially the U.S. At the same time, NATO members speak much more often and at greater length about strengthening non-nuclear deterrence and defence, as well as about the importance of arms control, disarmament, and reducing the risk of nuclear escalation. Such tendencies have been visible since the 2022 Russian invasion of Ukraine. Remarks by NATO members on deterrence refer mostly to the enhancement of forward presence and the overall potential of the Alliance’s conventional forces, with more

²³ Türkiye was also to operate F-35s, but the U.S. removed it from this programme in 2019 in response to the Turkish purchase of the Russian S-400 air-defence system.

²⁴ See, e.g.: “NATO 2022 Strategic Concept,” *op. cit.*, par 28; “Warsaw Summit Communiqué,” NATO, 9 July 2016, www.nato.int, para. 53-54.

²⁵ See the “News” section in: “NATO’s nuclear deterrence policy and forces,” NATO, www.nato.int/cps/en/natohq/topics_50068.htm; *Bomber task force*, U.S. European Command, www.eucom.mil/topic/bomber-task-force; “USEUCOM commander visits sub; highlights multinational cooperation, integrated deterrence,” U.S. European Command, 18 July 2023, www.eucom.mil.

general warnings covering various types of attacks and responses. President Biden publicly declared that the U.S. and its allies will defend “every inch” of NATO territory with the “full force” of its “collective power”.²⁶ The U.S. and some allies also warned that a nuclear attack against Ukraine will trigger “catastrophic” consequences for Russia.²⁷ There have been few instances, however, when the role of NATO nuclear deterrence was specifically mentioned by ministers of leaders of the Alliance’s member states.²⁸ Some of them have been more outspoken about their concerns about nuclear escalation, especially in the first few months of war. Such concerns have been cited as justification for not intervening directly in defence of Ukraine and not providing certain types of weapons.²⁹

NATO’S RESILIENCE TO NUCLEAR THREATS

As long as the Russian war against Ukraine continues, it is unclear how it will affect the Russian perception of NATO countries’ determination and resilience to nuclear threats. The Russian leadership seems to have drawn mixed conclusions from NATO’s nuclear adaptation. Most importantly, it apparently perceives NATO deterrence, including nuclear deterrence, as credible enough not to risk a confrontation with the Alliance. On the other hand, it seemingly assessed before the invasion that Russia would be able to intimidate NATO countries to such an extent as to minimise their support for Ukraine. Russia likely perceived NATO’s restraint in nuclear adaptation and the still visible sensitivity of many governments with regards to nuclear deterrence as signs of weakness that could be exploited.

Although the scale of support provided to Ukraine apparently surprised the Russian leadership, it is remarkable that Russia is stepping up attempts to intimidate Alliance governments and publics.³⁰ At the earlier stages of the war these efforts were limited mostly to rhetoric. Then, in February 2023, Russia suspended the New START treaty, which limits American and Russian intercontinental-range nuclear forces.³¹ In March, Putin announced that Russia would deploy nuclear weapons to Belarus, and in June claimed that the first warheads had been placed there. The Russian authorities also have been increasingly signalling the possibility of conducting

²⁶ “Remarks by President Biden on the United Efforts of the Free World to Support the People of Ukraine,” Warszawa, 26 March 2022, www.whitehouse.gov.

²⁷ D.E. Sanger, J. Tankersley, “U.S. Warns Russia of ‘Catastrophic Consequences’ if It Uses Nuclear Weapons,” *The New York Times*, 25 September 2022, www.nyt.com.

²⁸ “France says Putin needs to understand NATO has nuclear weapons,” *Reuters*, 24 February 2024, www.reuters.com; M. O’Connor, “Ukraine conflict: Putin’s nuclear alert a distraction attempt, UK says,” *BBC*, 28 February 2022, www.bbc.co.uk. NATO countries so far have not announced any changes in the operations of their nuclear forces (such as increasing readiness levels) since the 2022 invasion of Ukraine. This could be explained by the lack of signals about preparations of Russian forces for potential nuclear use. France was reportedly an exception, as it was reported to have increased the number of its nuclear missile submarines on patrol soon after the invasion. T. Newdick, “France Has Increased Its Ballistic Missile Submarine Patrols For The First Time In Decades,” *The Drive*, 24 March 2023, www.thedrive.com.

²⁹ See, e.g.: M. Amann, M. Knobbe, “‘There Cannot Be a Nuclear War’,” *Der Spiegel*, 22 April 2022, www.spiegel.de; J. Seldin, “US Sending Ukraine More Advanced Rocket Systems; Fighter Jets Under Consideration,” *Voice of America*, 22 July 2022, www.voanews.com; B. Samuels, “Biden: Direct conflict between NATO and Russia would be ‘World War III’” *The Hill*, 11 March 2022, <https://thehill.com>.

³⁰ Evidence of Russia being surprised by the Western response to the invasion includes renewed nuclear threats by Putin just three days after the invasion as well as remarks and articles by commentators with ties to the Russian authorities. See, e.g.: D. Trenin, “The US and its allies are playing ‘Russian Roulette’. You’d almost think they want a nuclear war,” Russian International Affairs Council, 22 June 2023, <https://russiancouncil.ru>.

