



# The future of the US nuclear guarantee

Svein Efjestad

# Acknowledgements



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# Foreword

The war in Ukraine has the potential to fundamentally reshape Europe's security landscape. This challenge is compounded by the deepening security cooperation between China and Russia. At the same time, political dysfunction in the United States raises concerns, and significant shifts in US security policy could diminish its commitment to Europe. Nuclear weapons play a pivotal role in great power politics. The modernization of US strategic nuclear forces presents a major challenge. These developments may erode the credibility of the US extended deterrence and nuclear guarantee to Europe.

Given this context, it is crucial for European allies to strengthen their conventional defense capabilities, reducing reliance on nuclear forces. In addition, Europe should actively advocate for a robust nuclear deterrent. Although US tactical or sub-strategic nuclear weapons stationed in Europe represent only a small portion of America's overall nuclear arsenal, they remain important. European nations should also pursue greater operational cooperation with US strategic forces, including hosting US strategic aircraft operations in their airspace and participating in joint training and exercises.<sup>1</sup>

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1 I would like to thank Eskil Jakobsen, Øystein Solvang, and Rolf Tamnes for their important comments on my manuscript.

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# Introduction

The full-scale Russian invasion of Ukraine on February 24, 2022 ushered in a new era in European security. The return of expansionist war, large-scale atrocities, and overt nuclear signaling by Russia has plunged relations between Russia and the West to depths not seen since the height of the Cold War, with no prospects for normalization apparent. As European powers scramble to re-establish credible conventional forces, the region remains overdependent on US extended deterrence,<sup>2</sup> both conventional and nuclear. At the same time, Washington faces a bloc of autocratic states set on challenging US power all along the Eurasian perimeter.<sup>3</sup> While Russia has become increasingly isolated economically and politically from the West, it has turned to China, Iran, and North Korea for diplomatic and material support. At the same time, the Chinese People's Liberation Army (PLA) remains the world's largest military force and continues to expand and modernize its capabilities, including its nuclear forces.<sup>4</sup> The modernization of the PLA has reinforced the threat against Taiwan, the US, and its allies and partners in the region.<sup>5</sup> Adding to the demand for US political and military support, North Korea has acquired a considerable nuclear inventory and developed a diverse array of capable nuclear delivery systems. Iran continues to develop and deploy long-range missiles that could potentially serve dual-use roles, and maintains a nuclear breakout capability, including steadily increasing stockpiles of highly enriched uranium.

The US remains Europe's principal security guarantor, providing extended deterrence for all NATO members ultimately based on a diverse and capable inventory of nuclear and conventional forces. US deterrence now also covers Finland and Sweden, after their entry into the Alliance following Russia's full-scale war against Ukraine. This has sparked a debate about their contribution to Allied nuclear deterrence. Prominent Polish decision-makers have indicated a desire to play a more direct role in NATO's nuclear sharing arrangement but this proposal has not gained much traction.

US nuclear forces require substantial modernization in the coming years while NATO's nuclear policy and posture remain largely shaped by the benign security situation that emerged in Europe after the end of the Cold War. This period produced a number of comprehensive nuclear arms control agreements, none of which remain in force. Notably, the US withdrew all non-strategic nuclear weapons from Europe, except for a small number of free-fall nuclear bombs which now constitute the entire arsenal included in the nuclear sharing arrangement. While Russia has re-introduced dual-capable medium-range land-based missiles to its arsenal, Chinese and North Korean nuclear expansion is also placing increased demand on US nuclear deterrence in the Indo-Pacific region.

What sets the US apart from all its competitors is its vast network of qualified and reliable allies and partners in Europe and Asia. NATO's new deterrence and defense policy includes regional operational plans, reinforcement planning, and a more ambitious force posture. The US has a decisive role in this policy, and has strengthened its force posture in Europe. The US has also strengthened its cooperation with allies and partners in Asia as a response to the Chinese military build-up in the region. Nonetheless, the partnerships with the UK and France are particularly important in nuclear affairs, as

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2 Max Bergmann (2024) 'A More European NATO'. *Foreign Affairs*, 21 March.

3 Hal Brands (2024) 'The New Autocratic Alliances'. *Foreign Affairs*, 29 March.

4 *The Military Balance* (2023), International Institute for Strategic Studies ch. 6.

5 Ragnhild E. Siedler et al (2024), *Wargaming Taiwan 2027*, Norwegian Defense Research Establishment No. 251.

is the cooperation with NATO and particularly those states in Europe which host US nuclear weapons on their soil (presumably Germany, Belgium, the Netherlands, Italy, and Türkiye).

A growing literature has examined the implications of Russia's expansionist foreign policy for European security and defense policy and cooperation. What has received less attention is the development of the US extended deterrence policy in the region, and in particular how it ties into overall US strategy and global commitments. Ongoing developments in US nuclear policy and posture have important implications for European security. This includes both the modernization of US nuclear weapons in Europe and the modernization of all legs of the US strategic triad. Improvements in other US military capabilities are also highly relevant for European security. While US air, land, and maritime forces continue to play a crucial role in European security, advances in US ballistic missile defense (BMD) and conventional long-range precision strike capabilities also have fundamental implications for strategic stability and security in Europe.

