

Alexander Høgsberg Tetzlaff
Cornelia Baci

**EUROPEAN PERSPECTIVES
ON THE GLOBAL
RETURN OF
NUCLEAR WEAPONS**

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European Perspectives
on the Global
Return of
Nuclear Weapons

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Alexander Høgsberg Tetzlaff & Cornelia Baci
European Perspectives on the Global Return of Nuclear Weapons
Legal Considerations for
Acquisition and Procurement

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Editor's Preface

The publications in this series present new research on defence and security policy of relevance to Danish and international decision-makers. The series is a continuation of the studies previously published as CMS Reports. It is a central dimension of the research-based services that the Centre for Military Studies provides for the Danish Ministry of Defence and the political parties behind the Danish defence agreement.

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Our studies aim to provide new knowledge that is both academically sound and practically actionable. The studies in the series have all undergone external peer review, and they all conclude with recommendations to Danish decision-makers. It is our hope that these publications will both inform and strengthen Danish and international policy formulation as well as the democratic debate on defence and security policy, in particular in Denmark.

The Centre for Military Studies is a research centre at the Department of Political Science, University of Copenhagen. The centre conducts research into security and defence policy as well as military strategy.

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Copenhagen, June 2023
Kristian Soby Kristensen

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Abstract and Recommendations

The ongoing disruptions in regional and international security and the breakdown of global institutions and norms necessitate a re-assessment of the emerging and future nuclear order. In the shifting global context, we shed new light on how European powers speak regarding the emerging nuclear order, what the actual problem is for Europe, and what the future debates over the nuclear order might be. Even though nuclear weapons as material objects never disappeared, the changing international and normative context - with the unravelling of major arms control treaties, political lowering of the barrier in state imaginaries, arms race, and military modernization - have made nuclear weapons matter more than ever before. The global return of nuclear weapons is particularly important for European countries because they have little collective agency on the matter and, thus, less power. The escalations in Ukraine, Putin's rhetoric, military modernization, and Xi Jinping's endeavors to unify China with Taiwan all contribute to a nuclear deterrence *problematique* for Europe. This *problematique* refers to how to obtain the optimal mix of conventional and extended deterrence, on the one side, and the idea of preventing a disaster by threatening with a disaster on the other. The erosion of both *crisis stability*, understood in the narrow sense of the absence of incentives to use nuclear weapons first, and *arms race stability*, understood as the absence of incentives to develop competing military build-ups, further exacerbates the European security situation.

The nuclear debate has become increasingly important for Europe in the aftermath of the war in Ukraine. The findings of this report suggest several major conceptual debates that could shape the future nuclear order. European powers might take these questions up in the context of Russian threats regarding nuclear escalation. These debates concern the meaning of deterrence in the third nuclear age, debates on preventing a nuclear catastrophe (intentional or non-intentional effective activation of nuclear weapons), instability management, a possible future of the "no first use" policy, and European voices in the nuclear order. The

first section of this report examines the political landscape in relation to nuclear matters, explaining the European security problem and the additional challenge posed by the erosion of strategic stability and arms control. The second part outlines the nuclear postures of key actors. Third, we estimate the key thematic debates that will likely shape the European nuclear order in the third nuclear age. We conclude with three sub-sets of recommendations for Denmark: 1) increase public and parliamentary debate on nuclear issues in Denmark, 2) focus on strategic issues in Danish defense planning, and 3) elevate Danish diplomacy on nuclear issues.

Recommendations

While we acknowledge that the meaning of nuclear policy is impugned within and across European governments, the time is ripe for Europeans to think more about nuclear policy.

As European countries lack agency in the nuclear realm, logically speaking, small states like Denmark lack even more agency. But this does not mean that Denmark has no interest in contributing whatever little it can to shaping the nuclear future for Europe.

With this caveat and the above analysis, we derive recommendations for Danish and other European policymakers on three topics. These recommendations should be seen as impulses for further reflections and considerations regarding nuclear issues, and we provide specific ideas related to each of the three overall recommendations:

- Increase public and parliamentary debate on nuclear issues in Denmark
- Focus on strategic issues in Danish defense planning
- Options for Danish diplomacy on nuclear issues

Increase public and parliamentary debate on nuclear issues in Denmark

An unfortunate side effect of nuclear deliberations increasing in importance is that they will likely become even more secret. This undermines the potential for public deliberations on nuclear topics at the very point in time when they are most needed. Danish decision makers should bear

in mind how to ensure public debate on nuclear topics, even if some measure of secrecy is necessary. Ways to do so include integrating the Danish Parliament (Folketinget) in nuclear issues by:

- Establishing a working group in the Parliament on nuclear issues or making nuclear issues a recurring topic (e.g., of the NATO Parliamentary Delegation)
- Conducting regular and confidential briefings in selected committees (e.g., defense and/or foreign policy committee)
- Engaging in European expertise by further liaising with parliaments in countries that are parties to NATO's nuclear-sharing agreement (e.g., Germany, the Netherlands)

Focus on strategic issues in Danish defense planning

The possession of nuclear weapons is limited to the so-called “great powers.” Still, with the increasing importance of strategic non-nuclear weapons (SNNW), some of the (future) inventory of the Danish Armed Forces may have (local) effects proving them strategically relevant. This is a novelty for the Danish Armed Forces, and awareness that new technology affordable for the Danish Armed Forces can play a strategic role and must be strengthened by:

- Recognizing the strategic effects of Danish conventional procurement decisions; especially if done in conjunction/cooperation with allies and partners
- Assessing (local) deterrence and vulnerability effects of Danish procurement decisions (e.g., long-range strike missiles)
- Contemplating the effects of potential increases to the Danish contribution to NATO's mixed deterrence posture (e.g., a Danish contribution to the NATO ballistic missile defense capability)

Options for Danish diplomacy on nuclear issues

Current tendencies paint a bleak picture regarding future arms control agreements and other diplomatic efforts aimed at managing the role of

nuclear weapons. Still, Denmark, as both a signatory to the Non-Proliferation Treaty and as member and beneficiary of the NATO nuclear deterrent, has an interest in (as well as an obligation to) working for increased strategic stability and nuclear security. Initiatives supporting such aims could include:

- Promoting diplomatic discussions on nuclear issues among small, non-nuclear NATO states that share Denmark's geopolitical position, while simultaneously being exposed to the erosion of strategic stability in Europe. This would provide a venue for knowledge exchange and a forum for deliberating stabilizing initiatives among likeminded countries.
- Engaging global partners to build momentum and share responsibility for renewed nuclear arms control agreements and regimes with wider reach when conditions are more conducive to reengagement between the US, Russia, and China on issues of strategic stability.
- Considering the use of Denmark's prospective 2025-26 seat at the UN Security Council, which precedes the next Non-Proliferation Treaty Review Conference in 2027, to promote renewed arms control efforts.

Resumé og anbefalinger

De igangværende forskydninger i regional og international sikkerhed og sammenbruddet af globale institutioner og normer stiller krav om en ny stillingtagen til den kommende og fremtidige atomare orden. I denne skiftende globale kontekst kaster rapporten nyt lys over, hvordan de europæiske stater samarbejder i den nye atomare verdensorden. Rapporten behandler, hvori det egentlige problem for Europa består, og hvad de fremtidige debatter om atomordenen kan være. Den skiftende internationale og normative kontekst, med bl.a. optrævlingen af store våbenkontroltraktater, våbenkapløb og militær modernisering, har gjort, at atomvåben spiller en større rolle end nogensinde før.

Atomvåbneenes globale genkomst er særlig vigtig for eurolandene, fordi de har et begrænset kollektivt handlerum på området, hvilket med andre ord betyder, at de har mindre magt på området. Krigen i Ukraine, Putins retorik og Xi Jinpings bestræbelser på at forene Kina med Taiwan på sigt udgør samlet en atomar problematik om afskrækkelse for Europa. Problematikken består i, hvordan man på den ene side opnår den rigtige balance mellem afskrækkelse, overfor ideen om gensidig total ødelæggelse, på den anden side. Udhulingen af både krisestabilitet (fraværet af incitamenter til at angribe først med atomvåben) og våbenkapløbsstabilitet (fraværet af incitamenter til at opbygge konkurrerende militære kapaciteter), skærper yderligere sikkerhedssituationen for Europa.

Debatten om atomvåben vil sandsynligvis blive vigtigere for Europa i kølvandet på krigen i Ukraine. Rapportens konklusioner forudsiger nødvendigheden af flere konceptuelle debatter, der kan være med til at forme den fremtidige nukleare verdensorden. De europæiske stater kan med fordel interessere sig for indholdet af disse debatter i forbindelse med Ruslands aggression i Ukraine og trusler om et atomart armageddon. Debatterne omhandler bl.a. betydningen af afskrækkelse i en ny, tredje atomar tidsalder, diskussion af forebyggelse af en nuklear katastrofe (tilsigtet eller ikke-tilsigtet effektiv aktivering af atomvåben), håndtering af ustabilitet, en mulig fremtid med »No First Use«-politik og endelig

om håndtering af divergerende europæiske stemmer inden for atomar strategi.

Den første del af rapporten kortlægger det politiske landskab for atomvåben og forklarer Europas sikkerhedsproblem og den yderligere udfordring, som udhulingen af strategisk stabilitet og våbenkontrol udgør. I anden del skitserer rapporten tre nøgleaktørers position (Tyskland, Storbritannien og Frankrig) ift. atomvåben. For det tredje vurderer rapporten de nøglespekter, der sandsynligvis vil forme den europæiske atomorden i den tredje nukleare tidsalder. Rapporten afsluttes med tre niveauer af anbefalinger til Danmark: 1) øge den offentlige og parlamentariske debat om nukleare spørgsmål i Danmark, 2) fokusere på strategiske spørgsmål i dansk forsvarsplanlægning og 3) løfte dansk diplomati i atomare spørgsmål.

Anbefalinger

Vi anerkender, at politikker vedr. atomvåben er omstridte inden for og på tværs af de europæiske regeringer, men tiden er moden til, at Europa tænker mere over deres atomvåbenpolitikker.

Idet de europæiske lande generelt mangler handlekraft på det atomare område, mangler småstater som Danmark naturligt nok i endnu højere grad handlekraft. Det betyder dog ikke, at Danmark ikke har en interesse i at bidrage til at forme den atomare fremtid for Europa.

Med dette forbehold udleder vi anbefalinger til danske, såvel som andre europæiske politikere, inden for tre emner. Anbefalingerne skal ses som incitamenter til yderligere overvejelser vedrørende atomare spørgsmål, og vi foreslår tiltag i forbindelse med hver af de tre overordnede anbefalinger:

- Øge den offentlige og parlamentariske debat om atomare spørgsmål i Danmark
- Fokusere på strategiske spørgsmål i den danske forsvarsplanlægning
- Muligheder for dansk diplomati om atomare spørgsmål

Øge den offentlige og parlamentariske debat om atomare spørgsmål i Danmark

Når drøftelser om atomvåben bliver vigtigere, er en uheldig bivirkning, at de sandsynligvis bliver endnu mere hemmelige. Det underminerer potentialet for offentlige overvejelser om atomare emner, når der er mest brug for dem. Danske beslutningstagere bør være opmærksomme på, hvordan man kan sikre en offentlig debat om atomare emner, selv om en vis grad af hemmeligholdelse er nødvendig. Måder at gøre det på er bl.a. at inddrage Folketinget i atomare spørgsmål ved at:

- Oprette en arbejdsgruppe i Folketinget om atomare spørgsmål eller gøre atomare spørgsmål til et tilbagevendende emne for f.eks. den parlamentariske delegation i NATO
- Regelmæssige og fortrolige briefinger i udvalg, f.eks. forsvarsudvalget og/eller det udenrigspolitiske udvalg
- Inddragelse af europæisk ekspertise ved at skabe yderligere kontakt til parlamenter i lande, der er parter i NATO's aftaler om deling af atomvåben, f.eks. Tyskland og Holland.

Fokus på strategiske spørgsmål i den danske forsvarsplanlægning

Besiddelse af atomvåben er begrænset til stormagter. Men med den stigende betydning af strategiske ikke-nukleare våben kan nogle af de danske væbnede styrkers (fremtidige) kapaciteter have (lokale) effekter, der viser sig at være strategisk relevante. Dette er nyt for dansk forsvar og bevidstheden om, at ny teknologi, som dansk forsvar har råd til, kan spille en strategisk rolle, skal styrkes ved:

- Anerkendelse af de strategiske virkninger af danske konventionelle anskaffelsesbeslutninger – især hvis det sker i forbindelse med samarbejde med allierede og partnere
- Vurdering af (lokale) afskrækkelses- og sårbarhedseffekter af danske anskaffelsesbeslutninger (f.eks. langtrækkende missilsystemer med evne til også at angribe)

- Overvejelse effekterne af et potentielt øget dansk bidrag til NATO's blandede afskrækkelsesposition (f.eks. et dansk bidrag til NATO's kapacitet til forsvar af ballistiske missiler)

Muligheder for dansk diplomati i atomare spørgsmål

De nuværende tendenser tegner et dystert billede med hensyn til fremtidige våbenkontrolaftaler og andre diplomatiske bestræbelser på at styre atomvåbnenes rolle. Alligevel har Danmark, som både underskriver af ikkespredningstraktaten og som medlem af NATO's atomare afskrækelse, en interesse i og en forpligtelse til at arbejde for øget strategisk stabilitet og atomar sikkerhed. Initiativer, der støtter disse mål, kunne omfatte at:

- Fremme diplomatiske drøftelser om atomare spørgsmål blandt små ikke-atomare NATO-stater, der deler Danmarks geopolitiske position, idet de er udsat for udhuling af den strategiske stabilitet i Europa. Dette ville give mulighed for udveksling af viden og et forum for drøftelse af stabiliserende initiativer blandt ligesindede lande.
- Inddrage globale partnere for at skabe momentum og dele ansvaret for fornyede aftaler om atomvåbenkontrol og ordninger med større rækkevidde, når betingelserne er mere befordrende for et fornyet engagement mellem USA, Rusland og Kina i spørgsmål om strategisk stabilitet.
- Overveje at udnytte Danmarks forventede plads i FN's Sikkerhedsråd i 2025-26, som ligger forud for den næste konference om revision af ikkespredningstraktaten i 2027, til at fremme en fornyet våbenkontrolindsats.