³¹ Russia also has been refusing to return to the talks about future arms control agreements. The U.S. suspended the dialogue on this topic in response to the 2022 invasion, but over time began to call for its resumption. “Russia Says U.S. Must End ‘Hostility’ for Nuclear Talks,” *The Moscow Times*, 25 October 2023, www.themoscowtimes.com.

a test nuclear explosion.³² None of these steps is tantamount to actual preparation for an imminent nuclear strike, but they are clearly aimed at stoking concerns that it could happen at a later stage of the conflict. Such signals are likely to intensify should Ukraine further liberate large swathes of territory. In that case, Russia may also return to threatening Ukraine with a nuclear strike and do so in a much more direct manner than in autumn of 2022.

The increase in nuclear signals towards NATO in 2023 suggests that Russia has concluded that it is not that the West that is immune to nuclear threats but that they have been too weak so far. Russia might still see them as partially successful, especially in preventing NATO from sending its forces to defend Ukraine (although the Alliance is neither obliged to do so, nor suggested it may do so). Additionally, delays in the provision of subsequent types of weapons to Ukraine that were linked to escalation concerns gave Russia more time to prepare for further fighting. And some constraints on the support for Ukraine are still in place. The U.S. and at least some other NATO allies deliver weapons on the condition that they not be used for attacks on targets in Russia.³³ In October, Germany refused to provide Ukraine with longer-range cruise missile due to concerns about escalation, although similar weapons had already been provided to Ukraine a few months earlier by the U.K. and France.³⁴ Also in October, Ukraine received its first U.S. ATACMS missiles, but not in the longer-range variant.³⁵

If Russia concludes that its nuclear threats have helped it achieve some goals with respect to Ukraine, this will increase the risk of Russia committing further aggression backed by nuclear intimidation against NATO. Such a danger will be particularly significant if Russia subjugates Ukraine, but it still will increase if it maintains control over part of the lands occupied since 2022. For Russia, the effectiveness of its nuclear threats may be confirmed even if they prevent Ukraine from retaking the areas occupied before 2022. Furthermore, there is no reason to believe that defeat will end Russia's hostility towards NATO, although it will at least temporarily weaken the Russian ability and perhaps willingness to start another war. The Russian authorities depict aggression against Ukraine as part of a larger confrontation with the West and has not abandoned its demands towards the U.S. and the Alliance from December 2021, which included the withdrawal of allied troops from NATO's Eastern Flank.³⁶ Given this and the weakening of Russia's conventional forces due to the war, it is highly likely that in the foreseeable future Russia will try to use nuclear threats and signals even more than before to put pressure on the Alliance in order to extract concessions and cause divisions among its members.

The risk of Russia committing further aggression in Europe also will increase if the U.S. becomes involved in a conflict in the Indo-Pacific. The U.S. views China as its biggest competitor and U.S. intelligence assesses that Chinese leadership want their armed forces to be ready to invade Taiwan by 2027.³⁷ If a war between China and the U.S. broke out, Russia

³² A.M. Simmons, "Russia's State Duma Votes to Revoke Ratification of Nuclear-Test-Ban Pact," *The Wall Street Journal*, 17 October 2023., www.wsj.com.

³³ "Ukraine shouldn't use US weaponry inside Russia, US general says," *EURACTIV*, 26 May 2023, www.euractiv.com.

³⁴ H. von der Burhard, "Scholz cites risk of 'escalation' as reason not to send Taurus missiles to Ukraine," *Politico*, 5 October 2023, www.politico.eu.

³⁵ N. Bertrand, B. Liebermann, "US has provided Ukraine long-range ATACMS missiles, sources say," *CNN*, 18 October 2023, <https://cnn.com>.

³⁶ See, e.g.: "Putin falsely claims it was West that 'started the war' in Ukraine almost a year after he ordered invasion," *CBS News*, 21 January 2023, www.cbsnews.com; "Briefing by Foreign Ministry Spokeswoman Maria Zakharova, Moscow, December 15, 2022," The Ministry of the Foreign Affairs of the Russian Federation, 15 December 2022, www.mid.ru.

³⁷ O. Gazis, "CIA Director William Burns: 'I wouldn't underestimate' Xi's ambitions for Taiwan," *CBS News*, 3 February 2023, www.cbsnews.com.

might be calculating that the U.S. will not be willing to risk nuclear escalation in Europe. Moreover, such concerns could lead Russia to assume that other NATO members would not dare to send their forces to defend attacked allies, or to once more provide military supplies to Ukraine. The ongoing war has highlighted how crucial U.S. involvement is in mobilising some allies and maintaining NATO cohesion. The most clear example is when Germany decided to provide tanks to Ukraine only after the U.S. announced similar deliveries. Moreover, even if China has in fact put pressure on Russia not to use nuclear weapons since the invasion of Ukraine, it is very doubtful that China would do the same if it was at war with the U.S. and could gain from American attention and forces being distracted due to nuclear escalation in Europe.³⁸

MILITARY CHALLENGES

Modernisation of NATO nuclear forces will enhance their effectiveness, but challenges to their ability to conduct a limited nuclear counterstrike will not disappear. They will be related to the ongoing and potential development of Russian offensive and defensive capabilities and the possible involvement of parts of U.S. nuclear forces in a war in the Indo-Pacific.