This study examines the role of US extended nuclear deterrence in Europe, how it has evolved in response to changes in the European security landscape and the emerging US pivot to Asia. In particular, the study focuses on the role of extended nuclear deterrence in contemporary European security. We begin by reviewing the historical development of NATO's nuclear deterrence policy before examining the current state of nuclear policy and posture in the Alliance and in antagonist states. The study concludes by discussing current developments and challenges to US extended deterrence in Europe.

# Background: NATO, extended deterrence, and nuclear weapons

Nuclear weapons have played a prominent role in Allied defense planning since NATO was established in 1949. To this day, the US continues to contribute the lion's share of Allied nuclear capabilities, supported by other alliance members. The UK (from 1952) and France (from 1960) have their own nuclear deterrents, both conducting continuous at-sea deterrence (CASD) patrols, and each operating four nuclear-powered ballistic missile submarines (SSBNs). France also stockpiles nuclear standoff missiles which can be launched by its Rafale multirole fighters. Since France never re-entered NATO's Nuclear Planning Group after its 1966 withdrawal from the integrated military structure, the UK remains the only European NATO member to explicitly contribute nuclear weapons to Allied deterrence. Other members of NATO depend on the deterrent effects of the alliance as a whole, in which US extended deterrence plays a crucial role. Non-nuclear Allies also contribute to NATO nuclear deterrence, the most visible example being the nuclear sharing arrangement where US nuclear bombs stored in Europe can be employed by US and European combat aircraft certified for the nuclear role. Other European states can provide various forms of support for the nuclear mission. The strategic concept of the Alliance, and numerous communiqués, reflect the political support for NATO's nuclear policies and for extended nuclear deterrence. With the exception of France, all NATO member states participate in the nuclear planning group.

To be credible, extended deterrence requires the potential aggressor to be convinced of the capabilities and the willingness of the United States to utilize all its diplomatic and military power in the case of aggression against any nation covered by extended deterrence.<sup>6</sup> In extreme circumstances, this could also include the employment of nuclear weapons. This arrangement, which has been in place for decades, may have contributed to the prevention of a major war in Europe. NATO's nuclear policy has undoubtedly also contributed to reducing the number of nuclear powers in the West and probably also in Asia. As such, extended nuclear deterrence is also an effective non-proliferation mechanism. But to make extended deterrence credible, this policy need to be supported by modern and effective capabilities, visible exercises, and a strong political solidarity expressed and confirmed at the highest political level.

Extended deterrence in general, and extended nuclear deterrence in particular, is a basic element of NATO's strategy, and the strategic documents of the Alliance have always included implicit or explicit formulations about the nuclear guarantee. A NATO Military Committee strategy document from 1950 stated that the objective was to "insure the ability to carry out strategic bombing promptly by all means possible with all types of weapons, without exception".<sup>7</sup> This nuclear formula was essentially kept in the next iteration of the strategy in 1952.<sup>8</sup> NATO defense planning underwent substantial changes over the following years however, as the Korean War heightened tensions while NATO member states were unable to build up the conventional forces required to defend against the Soviet threat. As an alternative approach, from 1954 NATO adopted the so-called massive retaliation strate-

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6 Thomas Schelling, *Arms and Influence*, (1966), Yale University Press, pp. 35-36.

7 MC 14, in Gregory W. Pedlow (ed.), (1997), *NATO Strategy Documents 1949-1969*, SHAPE.

8 MC 14/1.



gy.<sup>9</sup> In consequence, nuclear forces were incorporated into the force structure, and American tactical nuclear forces were deployed in Western Europe in large numbers.

In 1949, the first Soviet test of a fission weapon ended the US nuclear monopoly. Around the mid-1950s, the USSR also acquired strategic bombers capable of employing nuclear weapons against targets in the US. Gross overestimation of the number of strategic bombers entering service with Soviet Air Force led to concern about US vulnerability, the so-called “bomber gap”. In 1957, the launch of mankind’s first artificial satellite, Sputnik, demonstrated that the Soviet Union had developed an intercontinental ballistic missile (ICBM) with sufficient range and throw-weight to target the continental US with nuclear weapons, spurring similar concern over a “missile gap”. The SS-6 Sapwood ICBM first entered operational service at the Plesetsk missile base in the early 1960s.<sup>10</sup> The US deployed its first ICBM (Minuteman) in 1962. The first American sea-based ballistic strategic missiles also entered service in the early 1960s, and the US Navy went on to deploy 41 nuclear-powered ballistic missile submarines (SSBNs). A few years later the Soviet Union built up a large arsenal of strategic submarine based ballistic missiles operating from bases on the Kola Peninsula and Kamchatka. While early classes of SSBNs, such as the Yankee class, had to operate close to the American continent to cover relevant targets in the US, the later missiles on the Delta class submarines had full intercontinental range, enabling the boats to patrol close to Russian territory.