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1

Introduction

For some time, nuclear weapons have not been at the forefront of the European security agenda. However, the shifting international context combined with alarming trends in arms race and military modernization have meant that nuclear weapons are back on the agenda. Moreover, the unravelling of major arms control treaties and the political lowering of the nuclear barrier in many state imaginaries adds to the renewed relevance of nuclear weapons. Russian President Vladimir Putin's recent threats to use nuclear weapons in the context of the war in Ukraine, as well as the Russian suspension of the only existing nuclear arms control treaty (the New START), further complicate the nuclear weapons equation. Given these trends, this report argues that renewed nuclear debates will become increasingly important for Europe. To facilitate a debate on nuclear issues in Denmark, this report describes the political landscape and outlines the nuclear positions of key actors. Based on this knowledge, Denmark will be in a better position to navigate the future Euro-Atlantic nuclear debates, and the report therefore concludes by analyzing key issues that are likely to shape the strategic order in Europe in the third nuclear age.

Together with the breakdown of global institutions and norms, the recent disruptions in regional and international security necessitate the re-assessment of the emerging and future nuclear order. In the changing global context, this report sheds new light on how European powers speak along the emerging nuclear order, what the key problems are for Europe, and what the future debates of the nuclear order might consist of. The global return of nuclear weapons *is defined* as the comeback of threats to use and potential actual use of nuclear weapons, as the Russian

aggression in Ukraine has most recently alluded to. To this end, the report unveils the European perspectives on this matter. The global return of nuclear weapons is particularly important for European countries because they have little collective agency on the matter, meaning less power.

For Europe, the problem in this context is the *erosion of strategic stability and arms control*. While being dependent on NATO capabilities in a context of heightened regional security risks, Europe is exposed to a lack of agency to manage nuclear crises and arms race dynamics. Due to its geostrategic position between the US and Russia, Europe is at a crossroad. Heterogeneous defense postures, threat perceptions, and strategic cultures generate dilemmas regarding collective action. The “comeback” of nuclear weapons in international security politics poses challenges to European countries, since the US (for the foreseeable future) is the only actor capable of counter-balancing Russia when it comes to nuclear deterrence. For the same reason, a prerequisite for understanding nuclear security in Europe is the fact that the European countries have no alternatives to US nuclear security guarantees. This became clear in 2017, when European leaders waited in vain for an early Article V guarantee from the then newly elected U.S. President Donald Trump.¹

Furthermore, China is rapidly expanding its nuclear arsenals,² and substantial modernization programs in the US and Russia are currently underway.³ Showcasing the shift in the nuclear debates, at a Danish press conference on March 6, 2022, in the aftermath of the Russian invasion of Ukraine, the two former leaders of the political opposition in Denmark indicated that they would not exclude a future deposit of US nuclear weapons on Danish territory.⁴ Following through on this statement would be a fundamental shift in more than 70 years of Danish nuclear

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1. Kristian L. Nielsen, “Beware the Folly of Pride: Europe, Trump and the Enduring Need for the Transatlantic Alliance,” *L’Europe en Formation* 382, no. 1 (2017): 63-81.
 2. Amanda Macias, “China Is Rapidly Expanding Its Nuclear Arsenal, Pentagon Says in New Report,” CNBC, last modified November 3, 2021, <https://www.cnbc.com/2021/11/03/china-is-rapidly-expanding-its-nuclear-arsenal-pentagon-says.html>.
 3. Arms Control Association, “US Nuclear Modernization Programs,” January 2022, <https://www.armscontrol.org/factsheets/USNuclearModernization>; Dominika Kunertova, *New Missiles, Eroding Norms: European Options after the Demise of the INF Treaty*, 2021 (CMS report): 59.
 4. Danish State Department. Pressemøde søndag den 6. marts 2022 (Press Meeting in Danish State Department, March 6, 2022), <https://www.stm.dk/presse/pressemoeadearkiv/pressemoeade-soendag-den-6-marts-2022/>.

policy, and the mere fact that the statement was made reflects a new immediacy of nuclear topics in Europe and indeed Denmark.

On top of this, new technologies entail new risks potentially disrupting the nuclear balance, giving non-nuclear weapons an increasing strategic role. According to some researchers, the world stands on the cusp of a major transformation in nuclear affairs: the so-called Third Nuclear Age. Strategic non-nuclear weaponry (SNNW) and new technologies are increasingly influencing and complicating the return of nuclear weapons. New technologies pursued by the nuclear powers are leading to a more unstable situation, making it more difficult to see how stabilizing tools (e.g., arms control, verification schemes, and international treaties) can reduce the risk of instability. The introduction of these new technologies renders nuclear issues even more relevant to discuss.

Taken together, recent incidents and developments are indicative of radical changes underway in the nuclear security domain. The context in which nuclear weapons are understood and the nuclear weapons themselves are changing. An in-depth investigation of these trends is important to cast light on the potential nuclear security issues that will inform the future European nuclear debate. Nuclear weapons play an important role in security politics, as they are the ultimate guarantee against a large attack by a malicious state. Furthermore, nuclear deterrence in Europe is assured primarily by NATO's extended deterrence.

We acknowledge that regarding the nuclear policy domain, the knowledge society is highly divided along various lines; most importantly, between those actors focusing on disarmament and arms control and those primarily focused on building workable nuclear deterrent capabilities and, subsequently, options for their use. Seeking to bridge the debates, we triangulated data from both sides, and we hope that this publication can speak to both communities. Methodologically, this report applies a triangulating inductive analysis drawing on primary and secondary data. Primary data were gathered by the authors in the form of elite interviews, one focus group interview, and participant observations during open and closed sessions on nuclear-relevant topics. Historical data and policy reports on nuclear topics are employed as secondary data. Based on a triangulation of these data sources, we develop our core argument.

The report finds that *several major conceptual debates will shape Europe's nuclear future*. European powers might pick up on these questions

in the context of the Russian aggression in Ukraine and threats of a devastating nuclear war. These debates concern: 1) *the meaning of deterrence in the third nuclear age*, 2) *how to prevent a nuclear catastrophe*, 3) *instability management*, 4) *a possible future of the “no first use” policy*, and 5) *European voices in the nuclear order*.

We develop our argument in three steps. First, we explain the European security problem in detail, elaborating on the erosion of strategic stability and arms control. Second, we discuss the evolution of nuclear postures and thinking in the European powers France, Germany, and the United Kingdom (UK). France and the UK are two of the P5⁵ and possess nuclear weapons. Historically, Germany has stored Soviet and US nuclear weapons in, respectively, the former East Germany (DDR) and the Federal Republic of Germany (FRG). Germany remains part of the NATO nuclear extended deterrence, meaning that it is currently hosting US nuclear weapons on its territory and is therefore an important actor in the debate concerning nuclear issues in Europe. Third, we estimate the major thematic issues that we expect will shape the future nuclear order and in so doing could emerge as possible responses to the global return of nuclear weapons. These debates could also become potential fields of action (or of contention) for Europeans as the situation in Ukraine develops.

We conclude with recommendations for Danish decision-makers to facilitate further debate in Denmark on a topic that will unfortunately only become more important for overall European security in the time to come.

5. The P5 refers to the leaders of the five nuclear-weapons states: the US, Russia, China, the UK, and France.

2

The European Problem: Erosion of Strategic Stability and Arms Control

The world is experiencing a return of nuclear weapons on a global scale. This return is taking place on multiple, intertwined levels that mutually influence each other and point to the current European nuclear dilemma.

At the global strategic level, Europe experienced a historically peaceful period absent of nuclear threats in the decades that have passed since the end of the Cold War until the present. But with the return of great power competition,⁶ the Chinese economic and military rise to power, and assertive Russian behavior in Eastern Europe as well as the ongoing war in Ukraine, the seed has been sown for a future in which hard power once again plays a primary role in international relations. Nuclear weapons are consequently rising in importance, as they represent a capacity for enormous destruction. Nuclear threats and the logic of deterrence have thus made a dramatic comeback,⁷ and confidence-building measures (CBM) are not on the international agenda.

For the European states that have become accustomed to taking their overall security for granted, this is rather bad news. Nuclear weapons are Europe's ultimate security guarantee and have had an ill fate among

6. Walter R. Mead, "The Return of Geopolitics: The Revenge of the Revisionist Powers," *Foreign Affairs* 93, no. 3 (2014): 65-78.

7. Alexander Mattelaer, *Rethinking Nuclear Deterrence: A European Perspective* (Brussels, CSDS Policy Brief, Brussels School of Governance – Centre for Security, Diplomacy and Strategy, May 2022): 3.

European policymakers for many years. European thinking on deterrence has generated deeply rooted preferences for the status quo, which is increasingly inadequate for meeting the evolving threat environment.⁸ The election of Trump was the first wakeup call, but the long-term consequences of the US pivot toward Asia bears several unpleasant implications for Europe; one of which is the prospect of a Europe that cannot expect to be forever protected by the US nuclear umbrella, even with NATO's extended deterrence agreements in effect.⁹ As unpleasant as this may be for Europeans, it is equally crucially important for Europe to address these issues to prepare for a new, uncertain nuclear future. Despite France and the UK possessing nuclear weapons, Europe remains dependent on the US as the final deterrent and security guarantor.

The strategic-level instability is causing the rapid erosion of the international arms control architecture.¹⁰ The demise of important nuclear norms and agreements seen in recent years also contributes to an aggravation of strategic stability. With China building up their nuclear arsenal and uninterested in weapons reductions, the incentives to initiate and reach new agreements remain scarce. Thus, the strong analytical focus on arms control discussions, typical for the European capitals' nuclear policies, are experiencing hard times.

The increasing nuclear tensions also materialize in increased technological development (and economic spending) on (non-)nuclear weapons and missile technology, as well as information/cyber technologies that interfere with crucial nuclear command, control, and communication (C3) systems.¹¹ This development, labelled the "Third Nuclear Age,"¹² is characterized by new, high-tech and non-nuclear weapons and

8. Mattelaer, *Rethinking Nuclear Deterrence*.

9. *Extended deterrence* in Europe adheres to the sharing agreements between the US and the European NATO allies, five of whom have been assigned approximately 100 US shorter-range nuclear weapons (Italy, Turkey, The Netherlands, Belgium, and Germany). One of the benefits of nuclear sharing is increased reliability and redundancy, because different actors are involved in the decision-making process.

10. Kunertova, *New Missiles*, 13.

11. Yasmin Afina, Calum Inverarity, Beyza Unal, "Ensuring Cyber Resilience in NATO's Command, Control and Communication Systems," *Chatham House*, July 17, 2020, <https://www.chathamhouse.org/2020/07/ensuring-cyber-resilience-natos-command-control-and-communication-systems-0/summary>.

12. The first nuclear age was between 1945-1989, the second from 1989 until the present, and the third nuclear age is likely to ensue in the context of Russian aggressions and threats to

support systems. They can be used against an adversary's nuclear forces to a degree where they can augment—or even replace—nuclear weapons for national security functions.¹³

This broad palette of problems and overarching trends alters the overall strategic stability in ways that exacerbate the security situation for European countries especially. These deleterious developments in the nuclear domain make it important to unveil what the *global nuclear return* means for European states. The report therefore proceeds with a discussion of the core nuclear security concept *strategic stability* as the theoretical background for unfolding the European security predicament. For Europe, retrieving paths to strategic stability are of main concern to improve the overall security situation. The next chapter unfolds the strategic stability concept. The chapters thereafter investigate the essential conditions affecting the nuclear postures of Germany, the UK and France.

2.1. The Absence of Crisis Stability and Arms Race Stability

A useful way to contextualize the arguments presented in this report is by considering the temporality of nuclear issues in short-term vis-à-vis long-term timelines. The current, deteriorating relations between Russia and the West are affecting the European nuclear discussion. Evidently, the debate about strategic stability (entailing Mutual Assured Destruction—MAD) is among the realistic scenarios to stabilize the current situation and avoid nuclear escalation. Arms control agreements and verification measures are also part of this debate, but in a long-term perspective. Engaging in new nuclear agreements with Russia while Putin threatens Europe with nuclear weapons makes no sense and is therefore of no immediate relevance.