Unlike the dual-capable aircraft currently tasked with the delivery of U.S. nuclear bombs in Europe, the F-35s utilise stealth technology, reducing detectability to radar. This will substantially increase the likelihood of them performing a successful nuclear mission. Unlike the older B61 variants, the new B61-12 nuclear bombs will have stand-off capability, but a modest one, presumably up to 80 kilometres.³⁹ Therefore the F-35 will still have to drop the bombs from within range of Russian air defence systems, which have been highly effective in countering older-generation aircraft during the ongoing war in Ukraine. Thanks to stealth characteristics and other capabilities (e.g., electronic warfare) the F-35 strengthens the potential for supporting a nuclear mission with suppression and destruction of enemy air defences. NATO members are also developing and recently increasingly purchasing other weapon systems that could serve this purpose, such as longer-range precision missiles (although the vast majority of such capabilities in NATO is still provided by the U.S.). By using similar missiles and unmanned aerial vehicles, Ukraine has achieved significant success in attacks on Russian air defence systems and targets they protect. Also, NATO's ability to carry out the nuclear mission will gain from the accession of Finland and the expected accession of Sweden to the Alliance. The possibility of using their airspace and bases for that purpose will not only complicate Russian planning but also may help alleviate complications and constraints stemming from the F-35's range. It will create additional options for refuelling during an operation against targets in Russia.

However, even the introduction of the F-35 and increased support for it will not guarantee the success of the nuclear mission, especially in the longer-term perspective. Russia continues to develop its air-defence systems and might incorporate lessons from the war against Ukraine, while Russian regional-range missiles continue to pose a threat to NATO air bases that host B61 nuclear bombs and dual-capable aircraft. While Ukraine has been intercepting most of these kind of missiles—carrying conventional payloads but capable of carrying nuclear ones as well—and NATO countries considerably increase investments in missile defences, they still

³⁸ M. Seddon *et.al.*, “Xi Jinping warned Vladimir Putin against nuclear attack in Ukraine,” *Financial Times*, 5 July 2023, www.ft.com.

³⁹ The B61-12 nuclear bomb also will be more precise, which will allow the destruction of targets with a smaller explosive yield (which will be selectable) and minimise collateral damage.

have to fill in significant gaps. Moreover, Russia had been working on new types of missiles for use in Europe already before the war. It may start the development of additional ones to be used in the war against Ukraine, as well as to compensate for the weakening of Russian conventional forces, intimidate NATO members, and increase the chances of getting through Allied air defences in a potential war. NATO will also have to continue to take into the account that Russia may attack nuclear bases in Europe with intercontinental ballistic missiles, even though this could be more escalatory than the use of shorter-range and more precise missiles with lower-yield warheads. The U.S. is planning to deploy SM-3 Block IIA missiles to Europe (including Poland) that will have a limited ability to intercept intercontinental ballistic missiles but which so far have been tested against systems less advanced than Russian ones. Also, the NATO ballistic missile defence system in Europe has been under development with an eye towards defending against a long-range attack from Iran, not Russia.⁴⁰

The possibility of war in the Indo-Pacific prompts uncertainty as to how it would impact the availability of U.S. strategic bombers for limited nuclear counterattack against Russia.⁴¹ The U.S. currently operates 141 bombers, all of which can carry conventional weapons, with around half also capable of delivering nuclear weapons, including low-yield warheads.⁴² The U.S. Air Force has stated it needs to increase the bomber inventory to 225 aircraft, although under current plans it may take until 2040. Some non-governmental studies assess that the U.S. needs even 300 bombers or more, with the majority of them for a possible conventional war with China.⁴³ There also will be an increasing demand for potential nuclear operations in the Indo-Pacific. According to Pentagon assessments, Chinese nuclear forces have grown from more than 200 warheads in 2020 to around 500 in 2023, and will exceed 1,000 in 2030 and continue to grow.⁴⁴ The North Korean nuclear arsenal is much smaller, presumably numbering several dozen warheads, but is also growing.⁴⁵ A conflict in the Indo-Pacific would also involve many U.S. non-nuclear forces important for supporting strategic bombers and shorter-range dual-capable aircraft (including air refuelling, intelligence, surveillance and reconnaissance, and suppression and destruction of air defences).

In several years, questions might also arise as to the continued effectiveness of submarine-launched Trident missiles with W76-2 warheads, which currently present a prompt and assured option of limited response to a nuclear attack. The high speed of these intercontinental ballistic missiles would allow them to strike targets in Russia in some 30 minutes or less, and makes them and their payload extremely difficult to intercept. However, Russia has announced that in 2025 it will start deploying the S-550 missile defence system, which it claims will be capable of defending against such missiles. Effective defence against a massive

⁴⁰ M. Eckstein, "MDA: Test of DDG, Standard Missile-3 IIA a Good Start, But More Work Needed on Homeland Defense Mission," *USNI News*, 13 May 2021, <https://news.usni.org>.

⁴¹ For more on the implication of the growth in the Chinese nuclear forces and potential concurrent conflicts in Europe and Indo-Pacific for U.S. deterrence posture, see: M.R. Creedon, J. Kyl *et al.*, "America's Strategic Posture: the Final Report of the Congressional Commission on the Strategic Posture of the United States," Institute for Defense Analyses, October 2023, www.ida.org.

⁴² Of the U.S. nuclear-capable bombers, 20 are the stealthy B-2, which can carry B61 bombs. The remaining ones are B-52 bombers armed with older-generation cruise missiles. New B-21 bombers and LRSO air-launched cruise missiles for various bombers will both be stealth types and are to enter into service in 2027 and 2029, respectively.

⁴³ M.A. Gunziger, "Understanding the B-21 Raider: America's Deterrence Bomber," The Mitchell Institute for Aerospace Studies, March 2023., <https://mitchellaerospacepower.org>, pp. 27-28.

⁴⁴ "Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2023," Office of the Secretary of Defense, 19 October 2023, www.defense.gov, p. VIII, "Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020," Office of the Secretary of Defense, 1 September 2020, www.defense.gov, p. IX.