In the 1960s, NATO developed a more flexible strategy for nuclear forces, as the concept of massive retaliation no longer seemed credible and politically acceptable. The new NATO strategy of flexible response from 1968<sup>11</sup> underlined the possibility of first use as a response to a Soviet attack on Western Europe, even if the attack did not include nuclear weapons. By the end of the 1970s, there were about 7,000 tactical nuclear weapons deployed in Europe consisting of short-range missiles, free fall bombs, artillery grenades, torpedoes, demolition weapons and air defenses. Until the end the Cold War, NATO strategy called for the use of nuclear weapons in the event that a Warsaw Pact invasion with conventional forces could not be halted by NATO’s (numerically inferior) conventional forces.<sup>12</sup>

The Soviet deployment of large numbers of SS-20 Saber intermediate-range ballistic missiles (IRBMs) from the latter half of the 1970s created a new dilemma for NATO planners and politicians, who started to discuss how one could effectively deter the use of these forces in Europe. This resulted in the double-track decision in 1979 in which NATO decided to deploy ground-launched cruise missiles (GLCMs) and medium-range ballistic missiles (MRBMs) in Europe,<sup>13</sup> while at the same time offering the Soviets a verifiable arms control agreement for this category of weapons. NATO’s rationale was to strengthen deterrence and the transatlantic link by demonstrating that the Soviet homeland could also be threatened by nuclear forces stationed in Europe. This concept was to eliminate the possibility that Soviet nuclear forces could be used against Europe while Soviet territory itself could remain a sanctuary in such a nuclear exchange. Thus, the dangers of a nuclear war limited to

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9 MC 48.

10 Fred Kaplan, *The Wizards of Armageddon*, (1983), Stanford University Press.

11 MC 14/3.

12 Director of Central Intelligence, *Soviet Strategy and Capabilities for Multitheater War*. National Intelligence Estimate 11-19-85/D. (June 1985, as sanitized October 1999), p. 4. Available at <https://www.cia.gov/readingroom/document/5166d4f999326091c6a608f5>

13 These were the 464 BGM-109G Gryphon cruise missiles and 108 Pershing II ballistic missiles, respectively. Tomahawks were deployed to sites in Belgium, Italy, the Netherlands, the UK, and West Germany, while the Pershing IIs were deployed in West Germany.

Europe would be even more unlikely. At the same time, the presence of large numbers of intermediate-range systems on both sides was a significant concern for strategic stability due to the short warning times associated with their use. The Intermediate Nuclear Forces (INF) Treaty concluded between the US and USSR in 1987 eliminated all land-based missiles with ranges between 500 and 5,500 km from both country's stockpiles. The presidential nuclear initiatives in 1991 and 1992 eliminated the majority of US tactical nuclear forces in Europe, and all substrategic nuclear weapons were also withdrawn from US ships and submarines. Later, all nuclear-tipped sea-launched cruise missiles (SLCMs) were eliminated from the US stockpile.

In 1972, the US and the Soviet Union signed the first agreement regarding limitations on strategic nuclear arms (SALT I). During the following decades, the US and the USSR, later Russia, negotiated a series of new agreements regarding limitations on strategic arms, the last of which was New START. In 2023, Russia announced it was pausing its participation in New START. However, both Russia and the US have announced their intention to abide by the treaty's central numerical limits. Thus, while the US and Russia maintain parity in strategic nuclear forces, US strategists are also contending with growing numbers of Chinese systems.

In Europe, France and the UK also maintain their separate minimum deterrents, primarily consisting of strategic systems. As for tactical or non-strategic nuclear weapons, US nuclear forces in Europe consist of a small number of free fall bombs which can be used by designated US or Allied dual-capable aircraft. In comparison, Russia maintains a substantially larger and more diverse set of non-strategic nuclear weapons systems, including air, ground, and naval systems.

# New relevance: Russian aggression in Ukraine; China and Taiwan

The Russian attack on Ukraine and nuclear threats by Russian officials have led to a new debate in Europe about nuclear weapons and nuclear policy. In 1994, Ukraine, Kazakhstan, and Belarus gave up the Soviet nuclear weapons remaining on their territory. The agreement signed in Budapest in 1994 included assurances that Russia, the UK, and the US would not threaten or use military force or economic coercion against these three states except in self-defense, or in accordance with the UN Charter. Although not a security guarantee akin to Article 5 of the North Atlantic Treaty, this constituted an assurance that these countries would not use force against the three former Soviet Republics. While it is impossible to establish any causal link between the Budapest memorandum and the 2014/2022 invasions, the outcome could potentially reinforce the desire of threshold states to acquire nuclear weapons.

The Western nuclear umbrella does not cover Ukraine. Unofficial statements have suggested that Western countries could engage directly in combat operations against Russia with conventional weapons if Russia chose to use nuclear weapons. This could lead to a total collapse of Russian conventional forces, and must be seen as a more realistic and likely response than retaliation with nuclear weapons. A scenario like this could, however, easily lead to a widespread international war which again could escalate into nuclear warfare.