For Europe, the problem of the global return of nuclear weapons is twofold: *crisis stability* and *arms race stability*. Both constitute two sides

actually use nuclear weapons. See European Research Council Project: “Towards a Third Nuclear Age: Strategic Conventional Weapons and the Next Revolution in the Global Nuclear Order (NUCLEARREV)”: <https://thethirdnuclearage.com/>.

13. European Research Council Project, “Towards a Third Nuclear Age.”

of the same coin; that is, the principle of strategic stability.¹⁴ There is no official definition of strategic stability. Non-proliferation or arms reduction treaties do sometimes make references to stability. While game theorists might provide precise phrases seeking to delineate the term, at the policy practice level, “the term is used very loosely to describe anything from rough parity in the sizes of nuclear arsenals to the perceived unlikelihood of an acute political crisis.”¹⁵ The aspect of “first strike” or “first use” is quintessential to the understanding of strategic stability¹⁶ in the sense that a “country cannot undermine another countries’ nuclear deterrent capabilities so that the other side has an incentive to launch a first nuclear strike.”¹⁷ In broad terms, this involves a security environment characterized by “the absence of armed conflict between nuclear-armed states.”¹⁸ Before explaining the European problems of crisis stability and arms race stability in greater detail, it is necessary to clarify some common nuclear terms (see Text box 1).

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14. In the last decade, several studies have examined the meaning and evolution of strategic stability. For a comprehensive discussion of the definition of strategic stability, its historical origins, and contending interpretations, see Elbridge A. Colby and Michael S. Gerson, *Strategic Stability: Contending Interpretations* (Carlisle: US Army War College Press, 2013); Aaron Allen, *Europe and the Future of Nuclear Strategic Stability* (Washington, D.C.: CEPA, 2021); Corentin Brustlein, *The Erosion of Strategic Stability and the Future of Arms Control in Europe* (Paris, French Institute of International Relations, November 2018); Benjamin Hautecouverture, Emmanuelle Maitre, and Bruno Tertrais, *The Future of Strategic Stability*, Fondation pour la Recherche Stratégique No 7 (2021); Paul van Hoof, Lotje Boswinkel, and Tim Sweijs, *Shifting Sands of Strategic Stability: Towards a New Arms Control Agenda* (The Hague Centre for Strategic Studies, 2022). The 2022 Special Section on Nuclear Issue of the *European Journal of International Security* 7, no. 3 has deepened the debate on nuclear matters.
 15. C. Dale Walton and Colin S. Gray, “Looking beyond Cold Warriors and Nuclear Weapons.” In Colby and Gerson, *Strategic Stability: Contending Interpretations*.
 16. E. Colby, 2013, “Defining Strategic Stability: Reconciling Stability and Deterrence.” In Colby and Gerson, *Strategic Stability: Contending Interpretations*, 48.
 17. Allen, “Nuclear Strategic Stability,” 6.
 18. James M. Acton, “Reclaiming Strategic Stability.” In Colby and Gerson, *Strategic Stability*, 2023, 117.

Text box 1: Common nuclear phrases explained¹⁹

Several specific terms appear in nuclear security studies. This text box presents some of the most common terms to provide a basic understanding of nuclear security logics.

Strategic stability is where there is a lack of incentive for a country to strike first. In substantive terms, strategic stability involves both *crisis stability*, defined as the absence of escalations or crisis (e.g., interest in striking first), as well as *arms race stability*, understood as the absence of an incentive to develop competing military build-ups.

A “**sole purpose**” declaration states that the sole purpose of nuclear weapons is to deter and, if necessary, retaliate against a nuclear attack. Ongoing US discussions about adopting a “sole purpose policy” concern the two governments in Paris and London. France in particular is concerned that it would weaken the NATO deterrent and send a negative signal to Russia about a lack of faith in the current role of nuclear weapons. A sole purpose declaration would put US national nuclear policy at odds with the most recently agreed NATO consensus text and presumably mean a crisis for the alliance.

A “**no first use**” policy commits a state never to use nuclear weapons first. Europe might prefer “sole purpose” to a “no first use” policy, because it would enable NATO to maintain multiple options for escalation. There are concerns that a renewal of US nuclear posture might reduce strategic options.

According to the US, **escalate to de-escalate** is the current Russian nuclear weapons doctrine (in contrast to the declared). This doctrine seeks to gain an advantage by threatening to escalate a conflict, only to deescalate on favorable terms. To re-establish perceived escalation parity, the United States seeks the ability to respond to this kind of nuclear use in a proportional manner (i.e., with re-

19. See Acton, “Reclaiming Strategic Stability,” 117; Mark Episkopos, “Russia’s Crazy Nuclear War Strategy: Escalation...to De-escalate?,” *The National Interest*, March 19, 2021; James M. Acton, “Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War,” *International Security* 43, no. 1, 56-99.

duced-yield or tactical nuclear weapons). Russia firmly rejects this interpretation of its declaratory nuclear weapons doctrine.

Entanglement: Nuclear and non-nuclear weapons and systems are becoming increasingly entangled, raising the risk of inadvertent nuclear escalation in an ongoing conflict. Targeting systems used to detect nuclear missile attacks might be interpreted as a preliminary attack before a nuclear attack, which would create unnecessary tension.

Tactical (non-strategic) vs strategic nuclear weapons: While there are several ways to distinguish between strategic and non-strategic nuclear weapons, most analysts consider non-strategic weapons to be shorter-range delivery systems with lower-yield warheads that might attack troops or facilities on the battlefield. Strategic nuclear weapons hold far greater explosive power and are designed for use far from the battlefield as part of a strategic plan to cause major damage in heavily populated cities, for instance.

We define **crisis stability** in its narrow perspective, which is “the absence of incentives to use nuclear weapons first (crisis stability) and the absence of incentives to build up a nuclear force (arms race stability).”²⁰ This implies the *absence of escalations, crises, or, for example, the desire to strike first*. The escalations in Ukraine, Putin’s rhetoric, military modernization, and Xi Jinping’s endeavors to unify China with Taiwan in the near future unveil a nuclear deterrence *problematique* for Europe. The *problematique* refers to obtaining the optimal mix between conventional deterrence and extended deterrence on the one side and the idea of preventing a disaster by threatening with a disaster on the other.²¹

20. Acton, “Reclaiming Strategic Stability.”

21. Brustlein, *Erosion of Strategic Stability*, 18-19.

Text box 2: The nuclear deterrence problematique

General deterrence refers to the adoption of a posture to deter unspecified hypothetical threats and actors from ever considering becoming challengers. In that sense, deterrence consists of threatening with punishment without putting it into practice. Deterrence is a difficult mechanism to control because it has to do with one's own and one's adversary's perceptions and because the stakes are high, especially with respect to nuclear deterrence.

Conventional deterrence does not involve threats to use nuclear (or unconventional) weapons. The enormous destructive power of nuclear weapons means that they pose a unique threat to all societies around the world, and nuclear deterrence therefore plays a special role in the concept of deterrence. Nuclear deterrence can therefore be understood as dissuasion by a threat of nuclear weapons as a political tool to prevent war. Hence, the paradox of the *nuclear deterrence problematique*: to prevent disaster by threatening with a disaster.

For nuclear deterrence to be effective, it must be *credible* and assured. One must therefore possess effective nuclear capabilities to assure one's adversary of the ability to conduct a successful nuclear attack. "Deterrence by denial" refers to the efforts to make an action infeasible or unlikely to succeed by denying a potential aggressor confidence in attaining its objectives (e.g., by deploying effective ballistic missile defenses (BMD) to counter intercontinental ballistic missiles (ICBMs) with strategic nuclear weapons). A BMD is a missile system that locates and tracks an incoming ballistic missile and then launches an interceptor to destroy it before it strikes its target. All US interceptors consist of a booster rocket and a kill vehicle.

After a period of relative post-Cold War stability,²² the perceived international order equilibrium started to destabilize post 9/11 and went downhill fast after the Russian annexation of Crimea and invasion of Ukraine. The Russian resurgence and its practice of unconventional warfare, including cyber-attacks and disinformation, have demonstrated a

22. Which for Europe has been punctuated by crises and wars.

new level of ambition and aggression from Europe's eastern neighbor (see the 1996 Primakov Doctrine²³). The invasion of Ukraine has further exacerbated concerns about Russian intentions, triggering one of the most urgent security crises for Europe since World War II. Presuming that the Russian demands are not met, the question becomes whether Putin will attack other European countries—and if yes, whether they will be able to defend themselves. Another shifting reality complicates this dilemma: the shifting US focus toward the Asia-Pacific in the context of Chinese ambitions to unify with Taiwan and to become a leading world power by 2050. China's rise changes the overall parity and is expected to change the fundamental premises for deterrence theory and how extended deterrence will function in relation to the two big players: Russia and China.

As already mentioned, the basis for understanding European security is the European countries' complete dependence on the US and NATO deterrence to defend themselves (see Table 1). The US nuclear strategy in/for Europe is upheld by NATO's role as the main/sole deterrent. The European role in creating nuclear deterrence exists primarily through nuclear sharing delivered by the US in nuclear-sharing states such as Germany, the Netherlands, Turkey, Belgium, and Italy (see Table 2). The political value is enormous, as nuclear sharing agreements commit the US to defend Europe: NATO is first and foremost a nuclear alliance. The cornerstone elements of its nuclear policy are defined in the 2022 Strategic Concept and the 2012 Deterrence and Defence Posture Review.²⁴ The 2022 Strategic Concept increases the nuclear role of the alliance. NATO regularly discusses its nuclear policy directions. Most recently, NATO nuclear experts discuss global nuclear challenges the an-

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23. The Primakov Doctrine posits that a unipolar international order, with the US as a single pole of power, is unacceptable to Russia, thus striving for multipolarity, with Russia, China, and India as major power poles. Some key elements in the doctrine are Russian primacy in the post-Soviet space, opposition to NATO enlargement and partnership with China. For an in-depth discussion and its comparison to the 2013 Gerasimov Doctrine; see Eugene Rumer, "The Primakov (Not Gerasimov) Doctrine in Action," Carnegie Endowment for International Peace, 2019.
 24. For further details on the evolution, role, and documents on the NATO nuclear policy, see North Atlantic Treaty Organization (NATO), "NATO's Nuclear Deterrence Policy and Forces," accessed, March 9, 2023. https://www.nato.int/cps/en/natohq/topics_50068.htm#:~:text=The%20fundamental%20purpose%20of%20NATO's,a%20world%20without%20nuclear%20weapons.

nual policy symposia. While the nuclear matters in NATO summit communiqués have evolved significantly in language, the concrete changes to the alliance's deterrence posture have thus far remained limited to the conventional domain, focusing instead also on hybrid threats.²⁵

Nuclear consultations and deliberations on the nuclear posture are defined in the Nuclear Planning Group (NPG), composed by members of the national delegations of all NATO countries, except France, which opted not to participate. The NPG meets regularly and is advised by the High-Level Group (HLG), which is chaired by the US and includes high-level officials from NATO members, reportedly organized in a hierarchical structure, with those states possessing or hosting nuclear weapons having a greater say. The group deliberations are secret and the reports, especially those prepared by the HLG, are confidential.²⁶

French and British nuclear capabilities might not be sufficient to deter Russia from a nuclear attack on Europe. To some extent, it would seem as it is the fear of reprisals from the US superpower that deters Russia from attacking Europe. Prior to the Russian invasion of Ukraine, Europe appeared to be in a stalemate, resulting in Europe seeing no reason to change the nuclear status quo and the US gaining nothing from leaving Europe completely. The war in Ukraine might transform political positions and visions, making it crucial to identify the anticipation of thematic debates that will shape the future nuclear order.

The declarations made by European Commission President Ursula von der Leyen along with Joseph Borell (HRVP²⁷) and the Strategic Compass²⁸ show that European countries seek greater actorness in the security and defense domain. However, a series of variables reduce their agency. These include ensuing escalations in the European neighborhood (Russian threats to use nuclear weapons) and new technologies

25. Mattelaer, *Rethinking Nuclear Deterrence*, 4.

26. Simon Lunn, "NATO Nuclear Policy Reflections on Lisbon and Looking Ahead to the DDPR," *Nuclear Threat Initiative*, 2011.

27. High Representative of the Union for Foreign Affairs and Security Policy and Vice-President of the European Commission.

28. European Council, "A Strategic Compass for a Stronger EU Security and Defence in the Next Decade," accessed March 9, 2023, <https://www.consilium.europa.eu/en/press/press-releases/2022/03/21/a-strategic-compass-for-a-stronger-eu-security-and-defence-in-the-next-decade/>.

that can cut reaction times in the case of a nuclear attack or which might generate crises by making nuclear arsenals targets of sabotage.

A second part of Europe's problem, also exacerbated by the global return of nuclear weapons, is the absence of *arms race stability*.

We understand **arms race stability** as the *absence of incentives for developing competing military build-ups*.²⁹ The development of military build-ups is enabled not only by the Chinese-American-Russian competition for power but, ultimately, by the eroding non-proliferation norms and arms control regimes.