⁴⁵ H.M. Kristensen *et al.*, "Status of World Nuclear Forces," *op. cit.*

strike involving intercontinental ballistic missiles remains unrealistic, but Russia may, over time, gain the ability to intercept one or more W76-2 warheads, or at least assume so.⁴⁶ The growing Russian anti-ballistic capabilities is what the British authorities cited as one of the reasons for increasing the number of nuclear warheads available for British Trident missiles.⁴⁷

RATIONALE FOR BROADENING NATO NUCLEAR ADAPTATION

The political and military challenges facing NATO's nuclear deterrence make the case for the Alliance to take additional steps to strengthen it yet this decade. By the late 2020s, several risk factors may come together, in effect increasing the danger of Russia undertaking more aggressive actions towards NATO than it has so far. In addition to the growing risk of U.S. involvement in a war with China, the Russian war against Ukraine may still end in a way that would be taken by Russia as proof of the effectiveness of nuclear intimidation. In several years, it may also at least partially rebuild its conventional forces and acquire systems that would alter the effectiveness of some of the Alliance's nuclear forces. These risk factors may materialise in various ways. The most extreme—but possible—scenario would be an invasion of a NATO member under the cover of nuclear threats. Another possibility is another attack on Ukraine, during which Russia would be more willing than currently to use force to prevent Allied countries from providing material support to Ukraine. Finally, Russia may go too far in attempts to intimidate the Alliance or test its reaction with nuclear threats, unintentionally provoking a crisis or even a military clash.

NATO countries would strengthen deterrence primarily by demonstrating more clearly that even in the most extreme scenario, they would not be intimidated and would be determined to defend each other, including by adequately responding to any nuclear attack. The most explicit way to send such a signal would be to expand NATO's nuclear posture in Europe. This would be a fundamental and tangible change in NATO policy. As such a decision would be politically uneasy for many governments, the more it would demonstrate that NATO members are not as sensitive to threats concerning nuclear weapons as the Russian leadership might think. Moreover, the importance of having as militarily credible nuclear forces as possible in Europe will grow in the coming decade. This is because of uncertainty as to how capable of a response to a limited nuclear attack U.S. intercontinental nuclear forces would be in case of a war in the Indo-Pacific or advances in Russian ballistic missile defences.⁴⁸

NATO may also take additional steps to strengthen nuclear deterrence within its current adaptation framework, but these would be complementary, not alternative, to increasing nuclear forces in Europe. In addition to strengthening conventional support for the nuclear

⁴⁶ It should be noted that some experts criticised the option of using the W76-2 warhead in response to a limited nuclear attack as too escalatory. Launch of a ballistic missile with such warhead or warheads would be easily detectable by Russian early warning satellites and radar. Thus, according to the critics, it could be misperceived as the beginning of a larger attack and prompt Russia to launch a massive nuclear strike against the U.S. The Russian authorities and military have made warnings along these lines. While such a possibility cannot be excluded, there are substantial reasons for Russia not to make such a step. It would risk mistakenly triggering total nuclear war and massive U.S. retaliation against it. Additionally, Russia has developed capabilities for nuclear retaliation even if its leadership and parts of its nuclear forces were eliminated, so it would not have to immediately respond to an ongoing nuclear attack. However, even some supporters of the W76-2 have called for additional low-yield systems that could be launched "without visible generation". J. Gould, "US Strategic Command chief: Sea missile cancellation opens 'deterrence and assurance gap'", *Defense News*, 5 April 2022, www.defensenews.com.

⁴⁷ K. Reif, S. Bugos, "UK to Increase Cap on Nuclear Warhead Stockpile," *Arms Control Today*, April 2021, www.armscontrol.org.

⁴⁸ Cf. B. Roberts, "NATO's Nuclear Deterrent: Fit for Purpose?," *SIRIUS Zeitschrift für strategische Analysen*, no. 3/2023, <https://cgsr.llnl.gov>, p. 11; G. Weaver, "The urgent imperative to maintain NATO's nuclear deterrence," *NATO Review*, 29 September 2023., www.nato.int.

mission and air and missile defence of bases hosting U.S. nuclear bombs, the Alliance could exercise a contingency dispersal of dual-capable aircraft to various air bases or return to the practice of conducting integrated exercises of conventional defence and nuclear use scenarios. However, there is a risk that the Russian leadership would disregard such actions, assuming that the Alliance countries were trying to strengthen deterrence at possibly little cost and avoiding increasing nuclear forces in Europe because they lack resolve. During the invasion of Ukraine, Russia made a number of miscalculations, not only regarding the West's determination but also Ukraine's will and ability to fight, along with the level of Russian military capabilities. Whether this was due to Putin's own inclinations or the quality of the military and intelligence provided to him is of secondary importance. The basic lesson for NATO is that signalling to Russia must be as clear as possible. The Russian leadership will certainly pay attention to changes in NATO's nuclear posture. It attaches importance to the balance in regional-range nuclear forces, as evidenced by Putin's remarks that a larger number of such systems constitutes a "competitive advantage" of Russia over NATO.⁴⁹ Furthermore, the deployment of additional systems of this type by the Alliance would bring unique operational advantages. Depending on the details of these changes, they may involve increased survivability before and after launch, or the ability to promptly strike a wider range of targets.