The fact that most observers and officials do not believe that Russia would use nuclear weapons in Ukraine could also be seen as an indication that nuclear forces have become less relevant. However, the unwillingness of NATO countries to engage directly in the defense of Ukraine must be seen in light of the nuclear capabilities of Russia. The debate about allowing Ukraine to use weapons received from the West to attack targets on Russian soil is taking place in the shadow of Russian nuclear saber rattling. Long-range precision guided missiles with conventional munitions could be decisive for the outcome of the war. The United States has already deployed such land-based intermediate range missiles in Asia. The demise of the INF Treaty makes production and deployment of such weapons more attractive also for European states. Many European states are acquiring longer range weapon systems. The United States plans to deploy ground-launched Tomahawk cruise missiles with conventional weapons in Germany in 2026.

Russia has a range of nuclear options available. They could resume live testing at their testing range in Novaja Zemlya they could choose a demonstrative use without any tangible effect on the battlefield. Limited battlefield use would send a very strong signal. However, it is still very unlikely that Russia would use nuclear weapons. The nuclear threshold is high, and it is reasonable to believe that many states in the traditional non-aligned world and states which are de facto supporting Russia, would turn against it should it use nuclear weapons. The Chinese leadership has warned against such an escalation. World public opinion would almost certainly turn against Russia and support an even tougher stance against the country.

The final decision of whether to respond with nuclear weapons will be made by the US president, the British prime minister, or the French president. It seems unlikely that the Western nuclear powers would respond to such scenarios with nuclear weapons. It would be very risky, as it might lead to further escalation once the nuclear threshold has been crossed, and it could cause division and controversy among Western states. Western unity and a resolute response would be essential to deter the opponent and to signal that a nuclear exchange limited to Europe would be totally unacceptable.

# Adversaries' expanding and improving capabilities

What is the status and major developments in the nuclear arsenals of the three main nuclear opponents, Russia, China, and North Korea? This review is focused on nuclear forces and delivery systems with dual-use potential.

Russia currently maintains the world's largest nuclear stockpile, with its estimated at a total of 5,889 warheads, marginally surpassing US numbers.<sup>14</sup> The 2020 Russian nuclear weapons doctrine describe the conditions in which Russia might use nuclear weapons as: a response to nuclear attacks against Russia or its allies, conventional attacks that could threaten the existence of the state, credible warning of ballistic missile attack, or attacks that could undermine its strategic nuclear deterrent capability. Press reports indicate that Russia may be adjusting its nuclear doctrine in light of the Western support to Ukraine, and possibly lower the nuclear threshold. While all parts of the Russian Armed Forces suffered extensive decay after the Soviet Union collapsed, since coming to power in 1999 Vladimir Putin has consistently placed great emphasis on the modernization of the country's nuclear forces. This includes the procurement of new ICBMs for the land-based Strategic Rocket Forces. Furthermore, the introduction of new Borei-class SSBNs with modern SS-N-32 ballistic missiles has enabled Russia to reconstitute its strategic submarine presence in the Pacific and to begin the replacement of the Delta IV class in Northern Fleet service. Russia has developed the Avangard hypersonic glide vehicle (HGV) to enhance penetration of BMD systems. Russia has also modernized its non-strategic nuclear weapons, including long-range nuclear-capable land-based missiles, as well as sub-strategic systems for the Navy and Air Force.

While the reported number of Russian deployed strategic warheads has remained just below the New START central limit, a significant deficit has emerged in the number of strategic launchers deployed by Russia compared to the US and the treaty limit, although Russia retains a significant upload capability.<sup>15</sup> The development of a modern super-heavy ICBM remains a challenge for the Russian Strategic Rocket Forces. Due to the missile's massive throw-weight, a disproportionate share of Russian deployed strategic warheads sit atop the relatively few, and ageing, SS-18 M6 missiles in the Russian inventory. The development of its replacement, the SS-X-29, has suffered a string of delays and test failures. Despite the apparent absence of a recent successful test launch, Russia has claimed that the missile has entered operational service.

Apart from the modernization of its strategic forces, Russia has developed a broad array of new delivery systems, including strategic, dual-use, and non-strategic platforms. The Kalibr-family of weapons includes both anti-ship and land attack missiles, with some types being nuclear-capable. The quasi-ballistic Iskander (SS-26) and its air-launched derivative, Kinzhal (AS-24), have both been employed in the conventional strike role in Ukraine. These systems are part of the Iskander family, which also includes the SSC-7 GLCM. In 2019, Russia's development of the improved SSC-8 GLCM

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14 Hans M. Kristensen, Matt Korda, Eliana Reynolds (2023) Russian nuclear weapons, 2023, Bulletin of the Atomic Scientists, 79:3.