Non-proliferation and arms control regimes are important because they can reinforce the principle of non-use by making the actual use of nuclear weapons illegal and illegitimate.³⁰ Beyond norms and international law, however, states make their own choices, and the imaginability of nuclear war is closer today than it has been perhaps since the Cuban Missile Crisis. Arms control and non-proliferation regimes can nonetheless ease tensions and increase trust, as the final phase of the Cold War has demonstrated. The US-Russia arms control and non-proliferation regime³¹ formally began with strategic arms limitations negotiations in 1960s. Since then, numerous agreements have been adopted, in addition to the 1968 NPT: ABM (1972), SALT I (1972), SALT II (1979), Nunn-Lugar Cooperative Threat Reduction, INF (1987); The Conventional Armed Forces in Europe (CFE) Treaty (1990);³² START I (1991), Presidential Nuclear Initiatives (1991), Open Skies (1992),³³ START II (1993), START II Framework (1997); SORT (2002), and New START (2010). For an overview of the treaties, see Table 1. These initiatives resulted in the US and Russia eliminating more than 90% of their nuclear weapons since the peak of the Cold War.

29. Brustlein, *Erosion of Strategic Stability*, 18-19.

30. Nina Tannenwald and James M. Acton, *Meeting the Challenge of the New Nuclear Age* (Massachusetts, American Academy of Arts & Sciences, 2018), 16.

31. And in some cases former Soviet states.

32. This is a multilateral treaty, with 27 parties, pertaining limits to conventional arms. Russia suspended its participation in the treaty in 2007 and formally withdrew in 2015.

33. A multilateral treaty between 27 parties. The US and Russia withdrew from it in 2020 and 2021, respectively.

Table 1: Chronological list of treaties limiting nuclear weapons

Treaty	Duration	Content
Limited Test Ban Treaty	1963	Bans nuclear weapons testing in the atmosphere, in outer space, and under water.
NPT—Non-proliferation of nuclear weapons treaty	1970–now	Prevents proliferation of nuclear weapons.
ABM—Antiballistic Missile Treaty	1972–2002	Limits ABM to defense against ballistic-missile delivered weapons.
SALT I and II	1972 and 1979	Formal US–USSR talks leading to ABM Treaty.
Nunn-Lugar Cooperative Threat Reduction	1986/1991	US program to secure nuclear weapons in former Soviet states.
INF—Intermediate-range Nuclear Forces	1987–2019	A ban on all land-based intermediate ballistic missiles.
START I—Strategic Arms Reduction Treaty	1991–2009	Bilateral treaty on reduction of strategic offensive arms—of which up to 80% of strategic nuclear weapons were destroyed.
Open Skies	1992	Open surveillance of aerial surveillance flights.
START II –	1993–2002	Ban on missiles with multiple independent warheads. It never entered into effect.
New START	Extended until 2026 but suspended by Russia on February 21, 2023. ³⁴	Stipulates a deployed warhead limit of 1,550, a deployed delivery vehicle limit of 700 (ICBMs, SLBMs, or heavy bombers) and a limit to deployed and non-deployed launchers to 800.
TPNW—Treaty on Prohibition of Nuclear Weapons	2017–	The first legally binding international agreement to completely prohibit NW—the ultimate goal being total elimination. No NW-possessing state has signed the treaty.

Until February 2023, the NEW START treaty was the only nuclear treaty in place regulating nuclear weapons between Russia and the US. The Russian suspension of the treaty means that there are currently no nuclear arms control measures in effect. The suspension is a de facto abolition of the treaty but with the option for Russia to restore it more easily, should Russia decide to do so in the future. NEW START allowed both the US and Russia to maintain a nuclear triad.³⁵ It stipulates

34. Vladimir Isachenkov, “Putin Signs Bill to Suspend Last Nuclear Arms Pact with US,” *AP News*, February 28, 2023, <https://apnews.com/article/russia-us-nuclear-pact-suspension-ukraine-putin-e579b7562fb816d899e037d1d271a8c5>.

35. A nuclear triad is a three-pronged military force structure consisting of land-based intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and strategic bombers. A state can possess an assured second-strike capability without a nuclear triad, but a nuclear triad is considered the surest guarantee of a secure second-strike capability. To date, only China, Russia, and the US possess a full nuclear triad.

a deployed warhead limit of 1,550, a deployed delivery vehicle limit of 700 (ICBMs, SLBMs, or heavy bombers) and a limit to deployed and non-deployed launchers to 800. NEW START was important because it was a legally binding and verifiable agreement, which included treaty-monitoring elements such as site inspections and the exchange of telemetry (i.e., missile-test) data.³⁶

The Intermediate-Range Nuclear Forces Treaty (INF) was important, especially for Europe, as it facilitated the elimination of 2,692 ground ballistic and cruise missiles with a range of 500-5,500 kilometers by June 1991. The US blamed Russia for violating the treaty with the development and testing of the 9M729 missile, a ground-launch cruise missile that arguably exceeds the range of the INF limits.³⁷ Russia, on the other hand, blamed Washington for violating the treaty by establishing anti-missile systems in Romania (Deveselu) and Poland (Redzikowo). The Deveselu anti-missile site has been operational since 2016, while the one in Poland has entered Phase II. According to the European Phased Adaptive Approach (EPAA), there are 24 planned SM-3 interceptors³⁸ on each side of the Aegis Ashore. Additionally, each of the four BMD-capable Aegis ships can carry approximately 90-96 SM-3 interceptors.³⁹ The efficiency of SM-3 interceptors is uncertain, however, as they have never been tested against real threats.⁴⁰ The EPAA were initially developed to counter a potential threat from Iran, but eastern European countries have perceived it as a potential status-increasing element through binding US commitment in the region, even though its efficiency against a Russian attack remains very uncertain.⁴¹

Moscow claimed that the sites violate the INF limits, as they can be used to fire cruise missiles that exceed the INF limit. The EPAA system currently comprises the following installations: The Terminal High-Altitude Area Defence (THAAD) radar at Kürecik (Turkey) and Aegis Ashore site at Deveselu Air Base (Romania), Ramstein Air Base (Germa-

36. Although no inspections have taken place since the outbreak of the pandemic.

37. Arms Control Association, "Nuclear Modernization Programs."

38. An exo-atmospheric defensive weapon of the US Navy that can be employed to destroy short- to intermediate-range ballistic missiles.

39. Tytti Erästö, *Between the Shield and the Sword: NATO's Overlooked Missile Defense Dilemma* (San Francisco, Ploughshares Fund Study Report No. 3, July 2017), 4.

40. Erästö, *Shield and Sword*, 20.

41. Erästö, *Shield and Sword*, 2.

ny), and the four ships equipped with SPY-1 radar in Rota (Spain). Finally, there is the Aegis Ashore site at Redzikowo in Poland.⁴² Although EPAA has a defensive character, its potential and lack of certain purpose might pose future dilemmas for potential arms control agreements with Russia. The legal path for the establishment of Ballistic Missile Defense (BMD) systems in Europe was paved by the US withdrawal from the ABM Treaty in 2002.⁴³ It is yet to be ascertained whether the Aegis missile interceptor systems could be sufficiently efficient to intercept Russian hypersonic missiles, such as the Zircon hypersonic missiles (3M22), that fly low and as fast as 9,800 km/h (as demonstrated in tests) or ICBMs⁴⁴, given that the MIM-104 Patriot missile system reportedly was able to recently intercept a Kh-47 Kinzhal air-launched 'hypersonic' ballistic missile over Kyiv. While the EPAA system has evolved into a symbol of NATO unity, it is important to emphasize how EPAA can in no way protect Europe from a full-scale nuclear attack; nevertheless, its presence remains relevant, as the existing European missile infrastructure can generate a European "voice" or even wield influence in nuclear deterrence. In that sense, the sharing agreements along with the missile defense sites *associate* Europe with nuclear deterrence. They substantiate US nuclear extended deterrence by coupling the US and Europe closer together. This might be one of the more subtle but nonetheless most important aspects of the current European missile defenses and thus represent the physical dimension of European engagement in its own (nuclear) security.

In conclusion, the gradual termination of arms control regimes has dramatically eroded the level of strategic stability, both in terms of crisis stability and arms race stability. With the Russian suspension of NEW START, the situation now seems to be rather out of control, leaving the NPT the only major treaty regulating the behavior of nuclear states. However, the NPT does not regulate specific US-Russia nuclear weapons. During the Cold War, strategic arms reduction and nuclear disarmament was regarded as a form of emancipation, as the world faced possible

42. Arms Control Association, "The European Phased Adaptive Approach at a Glance," March 2022.

43. Tannenwald and Acton, *New Nuclear Age*, 12.

44. Blake Stilwell, "Why Russia's Hypersonic Missiles Can't Be Seen on Radar," *Military.com*, <https://www.military.com/equipment/weapons/why-russias-hypersonic-missiles-cant-be-seen-radar.html>.

total nuclear annihilation. The war in Ukraine is deepening the divisions between the West and authoritarian regimes. The restoration of strategic stability is more important than ever but drifting further away into the foreseeable future. Given the sharp divisions in the strategic culture among European countries, the next section outlines the nuclear postures of three main European countries: Germany, France, and the UK.

3

European Nuclear Postures: Germany, France and the UK

The report now turns to uncover the *nuclear postures* of Germany, the UK and France, as they are the three key European actors, two of whom possess nuclear weapons themselves. Understanding their strategic nuclear mindset and history provides a basis for discussing Europe's future options. The respective postures of these countries are therefore part of the analytical foundation from which we later induce the thematic foci of future nuclear debates. The relevance of Germany in the analysis is due to the size of its economy and its nuclear sharing agreement with the US, but also due to its potential to influence regional and international debates (and thereby the future order), even in the absence of their own nuclear weapons. In the following, we unpack the positions of the three countries regarding their nuclear policies and perceptions on strategic and political levels. To this end, we review historical impact points, as well as the current nuclear debate with a focus on the elite and citizen perceptions in each country, beginning with Germany.

3.1. Germany: Europe's Ambivalent Nuclear-Sharing State

While Germany has never possessed its own nuclear weapons, it has been an important nuclear-sharing state. The country's posture has evolved from a huge interest in having a say in nuclear matters while it was divided between the influences of two superpowers during the Cold War, to a rebuff of NATO nuclear sharing and focus on arms control

and even elimination after the German unification. The *Zeitenwende*⁴⁵ (turning point) in the aftermath of the Russian invasion of Ukraine is likely to constitute another critical juncture in the German nuclear debate. Germany is moving toward the adoption of a new national security strategy, which, despite the *Zeitenwende*, is being debated in a rather ambivalent domestic context. This section takes the reader on a historical journey tracing the evolution of German nuclear policy and highlighting the current debate, including the elite and citizen perceptions.

The Federal Republic of Germany (FRG) has been hosting US nuclear capabilities since May 1955. During the 1980s, the FRG hosted a large NATO/US nuclear arsenal, while East Germany hosted a substantial number of Soviet frog and scud missiles, nuclear-capable aircraft, and nuclear training sites.⁴⁶ The 1980s were particularly important, because they marked the point in time when the pacifist movement possibly stood strongest in Germany. A coalition of peace activists, leftist radicals, SPD splitters, and Greens influenced much of the nuclear policy debate. This momentum was further facilitated by the Soviet invasion of Afghanistan and the ensuing crisis in East-West relations. Eventually, the 1987 INF Treaty trimmed much of the two countries' arsenals, thereby reducing the perceived Soviet threat. However, this threat was asymmetric: While it reduced the threat for the US, it theoretically did little in terms of diminishing the risk of the use of smaller nuclear capabilities, which could be detonated with consequences for a radius that would devastate both Germanies. East-West tensions overshadowed transatlantic relations and NATO nuclear policy at the edge of balancing between *détente*⁴⁷ and arms control during the 1980s. German unification has transformed the nuclear predicament, as the two Germanies were no longer in the shadow of the two superpowers and therefore had more foreign policy agency.

Since unification, the German nuclear discourse has shifted from arms control to elimination.⁴⁸ The 20 nuclear warheads at the site in

45. B. Kim Olsen, "Zeitenwende," *Danish Institute for International Studies*, August 17, 2022.

46. Jeffrey Boutwell, *The German Nuclear Dilemma* (Cornell: Cornell University Press, 1990).

47. *Détente*, French for "relaxation," is a process of managing relations with a potentially hostile country in order to preserve peace while maintaining our vital interests.

48. Harald Müller, *Nuclear Weapons and German Interests: An Attempt at Redefinition* (Peace Research Institute Frankfurt (PRIF), report no. 55), 2000.

Büchel provided new dilemmas for German defense and foreign policy. Germany's leading role in the defense of Europe and deterrence has often appeared controversial, and Germany proposed a reversal from the NATO position in 1999. However, Germany's proposal at that time did not receive support from the capitals, and the US Secretary of State declared "first use" to be an "integral part of the NATO strategic doctrine" in a public response to Germany.⁴⁹ Another key moment was in 2010, when the German Parliament voted for the withdrawal of nuclear weapons from Büchel, stationed there since the Cold War (reportedly, the only location in Germany with nuclear weapons after 2007).