Expansion of forward-deployed regional-range nuclear systems is a better way to enhance regional deterrence than increasing U.S. intercontinental forces for this purpose. The constant presence of nuclear systems in an area threatened by aggression more clearly conveys the resolve to use them against a particular adversary and that they will be available for such a task. They can be used to conduct a counterattack faster than U.S.-based bombers, particularly if the latter are engaged in a war in Asia. Promptness of response does not have to be a decisive factor for effective deterrence but there are possible scenarios in which it would matter. For example, the Alliance should be able to respond with a rapid nuclear counterattack to deter subsequent nuclear strikes against NATO conventional forces. Such attacks could give Russia a battlefield advantage. Moreover, while credibly demonstrating U.S. resolve is key for NATO's nuclear deterrence, it is also important to convince the adversary that other allies will defend each other despite the threat of enemy nuclear use. This goal would be met by the involvement of allies in the deployment of additional delivery systems for U.S. nuclear weapons in Europe. This may entail a joint NATO decision on such deployment and allied involvement in hosting nuclear weapons and a delivery system or operating the latter.

There is no reason, however, for NATO to strive to achieve a quantitative balance with Russia or numerical superiority in regional nuclear forces. Russia has so many of them primarily to compensate for the overall conventional advantage of NATO countries. For the Alliance, there are simply far fewer targets that would require the use of nuclear weapons to destroy them. NATO's priority remains to deter a nuclear attack, and if it does occur, to respond in a way that gives the best chance of convincing Russia that the continued use of nuclear weapons will be met with severe consequences and that it will not be able to control the escalation. If Russia triggers even a limited nuclear exchange with NATO, it would risk further intensification of the conflict, including the use of a larger and more destructive intercontinental arsenal by the U.S. Moreover, even if NATO had a numerical advantage over Russia in nuclear systems, including those of regional range, the Alliance could not hope to eliminate all Russian nuclear forces and stop them from inflicting catastrophic damage. In the event of a total nuclear war, the use of nuclear forces—as well as precision-guided conventional missiles and bombs, and

⁴⁹ "Plenary session of the St Petersburg International Economic Forum," President of Russia, 16 June 2023, www.en.kremlin.ru.

air and anti-missile defences—against the Russian nuclear arsenal could allow the Alliance to at best limit the damage on its side.

OPTIONS FOR EXPANDING AND UPGRADING NATO NUCLEAR POSTURE

In recent year, U.S. discussions on bolstering regional-range nuclear forces have focused on a nuclear-armed sea-launched cruise missile (SLCM-N). Development of the missile was initiated by the Trump administration. The missiles was supposed to be deployed on submarines and possibly on ships in European and Asian waters in order to strengthen deterrence of Russia and China. In turn, the Biden administration assessed the SLCM-N to be unnecessary given other existing and planned U.S. capabilities. While it has been seeking to terminate the programme since 2022, Congress has so far continued to provide funding for the missile. Militarily, the SLCM-N would be a better option of response to a limited nuclear attack than dual-capable aircraft with nuclear bombs, even the F-35. Submarines with the SLCM-N would be very difficult to find and thus much more survivable than aircraft and bombs in their bases. The SLCM-N could be launched from various locations along the Russian coastline and likely would be harder to detect than the F-35. All these features facilitate getting through air defences and enable hitting a broader spectrum of targets.

However, even if Congress continues to fund the SLCM-N, its development may take around a decade. The Trump administration planned to introduce it into service around 2030, while Biden administration officials stated that it would not be ready before 2035.⁵⁰ Moreover, the SLCM-N would be deployed only on U.S. vessels.⁵¹ While they could make port calls in NATO countries, the deployment and use of the SLCM-N would not require the participation, consent, or support from the allies. From the beginning, this has been pointed out as a major advantage of the SLCM-N as less controversial and easier to deploy than land-based systems. At the same time, this means that the SLCM-N would demonstrate the resolve of the U.S., not the whole NATO. Moreover, while the ability to remain hidden is a huge military advantage, it severely limits the possibility of using them for signalling in a crisis, as opposed to aircraft or mobile ground launchers which may visibly leave their bases or conducting exercises.

In turn, forward deployed, regional-range, ground-launched and air-launched missiles would require some allied involvement. Similar to the SLCM-N, ground-launched missiles could have greater range and lesser in-flight detectability than the F-35. They would be much more survivable on the ground than aircraft if deployed on mobile launchers. As in the case of dual-capable aircraft and B61 bombs, the allies could both host them and operate at least some of the delivery vehicles. Air-launched missiles would not address the problem of the vulnerability of air bases to attack, but would increase the likelihood of F-35 or even older aircraft survival in the air and the payload reaching the target.⁵² But even in case of air- and ground-launched missiles, the time necessary to develop them would presumably be long, even if an adaptation of existing or upcoming conventionally-armed missile. The U.S. nuclear enterprise is currently focused on the modernisation and refurbishment of warheads for existing nuclear forces, and implementation of these plans are already delayed.⁵³

⁵⁰ M. Shelbourne, S. Lagrone, “Nuclear Sea-Launched Cruise Missile Has ‘Zero Value,’ Latest Nuclear Posture Review Finds,” *USNI News*, 27 October 2022, <https://news.usni.org>.

⁵¹ Deployment of U.S. nuclear missiles and related personnel on vessels of non-nuclear allies would create a number of practical problems related to the functioning of mixed crews and command and control.

⁵² Such options have been discussed in, e.g.: M. Kroenig, “Toward a more flexible NATO nuclear posture,” *Atlantic Council Issue Brief*, 15 November 2016, www.atlanticcouncil.org.