15 Hans M. Kristensen, Matt Korda, United States nuclear weapons, 2023, Bulletin of the Atomic Scientists, 79:1.

prompted the US to withdraw from the INF-treaty.<sup>16</sup> Furthermore, Russia is currently developing two long-range, nuclear-powered delivery systems, the SSC-X-9 GLCM Skyfall and the Poseidon autonomous torpedo, both of which are claimed to have intercontinental ranges.

Russia's conventional strength will suffer for many years to come, whatever the outcome of the war in Ukraine. Economic and demographic decline will have an impact on the Russian armed forces. This makes it more likely that the Kremlin will rely more on its nuclear forces.

Russia can strengthen its nuclear deterrent against Western Europe by deploying more theater-range weapons on its borders with Western Europe. It was reported in April 2024 that Russia would deploy a SS-26 brigade to the Karelia region, close to the border of new NATO member Finland.<sup>17</sup> Exercise patterns and political statements can also be used to support this signal.

The strategic nuclear forces on the Kola Peninsula are not considered to be a threat against the Nordic area despite being deployed close to the Nordic states, because they are strategic systems considered to be directed at targets far away, particularly in the United States. Russia has not permanently deployed theater ballistic missiles or ground-launched cruise missiles in the Arctic, but that could change in the future.

China is the world's third largest nuclear power with an estimated total stockpile of approximately 410 warheads,<sup>18</sup> and the only power besides Russia and the US to deploy a true nuclear triad. From the early 1980s, China began to develop a formal nuclear weapons strategy in conjunction with the deployment of its first ICBM silos. The Chinese force posture has been described as a minimum deterrent, centered on a small ICBM force. China has also reiterated its no first use of nuclear weapons policy.<sup>19</sup>

In recent years China has put considerable effort into expanding and modernizing its nuclear arsenal. The most visible example of this is the construction of three vast missile silo fields for an estimated total of 340 ICBMs. China is also modernizing its force of road-mobile ICBMs. Furthermore, the PLA has begun operational deployment of a HGV-capable MRBM and reintroduced the nuclear delivery mission for its strategic bomber fleet. Besides the growing number of ICBMs, Washington has expressed concern about Chinese deployment-at-scale of conventional and nuclear-tipped MRBMs and IRBMs, the development of a nuclear-tipped ALBM, and tests of a HGV from a fractional orbit bombardment system (FOBS). Furthermore, the longer-range CSS-N-20 SLBM deployed on all six JIN class SSBNs has the range to target parts of the continental US from Chinese coastal waters.

North Korea has continued to expand its nuclear arsenal and is testing new and improved delivery systems. While the size of North Korea's nuclear inventory remains elusive, the country may have

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16 Kramer, A.E. & M. Spica (2019) What is the I.N.F. Treaty and Why Does It Matter? New York Times (February 1). <https://www.nytimes.com/2019/02/01/world/europe/inf-treaty.html?searchResultPosition=1>. Russia has dubiously claimed both the 9M728 and 9M729 to be INF-compliant, i.e., to have less than 500 km range. The missiles are generally believed to have ranges in the thousands of kilometers.

17 <https://thebarentsobserver.com/en/security/2024/04/finland-relaxed-over-moscows-plans-deploy-iskander-missiles-near-border>

18 Hans M. Kristensen, Matt Korda, Eliana Reynolds, Chinese nuclear weapons, (2023), Bulletin of the Atomic Scientists, 79:2.

19 Jeffrey G. Lewis, 'Chinese nuclear posture and force modernization' (200), The Nonproliferation Review, 16:2.

assembled 30 warheads and produced enough fissile material for approximately as many additional warheads. Furthermore, North Korea continues to develop advanced nuclear delivery systems, including HGVs.<sup>20</sup>

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20 <https://www.38north.org/2024/04/hgv-unproven-at-irbm-ranges-analysis-of-the-april-2-hwasong-16na-hypersonic-missile-test/>

# US nuclear policy and posture

The US is bound by strategic commitments vis-à-vis a number of states, both in and outside Europe. US policymakers are facing significant challenges in developing and maintaining a nuclear posture and policy to effectively deter all the country's potential adversaries and extend credible deterrence to reassure its allies.<sup>21</sup>

Much of the current American nuclear posture consists of old delivery vehicles. The ICBM force consists of 400 LGM-30G Minuteman III ICBMs kept on alert in silos at three missile bases. Each Minuteman missile is deployed with a single warhead, but each missile could also be uploaded with two additional MIRVs. An additional 50 silos are kept in reserve, as are some missiles.<sup>22</sup> The Minuteman III entered service in 1970 but has been modified and improved over the years. The Biden administration plans to replace the missiles on a one-for-one basis with the new Sentinel ICBM.<sup>23</sup>

The naval leg of the nuclear triad currently consists of 14 Ohio-class SSBNs, each with 20 tubes for UGM-133A Trident II D-5 missiles.<sup>24</sup> Each missile can carry up to eight MIRVs, but most operational missiles are assumed to be loaded with 3-5 warheads. The Ohio class is to be replaced by 12 boats of the Columbia class SSBN, each with 16 missile tubes.<sup>25</sup> By reducing the time required for mid-life overhauls, the future SSBN class is expected to maintain the same number of operational patrols despite the reduction from 14 to 12 boats. The keel for the lead boat, the USS District of Columbia (SSBN 826), was laid down in 2022. Originally scheduled to enter operational service in 2031, the Navy later announced it expects delivery of the lead boat to be delayed by 12 to 16 months.<sup>26</sup> To add capabilities to its submarine force, the Trump administration initiated two programs: a new nuclear-tipped SLCM, and a low-yield warhead for the Trident II. While the low-yield warhead for the Trident II has been deployed, the Biden administration canceled the SLCM-N.