Until recently, the divisions on Germany's nuclear posture among political parties and the public opposition against nuclear weapons have largely dominated the domestic discourse. According to data from 2020, only 57% of German parliamentarians perceived the US nuclear weapons in Germany as being able to deter a nuclear attack, while 40% are of the opinion that they would deter a non-nuclear attack.⁵⁰ The public was even more skeptical. CDU/CSU and the liberal FDP elites and voters were found to be more convinced about the deterrent effect, while those associated with the social democrats (SPD), the left-wing *Die Linke*, and the Greens disagreed with the nuclear deterrence argument.⁵¹ The Russian aggression in Ukraine have transformed the public opinion as well as the political positions of some parties on foreign and defense policy, including the Greens and partially SPD, although to a very little extent of the small but important far-left party *Die Linke*. This historic shift is described as the *Zeitenwende*. What makes the *Zeitenwende* a critical juncture is how the defense items that were hitherto deemed controversial, such as defense spending and reaching the NATO 2% target, now face little opposition in the Bundestag. Germany is planning to spend €100 billion from special funds on defense and, as of January 2023, the country was the third largest provider of military assistance to Ukraine (after the US and UK) in terms of bilateral commitments that exclude

49. US Secretary of State William Cohen, cited in Uday C. Bhaskar, "Nuclear Weapons and No First Use: Need for Strategic Restraint," *Strategic Analysis* XXII, no.10 (1999).

50. Michal Onderco and Michal Smetana, "German Views on US Nuclear Weapons in Europe: Public and Elite Perspectives," *European Security* 30, no. 4 (2021): 630-48.

51. Onderco and Smetana, "German Views."

the share of EU commitments.⁵² The *Zeitenwende* could shape the German role in the future European security architecture. Germany's position is expected to be defined in the upcoming national security strategy currently being debated in still a rather ambivalent context regarding Germany's future responsibility. This ambivalence is due to the tensions created by the country's previous policy toward Russia and the deep polarization of political parties, elites, and the public on the views on a way out of the war in Ukraine. The combination of the above makes it all the more difficult for Chancellor Olaf Scholz to live up to the expectations of European leaders.

Finally, the debate on the replacement of the German dual-capable aircraft⁵³ Tornado also reflects the shifting German strategy: Until recently, Germany has avoided the decision to procure new aircraft due to various strategic, political, and industrial interests.⁵⁴ After the Russian invasion of Ukraine, however, Germany promptly decided to invest in F-35 fighter jets to prepare for the future of the crucial nuclear-weapons mission.⁵⁵

Germany was once a state with numerous nuclear weapons on its territory. Later, it developed a radical aversion against nuclear weapons and the NATO posture. More recently, with the *Zeitenwende*, Germany has broadly accepted its role in extended deterrence. The report now focuses on the UK, one of the two European countries that possesses nuclear weapons.

3.2. United Kingdom: Europe's Reluctant Nuclear Power

What makes the current debate regarding the future of British nuclear weapons so fascinating is the complex political, normative, and strategic

52. Christopher Wolf, "These Countries Have Sent the Most Aid to Ukraine," *U.S. News*, February 24, 2023.

53. Dual-capable aircraft are aircraft that can also carry out nuclear missions.

54. Naomi Conrad, "In Germany, Gridlock over Nuclear-Capable Fighter Jet," *Deutsche Welle*, October 1, 2020.

55. Sebastian Sprenger, "Germany to Buy F-35 Warplanes for Nuclear Deterrence," *Defense News*, March 14, 2022.

environment in which the UK now finds itself.⁵⁶ On the one side, domestically in the UK, there is a general debate about UK defense spending and budgets: Should nuclear spending instead go to conventional forces? At the same time, because of increased great power competition in the world and the war in Ukraine, the UK has grown keen to take a more assertive role regarding its own nuclear deterrent.⁵⁷

In 1962, US President Kennedy and UK Prime Minister Macmillan agreed to a nuclear missiles treaty (The Nassau Agreement), whereby the UK would receive the Polaris nuclear missile system. The UK then decided to build Ballistic Missile Submarines (SSBN) instead of ground-launched missile silos, as SSBNs would be almost impossible to detect and destroy. The belief at the time was that submarines would provide the UK with a much more secure second-strike nuclear capability and, thus, an improved deterrence profile. Since April 1969, the UK has had a Continuous-At-Sea-Deterrent (CASD) strategy: At any given point in time, at least one of four SSBNs is on deterrence patrol somewhere under the sea. The current Trident missile system is located on board the four Vanguard-class SSBNs, each armed with up to 16 Trident II D5 ballistic missiles with multiple thermonuclear warheads⁵⁸ capable of hitting multiple targets simultaneously. The UK has title to 58 Trident SLBMs from a pool of missiles shared with the US Navy, raising the question of full ownership and independence.⁵⁹ Since 1998, the UK has only had one leg in the nuclear triad and currently relies solely on their submarines and their CASD strategy. In 2006, the Labour Government approved the next generation of SSBNs, a Dreadnought class submarine still carrying trident missiles.

Over the years, the British nuclear stockpile has changed in stride with the overall strategic global security situation. It peaked at around

56. For an elaboration of these factors, see Andrew Futter, *The United Kingdom and the Future of Nuclear Weapons* (London: Rowman and Littlefield 2016), xiii.

57. Julian Borger and Dan Sabbagh, "UK Military Vaults Upgraded to Store New US Nuclear Weapons," *The Guardian*, April 12, 2022.

58. A thermonuclear weapon, fusion weapon, or hydrogen bomb (H-bomb) is a second-generation nuclear weapon design. Its greater sophistication affords it vastly greater destructive power than first-generation nuclear bombs, a more compact size, lower mass, and/or a combination of these benefits. All of the contemporary nuclear states are believed to possess them.

59. Hans M. Kristensen and Matt Korda, "United Kingdom Nuclear Weapons," *Bulletin of the Atomic Scientists*, 2021, 156.

500 nuclear weapons during the Cold War but has since decreased significantly. In a White Paper from 2006, the UK adopted a “minimum deterrence” strategy with only a “dormant nuclear weapons capability” in case of a specific emerging threat.⁶⁰ The White Paper stated that “currently no state has both the intent to threaten our vital interests and capacity to do so with nuclear weapons.”⁶¹ The 2010 Strategic Defence and Security Review reiterated this statement but added that it cannot be dismissed that such a threat might re-emerge.⁶² The 2010 Review pledged further to reduce its requirement for operationally available warheads from fewer than 160 to no more than 120.⁶³ We see a gradual change in the description of the security environment from the White Paper in 2006 to 2010. In the National Security Strategy and Strategic Defence and Security Review in 2015, the tone changes to “a constant review in the light of the international security environment and the actions of potential adversaries,” hereby possibly mirroring the Russian annexation of Crimea in 2014. One striking novelty in the UK Integrated Review released in 2021,⁶⁴ was the increase in the ceiling of nuclear warheads to 260 items by the mid-2020s (from 180 planned in the previous national strategic review). To reflect the changing global security environment, the Integrated Review also reversed longstanding transparency practices and announced that the UK will no longer provide public figures for their operational warhead stockpile.⁶⁵ This is part of a doctrine of “deliberate ambiguity about when, how, and at what scale” the UK would consider using nuclear weapons. This ambiguity complicates the calculations of potential aggressors, reduces the risk of deliberate nuclear use by

60. Government of the United Kingdom, *The Future of the United Kingdom's Nuclear Deterrent* (London, Government of the United Kingdom, December 2006), 21.

61. Government of the United Kingdom, *Nuclear Deterrent*, 19.

62. Government of the United Kingdom, *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review* (London, Government of the United Kingdom, October 2010), 37.

63. Government of the United Kingdom, *Securing Britain*.

64. The Integrated Review (named “Global Britain in a competitive age”) combines previously separate reviews into foreign policy, defense, national security, and international development, such as the National Security Strategy and the Strategic Defence and Security Review into one, making it the largest review of its kind carried out by a UK government since the Cold War.

65. Government of the United Kingdom, *Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy* (London, Government of the United Kingdom, March 2021), 155.

those seeking a first-strike advantage, and contributes to strategic stability.⁶⁶ The Integrated Review thus saw an increasing emphasis on nuclear deterrence in the British strategy for the first time since the end of the Cold War.⁶⁷ This shift in strategy is in response to an uncertain security environment together with a new, emerging technological environment that marks the return of nuclear weapons in international politics. In its Integrated Review, the UK underlines their support for the preservation and strengthening of effective arms control and disarmament while also underlining its leading approach to nuclear disarmament; but at the same time specifically stating that it is taking “the prevailing security environment” into account.⁶⁸

In general, there has been limited public debate about nuclear weapons throughout the UK's 70-year nuclear history.⁶⁹ Historically, the intensity of the nuclear debate and the public aversion to nuclear weapons in the UK follow in close line with the overall political security situation between the Eastern bloc and the West. Two periods of heightened debate stand out: the late 1950s and early 1980s. The United States' detonation of their to date biggest hydrogen bomb took place in 1954 and stirred new debate about nuclear weapons in the UK, leading to the launch of the Campaign for Nuclear Disarmament (CND). At its height, the CND gathered more than 150,000 people in annual marches against nuclear weapons in the late 1950s and was among the largest protests in British history.⁷⁰ In times of increased tension between the superpowers, the CND movement tends to receive more public support. Also relevant are the 1980s Greenham Common protests against US ground-launched cruise missiles.⁷¹ After the outbreak of the war in Ukraine in 2022, however, recent polls show increasing public support

66. Government of the United Kingdom, *Global Britain*, 77.

67. Clara Arndt, Liviu Horovitz, Claudia Major, Jonas Schneider, and Lydia Wachs, *Euro-Atlantic Concerns regarding a US "Sole Purpose" Policy* (Berlin, German Institute for International and Security Affairs, December 4, 2021), 26.

68. UK Integrated Review 2021, 78.

69. Daniel Salisbury, "Seventy Years of British Nuclear Debates (A short overview)." In: Futter (ed.), *Future of Nuclear Weapons*, 3.

70. Salisbury, "Seventy Years," 8.

71. Greenham Common Protest, *The National Archives*, <https://www.nationalarchives.gov.uk/education/resources/cold-war-on-file/greenham-common-protest/>

for the Trident nuclear missile system.⁷² This confirms the current basic reality: Domestic support for the UK's deterrent is rock solid.

At the political level, there have never been strong disagreements between the two government parties, Labour and Conservatives, when it comes to the nuclear realm. A basic nuclear consensus has existed throughout the years between them.⁷³ The political debate about nuclear weapons divides into two groups: The “orthodox” thinkers who are in support of nuclear weapons as an effective deterrence measure (therefore, they are known as the “deterriers”) and the “disarmers,” who want the UK to refrain from possessing nuclear weapons. The orthodox thinkers have largely dominated, although within the Labour Party a large minority has been against UK nuclear weapons; but this has not changed UK nuclear policy while Labour was in government.

In the future, two issues raise concern for the future UK nuclear deterrent. Firstly, increasing costs and poor management resulted in an affordability gap of £2.9 billion in its military nuclear spending between 2018-2028. The Ministry of Defence (MoD) therefore announced a renationalization of the Atomic Weapons Establishment, thereby upending a contractor-operated consortium led by Lockheed Martin.⁷⁴ Secondly, the issue of Brexit and Scottish independence is of concern, as the Naval Base Clyde that ports the SSBNs is situated in Scotland,⁷⁵ where there is reluctance toward the base. The costs and logistics of relocating to another base in England could prompt the UK to reconsider its current plans to modernize its nuclear arsenal. Prospectively, post Brexit and amid elevated political instability in the UK, it remains interesting to see how debates on the nuclear order will develop in the future, especially in the context of the lessons learned from the war in Ukraine.

72. *YouGov*, “What Should Happen to Trident at the End of Its Useful Life?,” <https://yougov.co.uk/topics/economy/trackers/what-should-happen-to-trident-at-the-end-of-its-useful-life>.

73. Daniel Salisbury, *In the United Kingdom and the Future of Nuclear Weapons* (Lanham, MA: Rowman & Littlefield, 2016): 5.

74. Kristensen and Korda, “United Kingdom Nuclear Weapons,” 157.

75. Adérito Vicente, “European Nuclear Deterrence and Security Cooperation: Post-Brexit Relations and Challenges,” In *Peace, Security and Defence Cooperation in Post-Brexit Europe: Risks and Opportunities*, ed. Cornelia-Adriana Baciu and John Doyle (Springer, 2019).

3.3. France: The Independent European Nuclear Power

From a historical perspective, nuclear power has been a symbol of modernity for France, as well as an instrument of independence and a tool of influence. France does not have the same nuclear policy as the UK; the two countries share neither the same conception of independence nor of influence.⁷⁶ France has traditionally always associated military nuclear capability with national independence.⁷⁷ In French perception, nuclear weapons are seen as a guarantee of its freedom of action, its strategic autonomy, as well as the final protection of the country's vital interests. France wants to avoid dependence on any foreign state, even a strategic partner.⁷⁸ This has often placed France in an outside position within Western allies, especially the UK and US, who are aligned in an Anglo-American partnership to a much greater extent, also on nuclear policy.