⁵³ These problems are related to the fact that after the Cold War, the U.S. stopped the production of new nuclear warheads and severely limited production of their components. See: “Nuclear Weapons: NNSA Does Not Have a Comprehensive

The fastest and simplest solution would be to increase the number of countries participating in nuclear sharing and the NATO nuclear mission by providing dual-capable aircraft and/or hosting nuclear bombs. At least 10 countries have either purchased or plan to purchase the F-35A—not only nuclear-sharing participants but also countries that currently plan to use these aircraft only for conventional missions. Starting in 2024, the F-35A are to be delivered in a version adapted to carry nuclear bombs. Having a full capability to do that would only require special training for pilots and ground crews.⁵⁴ Such certification would formally require only U.S. involvement, while assigning the aircraft for a nuclear role within the NATO nuclear mission would have to be accepted by all Allies (except for France). More aircraft capable of carrying U.S. nuclear bombs and more bases with these warheads and planes would increase the odds that a sufficient number of planes and bombs would survive a Russian attack and could launch a successful counterattack.

POLAND IN NUCLEAR SHARING?

Poland has been the only country known to have expressed an interest in joining nuclear sharing since the end of the Cold War. Including Poland in this cooperation arrangement would be a very visible political signal by NATO members to Russia: no country from the eastern part of NATO hosts nuclear weapons or provides aircraft for delivering them. This state of affairs goes against declarations by NATO countries on the necessity of ensuring “the broadest possible participation” of Allies in “Alliance nuclear burden-sharing arrangements to demonstrate Alliance unity and resolve”.⁵⁵ There are two options for potential Polish involvement in nuclear sharing. Full participation would entail both hosting U.S. nuclear weapons on Polish territory and possession of dual-capable aircraft. A more limited option would only include the latter. The latter was suggested by a security advisor to Polish President Andrzej Duda in mid-2023.⁵⁶ It would encompass nuclear certification of Polish F-35A aircraft, the first of which are to arrive in Poland at the turn of 2025-2026. It would be also technically possible to adapt F-16 fighters that Poland has been operating for years, although their usefulness in this role would be much lower than the F-35A. This is not only because of the much lower chances of the F-16 reaching its target but also the limited ability of this aircraft to use the new B61-12 nuclear bombs.⁵⁷

Full Polish participation, including hosting nuclear weapons, would have greater deterrent value than simply having dual-capable aircraft. This would be due to greater symbolic importance of such a move and the diversification of nuclear weapons deployment sites, which would complicate potential attempts to destroy them. Moreover, an F-35 starting from Poland with nuclear weapons would not have to refuel during an operation to reach targets in mainland Russia and return to allied airfields. They could thus conduct a nuclear mission

Schedule or Cost Estimate for Pit Production Capability,” United States Government Accountability Office Report, GAO-23-104661, January 2023, www.gao.gov.

⁵⁴ “F-35 Dual Capable Aircraft Team Meets Goals Ahead of Schedule, Earns Prestigious Award,” Defense Visual Distribution Service, 17 February 2022 r, www.dvidshub.net.

⁵⁵ “Vilnius Summit Communiqué,” *op. cit.*, para. 45.

⁵⁶ J. Palowski, “Polish F-35 Jets To Be Nuclear Capable? Polish National Security Bureau Takes the Floor,” *Defence24*, 11 July 2023, www.defence24.pl.

⁵⁷ The F-16 will not be adapted to use the B61-12 as a guided bomb. Moreover, the new tail-kit assembly allowing for such precise use by other aircraft replaces the parachute from older B61 versions. The parachute was to allow for dropping the bomb at low-altitude, high-speed flight, which would give the F-16 the best chance to avoid being shot down by air defences. Without the parachute to slow it down, the bomb would drop in such a way that it could disintegrate on impact but before it could detonate or the plane might not manage to safely fly away.

easier, faster, and with a lesser risk of warning Russia in advance about an operation than dual-capable aircraft launched from more distant existing bases with B61 nuclear bombs.⁵⁸

The option of involving Poland in nuclear sharing with the U.S. and NATO nuclear mission only by certifying F-35s for nuclear operations probably would be seen by NATO allies as the more acceptable solution and one easier to implement. This is indicated by the fact that this option has been supported, or not opposed, by some experts critical of the idea of deploying nuclear weapons in Poland.⁵⁹ While NATO members refrain from public comments about potential Polish participation in nuclear sharing, there have been non-governmental voices that such a step would be “provocative” towards Russia and that the deployment of nuclear weapons closer to the Russian border would make them more vulnerable to attack.⁶⁰ Some also argue that such deployment would increase risks to Poland in a conflict.⁶¹

Without stationing of nuclear weapons in Poland, it would be more complicated for Polish F-35s to launch a nuclear mission, although providing NATO with more nuclear-capable aircraft would still strengthen allied capabilities. In this variant, Polish F-35s could be involved in a nuclear operation in two ways. One would be to move Polish aircraft in a conflict to nuclear bases in other NATO countries. Some of the nuclear-capable aircraft of current nuclear-sharing participants could be destroyed on the ground or when performing their conventional tasks. In that case, the bombs assigned to the lost aircraft could be used by Polish F-35s. The second option would entail the deployment of nuclear bombs to Poland in a crisis from another base in Europe or the U.S. There are questions, however, as to how feasible such a solution would be given the lack of special infrastructure in Poland, including vaults for storing weapons under protective shelters. It is not clear whether the deployment of bombs to a location without such facilities would comply with the U.S. security procedures and how long the bombs could be maintained there without compromising their effectiveness.