The airborne leg of the nuclear triad consists of the B-2A Spirit and B-52H Stratofortress strategic bombers.<sup>27</sup> The 46 nuclear capable B-52Hs in service carry nuclear-tipped ALCMs, while the 19 B-2s remaining in service are designated to carry nuclear free-fall bombs. To replace the B-2, as well as the de-nuclearized B-1B, the administration intends to acquire at least 100 B-21 Raider bombers. The B-52 will remain in service for decades as a cruise missile platform.

The United States will also have to modernize its command and control systems for the nuclear force. This effort alone will be a costly but necessary investment in order to keep the nuclear deter-

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21 Brad Roberts, 'The Next Chapter in US Nuclear Policy' (2024), The Washington Quarterly, Summer. House Armed Services Committee, "America's Strategic Posture, the Final Report of the Congressional Commission on the Strategic Posture of the United States," October 2023, 5, <https://armedservices.house.gov/sites/republicans.armedservices.house.gov/files/Strategic-Posture-Committee-Report-Final.pdf>.

22 Kristensen et al., US Nuclear Weapons.

23 US DOD, National Defense Strategy 2022.

24 The boats were originally built with 24 SLBM tubes, but four tubes on each boat have been deactivated to comply with bilateral US-Russia agreements on strategic offensive arms.

25 <https://crsreports.congress.gov/product/pdf/R/R41129>

26 [https://www.nvr.navy.mil/SHIPDETAILS/SHIPSDETAIL\\_SSBN\\_826.HTML](https://www.nvr.navy.mil/SHIPDETAILS/SHIPSDETAIL_SSBN_826.HTML)

27 Parts of the B-52 fleet have been rendered incapable of carrying nuclear weapons to comply with bilateral arms limitations, as has the entire fleet of B-1Bs.



rent credible and effective. The total modernization package of the nuclear forces will probably cost approximately \$1.5 trillion. It is questionable whether that much money will be made available for this purpose. It is not only a question of financing and priorities. Critics argue that the US cannot and should not carry this enormous burden on behalf of the free world, and there is also political and moral opposition to the current concept of nuclear deterrence.

US strategic documents highlight that deterrence is achieved by a combination of all elements of national and Allied power. The aim is to maintain a capability to deter and defend so that it will not be necessary to use nuclear weapons. Coordinated response to threats and challenges by the US and its Allies are thus a requirement for effective deterrence.

The US will soon face two adversaries with extensive nuclear arsenals: Russia and China. The policy and posture must be designed so that both of these countries will be deterred, which is very demanding. The proliferation of nuclear weapons to new states is also a complicating factor. North Korea's nuclear capability, and the possibility that Iran may acquire nuclear weapons, are particularly worrisome. In light of these developments there is also a risk that US allies develop an independent nuclear deterrent.

The US needs a robust nuclear posture in order to maintain its security interests and support its Allies. The current plans seem adequate in terms of numbers and categories although there could be a case for reintroducing nuclear tipped Sea Launched Cruise Missiles. This could add to the credibility of the US deterrent. A complicated issue is the survivability and effectiveness of the nuclear force in a hostile situation. The dependence on space-based systems for navigation and intelligence is an obvious vulnerability. Missile defense could complicate the planning and execution of a nuclear attack on the US but could not provide an effective defense against a peer adversary. And while the submarine-based force is still considered highly survivable, new developments in autonomous and space technologies might change this in the longer term.

Despite these challenges, the future US posture consisting of ICBMs, SLBMs and strategic air forces, in addition to a smaller number of free-fall nuclear bombs on US and Allied multirole fighters, should suffice to stop any rational state from contemplating a nuclear attack on the US. Any employment against US Allies carries with it a substantial risk for a comprehensive conventional or nuclear response, which in turn could trigger an extensive nuclear war. Effective deterrence depends on the mindset and rationale that the employment of nuclear forces carries with it a far greater risk and burden than any conceivable gain.

# Nuclear policy and posture in Europe

No states can launch an attack on NATO countries knowing that a nuclear response is out of the question. This is an important element in NATO's successful history of deterrence. The forward deployment of nuclear weapons contributes to deterrence primarily by providing a linkage to the strategic nuclear forces. The French and British nuclear forces complicate the calculation of the aggressor and contribute to deterrence. It might not be possible for Russia to determine whether a ballistic missile attack from the West is coming from the United States, France, or Britain. However, should deterrence fail, and nuclear forces are used against Western targets, this will fundamentally change the nature of the conflict. The old question of whether the United States would risk a response on its own territory remains.