France was the fourth country after the UK to obtain nuclear weapons in 1960. There were several reasons for the creation of the French atomic bomb. First, there is the historic dimension: To forever avoid the traumatic defeat of 1940 in World War II. However, France acquired nuclear weapons just as much because they wanted autonomy from their allies as to arm themselves against their enemies.⁷⁹ In this way, the British acquisition of nuclear weapons boosted the French nuclear program. French nuclear weapons have always been a symbol of the strong French wish for independence that began with President De Gaulle's desire to place France on an equal footing with the UK and US within NATO. According to De Gaulle, the Anglo-American nuclear duopoly had to be brought to an end. This desire was so strong, that France was truly engaged in the manufacturing of a bomb by the summer of 1955 despite no political decision having been formally taken in this regard.⁸⁰

76. Bruno Tertrais, *French Nuclear Deterrence Policy, Forces, and Future: A Handbook* (Paris, Fondation pour la recherche stratégique, February 2020), 12.

77. Tertrais, *French Nuclear Deterrence*.

78. Emmanuelle Maitre, *Nuclear Deterrence in Europe: Points of Convergence, Singularities and Prospects for Cooperation* (Paris, Fondation pour la recherche Stratégique, January 2021), 11.

79. Tertrais, *French Nuclear Deterrence*, 5.

80. Tertrais, *French Nuclear Deterrence*, 6.

France left the NATO command structure in 1966 and was not part of NATO's military operations for over 40 years, first rejoining in 2009.⁸¹ As mentioned earlier, France is not part of the NPG in NATO. Disagreements over Anglo-American leadership and command structures in NATO⁸² as well as French interests in building good relations with Germany and Italy led to the exit. The break from NATO is symbolic for the French ambitions as well as its solitary approach to international security politics, both of which having affected French nuclear policy. Nuclear weapons ensure full French sovereignty—and “in case of a drama, to choose our own direction” in De Gaulle's words.⁸³ This underlines how it is just as much a means to avoid “bullying” by other nations as it is about threats from enemies. France asserts that it does not depend on others for the defense of its essential interests and its survival. Therefore, unlike the UK, France got no American help to start its nuclear program, and few French scientists were part of the Manhattan Project.⁸⁴ Unlike the UK, which collaborates closely with the US, France can self-sustain their nuclear deterrent and is not dependent on the US. France has an independent, self-sustaining national military industry that covers all of the necessary technological aspects of being a nuclear power.

The French nuclear program was developed within the framework of a policy of national independence, and the French withdrawal from the NATO-integrated military organization and implementation of French deterrent force are therefore inseparable to some extent, albeit less so for the contemporary French leadership.⁸⁵ In 2001, France underlined three functions of their deterrent force: the survival of France threatened by other major powers, their freedom of action in cases of external blackmailing from other countries, and contribution to the security of Europe and the Atlantic Alliance.⁸⁶ The 2017 Defence and National Security

81. France never shirked its responsibility to defend other NATO members in case of war (Article 5) but insisted that it would do so on its own terms. See Prateek Dasgupta, “Why Did France Leave NATO at the Height of the Cold War?” *Medium*, April 26, 2022.

82. France suggested a tripartite Atlantic Alliance Directorate (Paris, London, Washington), instead of NPG with all NATO members involved.

83. Tertrais, *French Nuclear Deterrence*, 8.

84. However, French-US cooperation has continued on nuclear affairs since the 1970s with mutual benefits.

85. Tertrais, *French Nuclear Deterrence*, 9.

86. Tertrais, *French Nuclear Deterrence*, 12.

Strategic Review explicitly underlined nuclear weapons as the cornerstone of the nation's defense strategy and in this review, Macron confirms plans to modernize and renew France's two nuclear components.⁸⁷

France currently has a nuclear arsenal of roughly 300 nuclear warheads divided into two components: four ballistic nuclear missile submarines and two Rafale air bomber squadrons capable of air-launched cruise missiles.⁸⁸ Nuclear deterrence is ascending on the security agenda: It was ranked third among five strategic functions in 2008, second in 2013, and the top priority since 2017.⁸⁹ In France, unlike the UK, both in the public opinion and among the strategic research environment, nuclear weapons and deterrence are part of an engaging public debate. The public support in favor of French nuclear arms is widespread. The underlying French assumption is that any collaboration with European partners in the nuclear domain should be with France at the lead. In a speech in 2020, Macron suggested that the French nuclear deterrent should play a central role in collective European security, presumably within the context of the EU's Common Security and Defence Policy (CSDP). He called for strategic dialogue with willing European partners and outlined the potential for their involvement in military exercises conducted by French deterrent forces.⁹⁰ France undertakes a balance act between encouraging European countries to cooperate but avoiding undermining or compete with NATO. In so doing, France attempts to develop more autonomous alternatives to US security guarantees in Europe.

Apart from the three big European countries, the nuclear postures of the remaining European states are also relevant to debate to understand the particular European nuclear predicament. Looking at the broader picture, the mapping of various European actors clearly indicates heterogeneous or diverging national postures on nuclear strategy (see Table 2).

87. The French Government, *Defence and National Security Strategic Review 2017* (Paris, The French Government, October 2017), 6.

88. Tertrais, *French Nuclear Deterrence*, 57.

89. The French Government, *The French White Paper on Defence and National Security* (Paris, The French Government, July 2008).

90. Claire Mills, *Nuclear Weapons at a Glance: France* (London, The House of Commons Library, July 2022).

Table 2. European countries and their postures on relevant nuclear subjects⁹¹

European countries	Nuclear postures ⁹²	NATO nuclear-sharing agreements	Arms control debate
Large-sized European countries			
Germany	Stronger support for extended deterrence since the Ukraine war	Yes	High
UK	Deliberate ambiguity	No	Moderate
France	National independence	No	Low
Medium-sized European countries			
Spain	Dispassionate supporter of nuclear deterrence through NATO ⁹³	No	Huge public support for TPNW
Italy	Maintain effective NATO deterrent against Russia No to TPNW	Yes	Low
Greece	Follow the NATO line	No	Low
Poland	Stern NATO supporter: credible deterrence	No	Very low
Turkey	Signed NPT for now—might in the future develop NW ⁹⁴	Yes	Not mapped
Selected small European countries			
Belgium	Credible deterrence along pursuit of <i>détente</i>	Yes	Moderate
Netherlands	In favor of maintaining a calculated ambiguity policy	Yes	Moderate
Norway	TPNW observer	No	High
Denmark	Credible deterrence as long as NW exists. No to TPNW	No	Low

91. A caveat pertains to the column concerning *arms control debate*. These interpretations are our own assessment; their function in this table is to illustrate how the national debate varies on the matter.
92. Arndt et al., *Euro-Atlantic Concerns*.
93. Clara Portela, “Weapons of Mass Debate – Spain: A Dispassionate Supporter of Nuclear Deterrence,” *Institut Montaigne*, 15 July, 2021.
94. Ezgi Yazigioglu, “A Look upon Turkey’s Future Nuclear Weapons Policy,” *Institut de Relations Internationales et Stratégiques*, September 25, 2019.

The strategic cacophony of European nuclear postures limits the action space for a common European alternative to balancing or substituting US security nuclear guarantees. The development of an independent European nuclear force would also risk violating the Non-Proliferation Treaty if it involved the transfer of nuclear weapons to non-nuclear states. The varying support in the respective national populations for nuclear weapons also inhibits closer cooperation. Without common European grounds, it will be difficult to alter the status quo, which limits the space for European action. Nuclear weapons fulfill different purposes in different European countries. Furthermore, Europe cannot balance Russia alone, because numbers matter when it comes to nuclear deterrence. A larger arsenal equals better assurance for the success of an attack or retaliation. Russia possesses many times more nuclear weapons than the UK and France together. It therefore cannot be ruled out that Europe might seek to establish a common nuclear posture reducing European dependency on the US. The prospects for such a development would very likely depend on the position in Berlin given the German role as a transatlantic balancer in shaping European policy.⁹⁵

To summarize, this chapter has presented the different postures of the three major European countries, outlining a variety of factors that make it difficult to plot a common European course of action in the nuclear domain. Adding to these difficulties, many European countries disagree on the future role of nuclear weapons on European soil as well as heterogeneous threat perceptions. This sustains a strategic culture that is inadequate for meeting the current nuclear challenges.

The next chapter discusses the strategic implications of this European lack of actorness and the anticipated key conceptual debates related to nuclear weapons that are also intensified by the current crisis in Ukraine.

95. Nele M. Ewers-Peters and Cornelia Baciú, "Differentiated Integration and Role Conceptions in Multilateral Security Orders: A Comparative Study of France, Germany, Ireland and Romania," *Defence Studies* 22, no. 4 (2022), 666-8.

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4

Key Conceptual Debates on the Future European Nuclear Order

The previous chapters unfolded several relevant thematic dimensions and controversies for nuclear policymaking in Europe.

The structure of nuclear security lies within the concepts of crisis and arms race stability, both of which have deteriorated substantially. At the same time, we are allegedly entering a third nuclear age characterized by new technologies further destabilizing the nuclear status quo. However, the European states do not agree about the future role of nuclear weapons and have ignored nuclear issues thus far. This makes change difficult. Within the confines of these overarching factors, we proceed with several thematic points of inflection, which we estimate will matter for Europe. Based on the changing security and normative context together with the heterogeneous nuclear postures, we anticipate these thematic clusters to be relevant for the future nuclear order, especially with view on the war in Ukraine.

By presenting the most striking thematic dimensions, we intend to guide the upcoming decision-making for European stakeholders in an era shaped by the return of nuclear weapons. The debates presented below are thus important for Europe to bear in mind when managing future nuclear threats. Each of the debates pinpoints relevant dimensions of the global return of nuclear weapons. Thus, the first two thematic dimensions concern the role played by technological development in general deterrence postures and ballistic missile defense discussions, which could spark a new weapons race. We then discuss diplomatic steps to build mutual trust and security. Europe does not benefit from a future with increasing nuclear competition, so diplomatic avenues for peace

should be explored. Acknowledging that Europe depends fundamentally on the US, changes in US nuclear postures will affect Europe. Finally, the last thematic dimension further unfolds the factors impeding the progress of a common European nuclear policy.

The key thematic debates comprised in this report therefore cover the most important avenues for future European deliberations and point to relevant potentials for future European nuclear action. They focus on different aspects of how to prevent nuclear threats from establishing communication forums to balancing the instability that new technologies pose for nuclear stability. The aim of our analysis is to illuminate the concrete actions or worthwhile considerations for European states.

Five key conceptual debates thus emerge: 1) *the meaning of deterrence in the Third Nuclear Age*, 2) *preventing a nuclear catastrophe*, 3) *instability management*, 4) *a possible future “No First Use” policy*, and 5) *European voices in the nuclear order*.

4.1. What Does Deterrence Mean in the Third Nuclear Age?

Considering the war in Ukraine, the meaning of deterrence, including extended deterrence in the third nuclear age, will likely be a point of major debate among European nuclear states in the near future.

This debate might concern the new nuclear age and what logics of deterrence this entails. It might involve debate on displacing the focus between *deterrence by punishment* and *deterrence by denial*, including counterforce options (see Text boxes 2 and 4). This shift could lead to less confidence in the function of nuclear weapons systems and feed an ongoing weapons technology race, while at the same time diminishing the trust in nuclear weapons and strategic stability. Strategic non-nuclear weaponry (SNNW) will therefore become more important, possibly reducing the threshold for war. While nuclear weapons will not become obsolete, their effective use might be put into question by new weapons that have the potential to disrupt existing command and control, and thus nuclear uncertainty.

Initiatives related to deterrence concepts could also be brought up in the debate of Article VII of the NPT on global disarmament, concrete punishments in the case of proliferation, or threats of proliferation, as

well as a leadership structure for decision-making and redundant hot-lines in times of crisis.

Text box 4: The onset of a new nuclear age⁹⁶

Researchers often divide nuclear strategy into different ages, as the logics of nuclear deterrence change over time.

According to Andrew Futter and Benjamin Zala, the first nuclear age ended with the Cold War. It was distinguished by major bipolar power rivalry and concepts such as *deterrence by punishment*; the threat of severe penalties (i.e., the use of strategic nuclear weapons) and the possibility of second-strike retaliation kept the USSR and the US in a stalemate position (the so-called Mutual Assured Destruction aka. MAD).

The second nuclear age is comprised of *deterrence by denial* and has long been associated with the development of ballistic missile defenses (BMD) and counterforce options. The purpose of a counterforce strategy is to conduct a pre-emptive nuclear strike to disarm an adversary's nuclear weapons before they can be launched.

According to some researchers, the world stands at the cusp of a new (third) nuclear age driven by the development of strategic non-nuclear weaponry (SNNW) and a shift in the perceptions of nuclear threats. Major advances in precision, tracking, sensing, and processing power have meant that it is now possible to conduct non-nuclear counterforce attacks with SNNW—attacks previously deemed impossible without a nuclear strike. Cyberattacks or artificial intelligence (AI) might also threaten an adversary's nuclear command and control or associated systems in new ways that destabilize nuclear deterrence. Thus, SNNW are creating both a new set of fears and risks resulting from strategic indistinguishability while at the same time challenging existing understandings of nuclear first-strike capabilities.