Presumably, some of the allies opposing the permanent deployment of nuclear weapons to Poland would also oppose the construction of special infrastructure for their storage and maintenance. Such facilities would have to be constructed by either the U.S. or at least in line with U.S. specifications. The argument that Polish involvement in nuclear roles would be “provocative” is sometimes formulated with reference to the 1997 NATO-Russia Founding Act (NRFA).⁶² In this document, NATO countries declared that they had “no intention, no plan and no reason” to deploy nuclear weapons on the territory of new members of the Alliance or establish nuclear storage sites there.⁶³ The Biden administration referred to the NRFA in October 2022 after President Duda expressed an interest in Polish participation in nuclear sharing. The U.S. stated that it “has no plans to deploy a nuclear weapon on NATO member territory that had joined NATO post-1997”.⁶⁴ Some allies, such as Germany, are generally against abrogating the NRFA.⁶⁵

⁵⁸ Cf. R. Peters, “NATO’s Nuclear Posture Needs Updating,” The Heritage Foundation, 31 August 2023, www.heritage.org.

⁵⁹ “Poland’s bid to participate in NATO nuclear sharing, IISS,” September 2023, www.iiss.org; F. Kuhn, “Making Nuclear Sharing Credible Again: What the F-35A Means for NATO,” War on the Rocks, September 2023, www.warontherocks.com.

⁶⁰ S. Pifer, “US nukes in Poland are a truly bad idea,” The Brookings Institution, 18 May 2020, www.brookings.edu; J. Borger, “Poland suggests hosting US nuclear weapons amid growing fears of Putin’s threats,” *The Guardian*, 5 October 2022, www.theguardian.com.

⁶¹ “Poland’s bid to participate in NATO nuclear sharing...,” *op. cit.*

⁶² S. Pifer, “US nukes in Poland are a truly bad idea,” *op. cit.*

⁶³ “Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation signed in Paris, France,” 27 May 1997., www.nato.int, part IV.

⁶⁴ “Department Press Briefing,” U.S. State Department, 6 October 2022, www.state.gov.

⁶⁵ “Europe stands united side by side with the Ukrainian people,” Die Bundesregierung, 22 June 2022, www.bundesregierung.de.

It is highly unlikely, however, that the deployment of U.S. nuclear weapons to Poland would prompt Russia to take hostile steps substantially different from those it is already taking and probably would take anyway. NATO's adherence to military self-limitations from the NRFA did not stop Russia from violating its commitments, including the invasions of Ukraine and Georgia, nor threats against NATO members. Neither did it induce Russia to reciprocate the Alliance's self-restraint in the nuclear dimension. Russia has long been expanding its nuclear forces and recently declared the deployment of nuclear weapons to Belarus, which concluded the withdrawal of Soviet nuclear weapons to Russia shortly before the signing of the NRFA. This time, Russia announced the deployment under a formula similar to nuclear sharing. It may decide to release at least some of the warheads for use by Belarussian forces, which it trained and equipped with nuclear-capable short-range missiles and aircraft. There is no reason to suppose that Russia would respond to the deployment of U.S. nuclear bombs to Poland by launching a strike against them, since it has not done so against other U.S. nuclear bombs already deployed in Europe or the longer-range nuclear forces of NATO countries. Similarly, the Soviet Union tolerated much greater numbers of U.S. nuclear weapons in Europe during the Cold War, including intermediate-range missiles that could reach its territory.

While U.S. nuclear bombs in Poland could be attacked by Russia in wartime, so can those deployed in their current locations in Europe. There is no need to deploy nuclear weapons on Poland's eastern border, where they could be attacked by artillery or ground forces. Unlike in the Cold War, NATO does not rely on early nuclear use to deter and repel an invasion, but plans forward defence by conventional forces. Nuclear weapons deployed to future bases of Polish F-35s in Western (Świdwin) or Central (Łask) Poland would be under threat of missile attacks, but not defenceless against them, given that Poland is in the midst of a comprehensive modernisation of its air and missile defences. Although Russia indeed possesses a broader range of missiles that could be launched at Poland, its abilities to strike more distant NATO nuclear bases are also significant. They include options for quick, short-notice strikes, even though, unlike Poland, these bases cannot be reached by ground-launched shorter-range Iskander ballistic missiles. A similar threat is posed, however, by submarine-launched P-800 Oniks supersonic cruise missiles, and will be greater with the upcoming introduction of the more capable 3M22 Tsirkon hypersonic cruise missile. The sites also may be rapidly attacked by intercontinental ballistic missiles, against which the Alliance has no effective defence. It is also possible that Russia will return to the development of intermediate-range ballistic missiles, which could conduct such attacks with greater precision and without taking away from forces intended to attack the U.S.

Finally, hosting U.S. nuclear weapons would make Poland more, not less, secure. It would lower the risk of an outbreak of war and its escalation by sending an additional signal of NATO countries' resolve to defend their allies and by broadening the response options to nuclear attack. When assessing the risks related to hosting nuclear weapons, one must consider that as a NATO Eastern Flank country, Poland is already particularly vulnerable to the consequences of deterrence failure. U.S. nuclear weapons would constitute one of the potential targets for Russian nuclear strikes on Polish territory, but not the only one. If Russia were to lose a conventional conflict, it could, for example, attempt to strike Polish and allied forces on the battlefield with nuclear weapons. An existential threat for Poland is also posed by even a strictly conventional war with Russia, the risk of which will grow if Russia concludes it can paralyse NATO with nuclear threats. Polish territory would be at risk of various attacks, especially non-nuclear strikes, also in case of a NATO-Russia conflict started beyond it. For example, Russia could strike infrastructure used for the deployment of reinforcements to the Baltic states.