US nuclear weapons are deployed to airbases in a number of NATO countries in Western Europe. These bases could be vulnerable to conventional and nuclear attack, and revelations of gross security lapses have reinforced criticism of the level of security afforded the weapons.<sup>28</sup> Much has been done to make these weapons more survivable and safer from terrorist or special forces attack, including construction of new facilities at bases. The aircraft designated to deliver B61s could also be vulnerable to enemy air defenses. In recent years, most countries participating in NATO nuclear sharing have acquired F-35A combat aircraft, which have been certified to carry the B61 bomb. At the same time, a new and improved version of the bomb – the B61-12, which adds a guidance kit among other improvements – is replacing the older, unguided B61-3/-4, improving the credibility of the force posture. Other NATO members contribute to Allied nuclear deterrence by providing Support for Nuclear Operations with Conventional Air Tactics (SNOWCAT).

France maintains a nuclear force of four SSBNs, each carrying up to 16 MIRVed SLBMs, and approximately 50 nuclear-tipped ASMPA ALCMs for use with its Rafael fighter jet. The total number of nuclear warheads in the French arsenal is about 300. While its nuclear forces are independent and not dedicated to NATO, the existence of these forces adds uncertainty to the Russian strategic calculus in Europe.

The UK maintains a nuclear stockpile of approximately 225 warheads and has recently announced plans to increase the size of its stockpile toward a maximum of 260. Warheads are exclusively deployed on Trident II SLBMs, of which up to 16 are carried on each of the four Vanguard class SSBNs. In common with France, the UK maintains continuous SSBN patrols at sea. The UK deterrent relies on the same Trident missile as the US Navy, while warheads are independently designed and produced. Britain will modernize its force by building four replacement SSBNs and fielding a new warhead while cooperating with the US on further upgrades to the Trident II missile. The British nuclear forces are committed to NATO and contribute to NATO deterrence.

NATO's 2022 strategic concept formulates its nuclear policies as follows: "The fundamental purpose

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<sup>28</sup> <https://www.bellingcat.com/news/2021/05/28/us-soldiers-expose-nuclear-weapons-secrets-via-flashcard-apps/>

of NATO's nuclear weapons is to preserve peace, prevent coercion and deter aggression. Nuclear weapons are unique. The circumstances in which NATO might have to use nuclear weapons are extremely remote. Any employment of nuclear weapons against NATO would fundamentally alter the nature of conflict. 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." This formulation does not indicate any threshold for the use of nuclear weapons. It could however be interpreted as saying that NATO is primarily planning for the use of nuclear weapons only in response to a nuclear attack on one of its member countries. Still NATO does not have a no-first-use policy, and it does not subscribe to a "sole purpose" policy in which nuclear retaliation would be the only acceptable justification for the use of nuclear weapons.

Current NATO policy does not reveal much about the criteria for the use of nuclear weapons. The US will consult with Allies if time and circumstances allow. There will always be a danger of information leakage in such circumstances, and this could lead to preemptive attacks from the adversary. Allies most directly affected have a more important role in these consultations. This includes states providing aircraft for nuclear weapons delivery and nations hosting nuclear weapons on their territory. Over time, there have been many attempts to gain more influence in nuclear decision-making, with almost all these efforts directed toward the options concerning sub-strategic nuclear forces in Europe.<sup>29</sup>

Any use of nuclear weapons is a strategic issue. The distinction between tactical and strategic weapons originates from a time when the world political situation was totally different and arms control agreements required distinguishing between different classes of weapons. The range of the different weapon systems were decisive for their classification as strategic or sub-strategic. New technologies, including air refueling, have made this obsolete. Russia is also developing new systems such as the Poseidon intercontinental torpedo and the new intercontinental cruise missile Skyfall. These systems do not fall into the old categories of nuclear forces. The United Kingdom claims its SLBMs can also be used in a sub-strategic mode.

The importance of European-based nuclear weapons is political in nature. Their military utility and relevance is less important. They do provide a linkage to US nuclear weapons even though they may not be the first choice in a nuclear response. It is still important to demonstrate solidarity and agreement on the role of nuclear weapons in Europe. The public strategic concepts and summit declarations serve this purpose. It is also important that as many member states as possible participate in planning through the Nuclear Planning Group, in procedural exercises, and by giving support to those states which provide aircraft for the nuclear role in Europe. Other kinds of support for nuclear operations in terms of providing escort, intelligence, electronic warfare, refueling, and SNOWCAT are also important.