96. See Benjamin Zala and Andrew Futter, "Strategic non-nuclear weapons and the onset of a Third Nuclear Age," *European Journal of International Security* 6, no. 3 (2021), 1-21.

New challenges posed by technological developments, including SNNW, also complicate the scope of European action within the nuclear domain. Europe is not usually a first mover on new military technologies, but the considerable financial boost to the German military in particular might involve new technological capabilities. The arrival of SNNW therefore presents both opportunities as well as challenges for the European countries to either develop or acquire new technologies that will affect the nuclear balance—or become even more dependent on US technology and security guarantees.

Future debates on the logic of deterrence are likely to entail discussions on the *relationality toward Russia*. Russia has often expressed concerns that the NATO nuclear sharing is not in line with the NPT, which only accepts five nuclear states: the P5. This has also provided Russia with an excuse to place tactical nuclear weapons in Belarus.⁹⁷

The ambiguous link between nuclear sharing and the NPT has been of particular concern to Germany, and the country's nuclear policy ambivalence was demonstrated by the 1999 proposal to reverse NATO's "no first use" policy and the de-nuclearization attempt between 2009-2012, respectively. The decision to renew the dual-capable aircraft fleet able to conduct nuclear strikes through the acquisition of F-35s (a decision approved in the aftermath of the Russian invasion of Ukraine) eliminates any hypotheses of a German "soft-exit" from the extended nuclear deterrence for the moment.⁹⁸ Re-consideration of the extended deterrence would involve the assessment of alternatives, such as conventional deterrence, and their effectiveness in terms of preventing unexpected surprises,⁹⁹ such as the Russian invasion of Ukraine, given the Russian preferences for asymmetric and pro-active use of force.¹⁰⁰ A premise for such a discussion would thus be clear national visions of the positions of different countries in the global order, which also applies for post-Brexit

97. James Gregory, "Putin: Russia to Station Nuclear Weapons in Belarus," *BBC News*, 26 March 2023.

98. Alexander Sorg, "Nuclear Weapons in Germany: Mitigating a Hypothetical End of the Nuclear-Sharing Arrangements," In *Challenges to NATO's Nuclear Strategy*, ed. Andrea Gilli (NDC Research Paper No 22, NATO Defence College, December 2021), 27-34.

99. Andreas Lutsch, *The Persistent Legacy: Germany's Place in the Nuclear Order*. NPIHP Working Paper (Washington, Woodrow Wilson International Center for Scholars, May 2015).

100. Nicolo Fasola, "The Shaky Grounds of Russia's 'Escalate to De-escalate Doctrine.'" In Gilli, *Challenges*, 3-16.

UK and domestic-problems-torn France. As both France and the UK are autonomous nuclear powers, the long-term sustainability of deterrence is a major strategic priority. Both European nuclear powers have adopted a logic of “sufficiency” or “minimum deterrence” and possess only what is considered to be “just enough” to deter adversaries. The two countries can imagine no circumstances under which a threat to the vital interest of one would not constitute a risk to the other.¹⁰¹ Any hypothetical end of the nuclear sharing arrangement must be thoroughly reviewed in the NATO High-Level Group and NPG, grant consideration to the alliance solidarity principles, and be unanimously approved by all NATO states.

4.2. How to Prevent a Nuclear Catastrophe?

Future debates on how to prevent a nuclear catastrophe¹⁰² will likely intensify in Europe in the aftermath of the Russian nuclear terrorism in Ukraine. The global return of nuclear weapons has increased the risk of miscalculations and accidents. We define a nuclear catastrophe as the intentional or non-intentional effective activation of nuclear weapons, which can take the form of an intended attack, the use of nuclear weapons based on miscalculations, or an accident. Despite the existence of hard- and soft-law provisions regulating their use, and the existence of legal commitments in the nuclear domain, their implementation remains in the hands of the governments or coalitions in power. In January 2022, for example, the P5 countries issued a joint statement on reducing strategic risks. Here, the five powers shared their commitment to the defensive purpose of nuclear weapons for deterrence and war-prevention purposes, affirming that a nuclear war “must never be fought” (The White House 2022). Less than two months after the P5 joint statement, however, Putin invaded Ukraine and threatened to use nuclear weapons, thereby demonstrating the volatility of soft-law measures. These Russian nuclear threats might incentivize the European countries to increase their security from nuclear threats. There are two main solutions to avoid a nuclear

101. Tertrais, *French Nuclear Deterrence*, 45.

102. In this context, “catastrophe” is defined as intentional or non-intentional effective activation of nuclear weapons.

catastrophe: Either to aim at maximizing strategic stability or improving self-defense to the degree where the nuclear threat no longer exists. A third possible option—working toward complete disarmament—is unacceptable for both sides, as tensions remain high and are not likely to change soon.

One way of preventing a catastrophe could be by developing an “anti-nuclear shield,” which would simply be a highly effective form of air and missile defense (e.g., BMD). But such a shield would have to guarantee that *every* nuclear weapon is intercepted due to the destructive power of just one delivered bomb. Several European countries are developing plans for a more robust European air and missile defense system,¹⁰³ but these plans do not constitute a “European anti-nuclear shield,” because no foreseeable technology can provide this kind of capability. In that sense, European investments in missile defense systems only constitute a defense against a conventional or very limited nuclear strike—such missile defenses cannot repel an attack to any meaningful extent in the event of a full-on Russia-West nuclear exchange. As per official data, the NATO BMD system does have the possibility to “take appropriate and timely action, if necessary, to respond to a ballistic missile” strike.¹⁰⁴ Nevertheless, unlike conventional weapons, the destructive power of which is minor compared to strategic nuclear missiles, a BMD must be able to neutralize an incoming missile with 100 percent certainty. While one missile would probably not lead to a full nuclear exchange, it could inflict unacceptable damage and thus significantly increase the risk of further nuclear escalation. However, none of this might constitute an effective defense against a nuclear arsenal as large and sophisticated as that of Russia—the speed and number of Russian IBCMs is simply too great to counter. Hence, nuclear weapons pose a unique threat and play a special role in international security relations; a role that must be considered when discussing defensive nuclear capabilities.

From the perspective of “strategic balancing,” the European investments in missile technologies and even missile defenses should be in-

103. “Germany: Background,” *Missile Defense Advocacy Alliance*, October 14, 2022, https://missiledefenseadvocacy.org/intl_cooperation/germany/.

104. NATO Ballistic Missile Defence – factsheet,” *North Atlantic Treaty Organization*, July 2016, https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2016_07/20160630_1607-factsheet-bmd-en.pdf.

terpreted as an opportunity and future avenue for European countries to find a “voice” when dealing with nuclear security issues. However insignificant it might be, this voice is important for Europe due to the aforementioned low degree of collective European agency in the nuclear domain. The nuclear missile sites in Poland and Romania might not be currently able to counter a large nuclear strike, whether intentional or in the aftermath of miscalculations or an accident, but together with the sharing agreements, they associate Europe with nuclear deterrence. In that sense, coupling Europe and the US together substantiates the US extended deterrence, which remains important for European security.

In addition, the debate and eventual implementation of such systems might create further tensions and risks turning into a self-fulfilling prophecy. Worst case, it might further boost an already existing arms race or increase the likelihood of a pre-emptive nuclear strike. In other words, discussions of anti-nuclear BMDs are paradoxical in relation to creating a more secure Europe.

4.3. Instability Management

The developments outlined in this report, including the war in Ukraine, create enormous repercussions in terms of instability that severely reduce European security. Recent Russian threats of using nuclear weapons, likely the tactical nukes designed for battlefield use,¹⁰⁵ makes *managing instability*, both in terms of *crisis instability* and *arms race instability*, crucial. This is likely to be picked up by European powers in future nuclear debates. Managing instability refers to *diplomatic steps to build mutual security, on the one side, while also establishing binding agreements to enhance transparency and stability on the other*. For Europe, achieving security could mean the *greater regulation of both tactical and strategic nuclear weapons*. Fears of Putin’s actual use of tactical nukes on the battlefield might well likely increase European interest in regulating low-yield nuclear weapons to a larger extent than the US might be interested

105. Liviu Horovitz and Lydia Wachs, “Russia’s Nuclear Threats in the War against Ukraine,” *SWP Comment* (Berlin, German Institute for International and Security Affairs, April 2022).

in given the safe geographical position of the latter. To get to that end, the achievement of regulatory regimes is usually preceded by *diplomatic steps* and *agreements* that can ensure the reduction of arsenals while *confidence-building measures* between the Euro-Atlantic countries, Russia, and China seem like a crucial prerequisite to getting them commit to non-use principles. In their latest doctrines, Russia, the US, and the UK all allow for the use of nuclear weapons to retaliate against non-nuclear strikes.¹⁰⁶ Even more concerning in the longer term is the revealed Russian willingness to engage in armed conflicts with neighboring countries in their declared sphere of influence. In this light, the fear of further Russian expansion into the Western sphere of influence is likely to be of great concern in future nuclear debates. Although not feasible at the moment, the Vienna Document (FSC.DEC/14/11) on military confidence building between OSCE countries could offer a legal starting point for establishing confidence-building measures in a long-term perspective. Both Germany and the UK are likely to focus more on this in a future when intense fighting in Ukraine has ceased. In times of increased inter-superpower tension, the CND movement in the UK tends to receive more public support. The UK also sees itself as a country that has taken a leading approach to nuclear disarmament.¹⁰⁷ For the time being, the support for the war remains high among Western populations, but support might fade as war fatigue increases or if the conflict freezes in unfavorable terms for the Ukrainians.

A second element of managing instability has to do with the lack of *arms race stability*, which can be largely blamed on the *erosion of control regimes* and the *quest for power*. A nuclear attack could also occur due to possible miscalculations and false warnings, and new cyber technologies exacerbate this risk.¹⁰⁸ A positive effect could also come from stabilizing and updating the eroding arms control regimes, including the control of new technologies, intermediate range missiles, conventional weapons,

106. Vladimir Isachenkov, "New Russian Policy Allows Use of Atomic Weapons against Non-Nuclear Strike," *Defence News*, June 2, 2020.

107. UK Integrated Review 2021, 78.

108. European Leadership Network, "Statement by the Euro-Atlantic Security Leadership Group: Advancing Strategic Stability in the Euro-Atlantic Region," June 6, 2021, <https://www.europeanleadershipnetwork.org/group-statement/statement-by-the-euro-atlantic-security-leadership-group-easlg-advancing-strategic-stability-in-the-euro-atlantic-region-2021-and-beyond/>.

verification measures, and concrete punishment provisions in nuclear treaties.

In the new nuclear age, another open question for European powers is *how to re-activate arms control regimes* or establish new ones that could also include China and consider new technological aspects in an attempt at ensuring that countries remain in command and control of their nuclear arsenals;¹⁰⁹ especially in the quest for increased European strategic autonomy. Due to heightened cyberattacks and acts of sabotage, nuclear states will very likely either focus more on the regulation of new technologies or decide to compete over them. In a low-trust environment, the latter might seem more likely. New technologies intensify both crisis stability and arms race. They also aggravate the risks of a nuclear attack by reducing reaction times and raise questions regarding the retaliation logics that are important to maintain stability. The increasing entanglement of nuclear and non-nuclear technologies, cross-domain capabilities, and dual use technologies therefore either compels the regulation of non-nuclear strategic weapons to ensure further sustainable reductions of nuclear weapons or can lead to increased competition.¹¹⁰

However, the limited impact of the EU in the Open Skies Treaty framework offers little hope that it might have the strategic capacity to persuade major powers. Nonetheless, among the analyzed countries, Germany is expected to have increased interests in strengthening institutional arms control regimes in the future. In this regard, the country has an established nuclear policy expertise, with advanced knowledge ranging from institutional designs on how to advance concrete diplomatic steps to the implementation of verification mechanisms. Conversely, Germany has very few nuclear capabilities, which makes it difficult to see why a nuclear-armed state would negotiate with it.

109. European Leadership Network, “Statement.”

110. Körber Stiftung, *Körber Strategic Stability Initiative. Digital Working Sessions I-III*, 2021, https://ifsh.de/file/research/project_documents/20200817_KSSI_Summary_DWS_I-III.pdf.

4.4. A Future “No First Use” Policy?

A “No First Use” (NFU) principle involves commitment not to use nuclear weapons pre-emptively, but instead only for deterrence or in response to an actual attack. This would imply the use of nuclear weapons only for deterrence and never for actual warfighting. In the context of the US nuclear policy, an NFU policy is not the same as a “sole purpose” policy (see also Text box 1). A “sole” purpose policy means a policy in which nuclear weapons are utilized *only* for deterring nuclear aggressions. Declaring a sole purpose policy means that nuclear weapons cannot be used for deterring conventional, biological, cyber, or other types of attacks, but only as a response to a nuclear attack. Commitment to both sole purpose or NFU policy is important because it appears as a viable practice leading to the implementation of Article VI of the Non-Proliferation Treaty of 1968, envisaging “a treaty on general and complete disarmament under strict and effective international control,” which is the most important nuclear-disarmament-binding international legal provision to which the P5 have committed.