CONCLUSIONS AND RECOMMENDATIONS

NATO's nuclear deterrent is fulfilling its role today, but the Alliance countries should do more than they currently plan to increase the chances that it will not fail in the future. The gradual adaptation process, which did not involve the stationing of additional nuclear forces in Europe, allowed the Alliance to maintain unity and consensus on strengthening nuclear deterrence. However, as a side effect, this restraint and sensitivity among NATO members to nuclear issues apparently contributed to a Russian belief that many of them were susceptible to nuclear threats. It is not yet known whether continued support from NATO countries for Ukraine will change this perception. Even if so, the deterrence of Russia will be complicated by the growing risk of the U.S. getting involved in a war in the Indo-Pacific, which could encourage Russia to take more aggressive actions against NATO. Already in the late 2020s, the Alliance's deterrence may be tested even more severely than now.

The main challenge to NATO's nuclear deterrent is political. It concerns the need for NATO allies to demonstrate their resolve and resilience to nuclear threats more clearly. As follows from Russian nuclear strategy and its implementation, including actions during the recent invasion of Ukraine, the greatest threat to NATO is not Russia deliberately starting a war with the rapid use of nuclear weapons, rather that it would commit aggression with conventional forces, believing that its nuclear threats would weaken the response of NATO countries. As with the ongoing war in Ukraine, such aggression would carry the risk of nuclear escalation if Russia began to lose the conflict. It could be another invasion of Ukraine or the less likely but also possible scenario of an attack on a NATO member. Russia unintentionally provoking a crisis or armed clash by going too far with trying to test and intimidate NATO with nuclear threats is also possible.

NATO members could and should also do more to ensure they can effectively and promptly respond to a limited nuclear attack in Europe, even if the biggest political and military risk factors materialise. The use of U.S. intercontinental forces for this purpose might be impeded by a U.S. war with China or advances in Russian ballistic missile defences. Shorter-range NATO nuclear forces in Europe are to be modernised soon, but their size, composition, and geographical distribution are a result of plans and decisions from times when many countries did not see Russia as a threat, China had smaller nuclear forces, and the prospects for a U.S.-China war were much more remote than today.

NATO should take two general steps to expand and upgrade the Alliance's force posture in Europe.

The first step should be to expand the number of countries participating in nuclear sharing, taking advantage of the fact that the F-35A will soon be produced in a version adapted to carry nuclear bombs. This expansion should include at least an increase in the number of aircraft certified for nuclear operations, and ideally also the deployment of nuclear bombs in additional locations. It would be politically and militarily optimal to include a few more countries in nuclear sharing. The participation of Poland, as one of the NATO members particularly at risk of Russian aggression, would have special political importance. Deploying nuclear bombs in Poland would likely be much more controversial within the Alliance than just the nuclear certification of Polish aircraft, but it would also strengthen deterrence to a greater extent, both symbolically and by increasing the resilience of NATO's nuclear forces to attack and expanding the possibilities of their use.

As a second step, which will be more time-consuming, NATO should deploy more capable and survivable regional-range nuclear systems. SLCM-N would fulfil that role if the U.S. continues its development. The deployment of this missile and the previous step would complement each other. SLCM-N missiles would bring significant military advantages, while the expansion of nuclear sharing based on the F-35 would be possible faster and would better demonstrate the resolve of not only the U.S. but also the rest of the Alliance. The presence of both systems in Europe would complicate Russian calculations and planning by diversifying the means and possible vectors of a NATO counterattack. A ground-launched nuclear missile could be an alternative to the SLCM-N, which could be also used by NATO allies participating in nuclear sharing either as an addition or successor to the F-35 and nuclear bombs. Even if the U.S. deploys the SLCM-N, sooner or later the nuclear-sharing participants would have to take additional steps to maintain the military credibility of their contribution to the nuclear mission. Ground-launched nuclear missiles would be an optimal option for NATO in terms of military capabilities and political signalling, but likely also the most controversial one within the Alliance. Allied acquisition of shorter-range air-launched missiles, similar to the French ASMPA or the longer-range U.S. LRSO, would not improve pre-launch survivability but would be a natural solution to extend the viability of the F-35 as a nuclear delivery platform in the face of evolving air defences. The earlier NATO starts to discuss such new-generation systems, the better, given the time that might be necessary to develop them and the risks of further deterioration of the security environment.

Nuclear forces are part of a broader NATO deterrence posture, so strengthening other elements will also contribute to the deterrence of nuclear attacks. It would be enhanced by strengthening the conventional forces of NATO countries so that they can stop and defeat a potential Russian invasion as early as possible. Russia would thus be unable to occupy parts of NATO territory and try to prevent the Alliance from retaking it by threatening or employing nuclear weapons. Therefore, it is crucial to fully implement the decisions of the recent summits in Madrid and Vilnius to increase the pool of high-readiness forces and, optimally, also further boost the presence of allied troops on the Eastern Flank. At the same time, it is in the Alliance's interest to have as credible capabilities and to send as clear signals in every dimension of deterrence as possible. Credible conventional deterrence requires Russia to believe that NATO allies will be willing to use their troops despite Russian nuclear threats or even the use of nuclear weapons. NATO should expand its nuclear forces in Europe, not because not doing so would guarantee a war with Russia, but because taking this step will minimise such risk.



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