There are those who argue that deployment of nuclear forces on the territory of new members will strengthen deterrence. Such forward-based nuclear weapons were widespread during the Cold War. But it could also be argued that such deployments will increase tension in Europe without improving the Western position. Such a basing arrangement would also be in violation of the NATO-Russia Founding Act of 1997, which is still in effect although Russia has violated the agreement. There is

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29 Jeffrey H. Michaels, 'No annihilation without representation': NATO nuclear use decision-making during the Cold War, *Journal of Strategic Studies* (2023), 16:5.

also the danger that Western opinion would be even more negative to NATO's deterrence policy if Western moves were seen to be provocative.

None of the Nordic states have indicated support for the permanent deployment of nuclear forces on their territories in peacetime. Denmark and Norway formulated such a policy in the 1950s. Upon entering NATO, Sweden and Finland have not declared any similar reservations regarding nuclear weapons, but there are no indications that they wish to host nuclear weapons on their territory in peacetime. Most likely therefore, all Nordic countries will probably end up with very similar nuclear weapons policies. There is, however, the question of the extent to which Nordic countries will provide support to nuclear operations through the SNOWCAT concept. All Nordic countries participate in the Nuclear Planning Group and fully support NATO's nuclear policy as defined in the Alliance's strategic concept. Perhaps the Nordic countries could also coordinate their nuclear policies through the Nordic Defense Cooperation (NORDEFECO) – for instance by common support for the nuclear modernization underway in the Alliance. However, skepticism regarding NATO's nuclear policy exists in all Nordic countries. In Norway, this is reflected in the fact that the Norwegian Pension Fund Global is prohibited from investing in all companies involved in nuclear weapons programs, despite the fact that all Norwegian governments have supported NATO's nuclear policies. After some hesitation, Sweden decided not to support the Treaty on the prohibition of nuclear weapons. Norway has decided to be an observer to the meetings in the treaty body, but has declared it will not sign the treaty.

Should extended deterrence lose its credibility, there could be a danger that some European nations will develop their own independent nuclear capability. However, in the current situation this is very unlikely. Moving US warheads closer to the East-West divide is a more probable development. Such deployment could enhance the deterrent, but deployment close to Russia could also increase the vulnerability of the nuclear weapons during hostilities.

During the Cold War, NATO might have felt compelled to resort to nuclear weapons by deliberate escalation in order to avoid military defeat. In the future, NATO and the West will be in a much better situation regarding the balance of conventional forces. Given the state of Russian capabilities, NATO should be able to deter by denial and thus not face the dilemma of deliberate nuclear escalation. European Allies must make a more fair and stronger contribution to the collective defense to achieve this. Current plans indicate that European Allies will strengthen their defense forces substantially.

# Future US extended deterrence and Europe

Politicians and experts need to communicate the implications of extended nuclear deterrence. Transatlantic cohesion is based on extended deterrence, and this is underlined in NATO's strategic concept and thus agreed by all member states. However, despite the fact that this is the backbone of deterrence, there is not much evidence that this – and the political and economic burden that the United States carries – is understood and valued by European Allies.

We live in a time of unprecedented security challenges. The result of the war in Ukraine could fundamentally change the security situation in Europe. The closer security cooperation between China and Russia adds to the challenge. The Chinese challenge will most probably be highest on the US agenda. The political climate in the United States is becoming more and more dysfunctional. Major changes in US policies, notably a new administration and a higher priority given to Asia, might weaken US involvement in, and support for, security in Europe. This could also have implications for the credibility of the extended deterrence policy of the United States.

The modernization of the strategic forces of the United States is a huge endeavor. The cost of the proposed modernization is enormous, and the political support for the US nuclear umbrella is challenged both from the radical circles in the Democratic party and from right wing Republicans. US federal debt is high and increasing. These facts underline the need for a new burden-sharing between the US and its NATO Allies.

In this situation, it is important that European Allies give full support to the US efforts to maintain a credible and effective nuclear posture. The strategic modernization and the maintenance of the sub-strategic nuclear forces in Europe are necessary elements in a strategy of integrated deterrence. Furthermore, Europeans must contribute more significantly to collective defense. By creating a solid conventional defense, NATO can establish a more credible deterrence based on denial, which is necessary in order to avoid undue reliance on nuclear forces by deliberate escalation. Such an option seem more and more unacceptable as the Russian advantage in number and types of sub-strategic nuclear weapons is increasing.

In conclusion, Allies of the United States should therefore be more vocal in supporting the modernization of the strategic forces. They should also be more active in promoting operational cooperation with strategic forces when opportunities arise. One should have in mind that the sub-strategic weapons deployed in Europe are only a small fraction of the nuclear capabilities in the US arsenal.

Allies now seem to be more willing to allow strategic aircraft from the USA to operate in their airspace, and to cooperate with such forces in training and exercises. Strategic aircraft have been operating in Iceland, the UK, Norway, Sweden and other Allied countries. The Nordic states will not make a direct contribution to NATO's nuclear posture by hosting nuclear forces on their territories or by contributing to the sharing arrangement with the United States. They could, however, make a common statement on their support for the maintenance of Allied nuclear forces, their modernization, and for the policy of extended deterrence.





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