In the light of the ongoing war in Ukraine, however, any signs of a “softer” Western approach are improbable, which renders any movement toward an NFU policy unlikely for the time being. To the contrary, all major nuclear states are moving away from NFU policies, either by amending their declaratory policy or their posture/behaviors (see Text box 3 regarding US Nuclear Posture Review). However, even though the current trust levels in international politics between Russia/China and the collective West are historically low (and the expectancy of an NFU therefore not presently feasible), touching upon the ramifications of NFU in the future is not necessarily irrelevant.

Text box 3: US Nuclear Posture Reviews¹¹¹

Every US administration since the end of the Cold War has issued its own revised nuclear posture review (NPR). The previous 2018 NPR by the Trump administration was a return to great power competition, with an increased focus on nuclear modernization instead of promoting arms control measures.

The Biden administration published its 2022 NPR in October 2022, which affirms the following roles for nuclear weapons: to deter strategic attacks, to assure allies and partners, and to achieve US objectives if deterrence fails. At the same time Biden is known for his support in favor of a “sole purpose” strategy, and because of a possible change in US nuclear posture and the ongoing war in Ukraine, this NPR was anticipated with more excitement than usually.

Previous discussions of whether the Biden Administration would adopt a “sole purpose” policy have clearly weakened due to the Russian aggressions in Ukraine along with recent Chinese behavior. Moreover, because the possible realization that such a policy would meet strong congressional opposition and prove controversial among the public, neither “sole purpose” nor even “no first use” is expected to be part of the US nuclear debate to come.

The US has embraced a continuation of its “flexible deterrence” or “calculated ambiguity” policy practices since the Cold War era. An NFU policy would diminish the risk of miscalculations and possible security dilemmas but might nonetheless jeopardize the security of European allies,¹¹² especially if not adopted by all nuclear states. The US committing to a “sole purpose” policy in the future (however unexpected at the moment) would have implications for the force structure that is used in response to a potential attack. A non-nuclear attack would involve a different type of force structure and planning than in the case of a nuclear attack. It would increase the probability of non-nuclear responses, thereby reducing the risk of escalations. Although the two principles

111. See IISS, “The US Nuclear Posture Review in limbo,” *Strategic Comments* 28, no. 4 (2022), v-vi.

112. Amy F. Woolf, “U.S. Nuclear Weapons Policy: Considering “No First Use,” *Congressional Research Service Insight*, IN10553, Version 11. 2022, 2.

might have different meanings, with the NFU implying an ex-ante constraint of not striking first, the sole purpose principle does not necessarily preclude striking first.¹¹³ The adoption of an NFU policy would eliminate the option of a pre-emptive nuclear attack. Slightly different, the adoption of a sole purpose policy would eliminate the opportunity to respond with nuclear weapons to a conventional or otherwise non-nuclear attack. Denmark has hitherto been a relatively important strategic member of NATO, excelling in reliability and credibility. However, Denmark is not part of the NATO nuclear sharing mechanisms and does not host any US nuclear weaponry on its territory. Deterrence of an armed aggression and commitments to a “never again a 9th of April”¹¹⁴ were major justifications for the small country to drop neutrality and join NATO in 1949. Thus, any Danish reaction to a possible NFU/sole purpose declaration should be viewed in the light of its implications for the quality and efficiency of deterrence, both in relation to P5 and non-P5 nuclear states.

Consistently and openly, France is opposed to adopting an NFU or sole purpose doctrine, as doing so might weaken the overall NATO deterrent and embolden conventional-level aggressions. Internal debate in the US¹¹⁵ about NFU or sole purpose will likely diminish, even after the war in Ukraine reaches a less intense phase, since rivalry with China also makes the NFU debate less likely.

The NFU debate is eloquent for the different national approaches that form the difficult strategic context within which a common nuclear posture could manifest itself. This is the topic for the next and final section of this chapter.

113. Adam Mount, *What Is the Sole Purpose of U.S. Nuclear Weapons?* (Washington: Federation of American Scientists, September 2021). See also: Ankit Panda and Vipin Narang, “Sole Purpose Is Not No First Use: Nuclear Weapons and Declaratory Policy,” *War on the Rocks*, February 22, 2021.

114. Hitler invaded and conquered Denmark on April 9, 1940.

115. Greg Hadley, “55 Democrats Urge Biden to Adopt ‘No First Use’ Nuclear Policy,” *Air & Space Forces Magazine*, January 26, 2022.

4.5. European Voices in the Nuclear Order

The heterogeneous nuclear postures of European countries due to different strategic cultures, strategic aims, and levels of ambition are likely to continue to prevent the EU from actuating a common nuclear posture beyond reliance on NATO deterrence.

As mentioned, Germany has traditionally embraced a policy of disarmament since the end of World War II. Nevertheless, West Germany had a very large standing army and pursued a deliberately ambiguous policy under Adenauer regarding its future nuclear ambitions. Post-Cold War, the governments led by the Christian Democrat Party have revealed new levels of transatlanticism, but the discourse on deterrence and nuclear policy has advanced little. According to recent opinion polls, in the context of the Trump administration, many Germans have lost faith in US credibility—although European attitudes are generally linked to who is in office at any particular time; that is, European publics are more favorably inclined to Biden and probably see the US as more reliable as a result.

There have been very few path-breaking nuclear policy debates in the last decade. This might change in the context of the *Zeitenwende*, however, and the future German level of ambition has yet to present itself in the upcoming national security strategy.

Both France and the UK have recently increased their nuclear ambitions. In the case of the UK, the “Global Britain” ambitions involve substantive enhancements in its nuclear posture, including an increase in the number of nuclear warheads and adoption of a secrecy policy aimed at enhancing “strategic ambiguity” (UK Integrated Review 2021). Post-Brexit, despite the exposure to common territorial threats with EU countries, British security and defense cooperation is likely to be closer with the US than with the EU. In the case of France, the country has embraced new ambitions in the security and defense realm under President Macron. Nonetheless, despite its thriving discourse and projection of strategic autonomy, a possible future *Eurodeterrent* remains far from being articulated. Furthermore, there is a lack of any clear policy toward Russia. The swift and resolute EU actions toward Russia early in the war, as expressed in the use of the European Peace Facility, point to greater EU agency on security matters. When it comes to the nuclear domain, however, no such plans exist—likely because nuclear security is a core NATO task and therefore done by NATO and the US alone.

The heterogeneous preferences of European countries induce a somewhat unclear positioning of the EU on NATO deterrence in the context of strategic autonomy. Moreover, the civil-military and mil-to-mil channels of communications, which are especially relevant in a context of war, seem to be unclear. The NATO-Russia channel has been dysfunctional for years. This is further burdening the equation in the policy toward Russia, and it adds to the European dependence on NATO while simultaneously weakening its strategic autonomy agenda.

Cooperation in the nuclear domain is not usually among the items addressed in EU-NATO joint declarations. The 2018 declaration mentions increased cooperation between both organizations to strengthen resilience regarding nuclear risks, but little else is happening.¹¹⁶ The NATO Nuclear Planning Group surfaces as the most important body for European countries to advance their own preferences—but from a national and not EU collective perspective. All European countries except France have a seat in the NATO NPG. The challenge lies in the fact that the nuclear policy community in the individual allied capitals is often very small and often not at liberty to address deterrence matters in the public domain.¹¹⁷ This likely reduces the possibility of a cross-European strategic culture that could possibly change NATO's nuclear posture, simply because the environment for upscaling the nuclear domain is not adequately present. So in order to develop strategic autonomy for Europe, European non-nuclear weapon states such as Germany might seek to engage more actively in the nuclear debate.

In the context of the war in Ukraine, it is uncertain whether greater European agency in nuclear matters might change Putin's calculations regarding a possible nuclear strike. The EU has no deterrence policy of its own. EU defense is de jure and de facto provided by NATO and the standing armies of the European membership countries. However, as Washington is on retreat and looking eastward, a stronger European voice might be considered a condition of security in future nuclear debates.

116. "Relations with the European Union," *North Atlantic Treaty Organization*, January 12, 2023, https://www.nato.int/cps/en/natohq/topics_49217.htm.

117. Mattelaer, *Rethinking Nuclear Deterrence*.

5

Conclusions and Recommendations

This report has shed light on the global return of nuclear weapons and analyzed the European consequences thereof. This return is characterized by many intertwining trends and tendencies. These trends range from new technologies potentially undermining existing nuclear deterrence logics to heterogeneous national nuclear postures and thinking within Europe and potentially between Europe and the US. Against the background of heightened tensions, peer competition, nuclear multipolarity, the global return of nuclear weapons will be part of a major redefinition of power balances and the relationships between great powers in the future. Due to the changing global normative, political, and technological context, the nuclear dimension will inevitably come to the forefront of European attention in the near future.

Even after the war in Ukraine is over, strategic competition is likely to continue in Europe and abroad. Arms control and verification schemes will be lacking, and there will be very little trust between the West and Russia and/or Russia-backing countries like China. Europe and Denmark must prepare for this situation by deliberating on the most effective way to cope with this future and begin to discuss these issues with partners and allies. In that sense, this report suggests that “due diligence” in the nuclear debate is of great importance, also for small European states like Denmark.

Nuclear weapons are the ultimate symbol of great power status. A re-emphasis on nuclear issues thus also changes international power relations; the most obvious being that the influence of non-nuclear states will wane. This is already the case in an increasing great power competi-

tion environment, but the nuclear dimension of this competition raises the bar further. Put bluntly: To have a say in the global order, states must be invited to the table—and nuclear weapons are the entry ticket. Even the two European nuclear powers (UK and France) often find themselves lacking the potency to change the status quo.

Europe is thus subject to a security predicament, caught between Russia and the US on the one side and with an active war in its immediate neighborhood, and tensions and peer competition between China and the US on the other side. To make things even more alarming, Russia deliberately uses its nuclear weapons to both deter and divide the West in its war against Ukraine. European actors—including the EU—cannot deal with nuclear power issues on an equal footing with Russia and the US. Nuclear security issues are dealt with in the framework of NATO alone.

At the same time, the world is entering what many describe as a new age of nuclear weapons that questions traditional logics of deterrence for the nuclear powers as well as within Europe—but also within NATO. As a nuclear alliance, the collective NATO defense rests on the assumption that nuclear deterrence holds. The nuclear return—and with it the questioning of existing deterrence doctrine—should therefore spark new debate and increased concern, also for European NATO member states.

We anticipate changes in how European governments address the nuclear issue in the years to come. Nuclear issues have been both changed and intensified by developments driven primarily by the US and Russia. The individual European countries will benefit from further deliberation on how to position themselves in relation to these issues. While they have been out of sight (and therefore out of mind) for years, as this report showed, they are now re-emerging on strategic and technological levels. And they need to be addressed. Despite strategic developments, Europe is not sufficiently debating the role for nuclear weapons in the security of the continent. There are several explanations for why this is so. First, Europe has no viable alternatives to the US nuclear security guarantees and extended deterrence. Second, heterogeneous nuclear postures and strategic nuclear thinking—together with the nuclear aversions in the general public of many European countries—work against a more active engagement with nuclear issues in Europe.

Our analysis shows how several key thematic clusters emerge that will likely shape European nuclear debates in the third nuclear age. *The*

meaning of deterrence in an uncertain future points to the increasing role of strategic non-nuclear weapons that might present non-nuclear states with opportunities to affect nuclear balances, at least perhaps locally. *Preventing a nuclear catastrophe, whether in the form of an attack, nuclear strike in the aftermath of a miscalculation, or accident*, also addresses the increasing technological advances in a future where anti-missile defense systems are of increasing importance, with the risk of sparking a new arms race given volatility of soft-law incentives. For Europe, *instability management* requires diplomatic steps toward building mutual security by reinstating verification measures, such as the Vienna Document. Finally, *European voices in the nuclear order* point out the difficulties of a common European nuclear posture.

For small European countries like Denmark, these key thematic issues might seem intangible and somewhat difficult to use to craft actual policy. However, smaller, non-nuclear states like Denmark will also increasingly be expected to take a stand and formulate policy positions on nuclear topics—and perhaps in very small ways, these policy positions may influence broader nuclear thinking. With the key thematic issues as guiding principles, the report points to specific recommendations for Denmark.

5.1. Recommendations

While we acknowledge that the meaning of nuclear policy is impugned within and across European governments, the time is ripe for Europeans to think more about nuclear policy.

Logically, if European countries lack agency in the nuclear realm, small states like Denmark lack it even more; however, this does not mean that Denmark has no interest in contributing whatever little it can to shaping the European nuclear future.

With this caveat in mind, based on the above analysis, we derive the recommendations below for Danish and other European policymakers on three topics. These recommendations should be seen as impulses for further reflections and considerations regarding nuclear issues, and we provide specific ideas related to each of the three overall recommendations:

- Increase public and parliamentary debate on nuclear issues in Denmark
- Focus on strategic issues in Danish defense planning
- Options for Danish diplomacy on nuclear issues

5.2. Increase public and parliamentary debate on nuclear issues in Denmark

An unfortunate side effect of the increasing importance of nuclear deliberations is that they will likely become even more secret. This undermines the potential for public deliberation on nuclear topics at the very time when they are most needed. Danish decision makers should bear in mind how to ensure public debate on nuclear topics, even if some measure of secrecy is necessary. Ways of doing so include integrating the Folketing in nuclear issues by:

- Establishing a working group in Parliament on nuclear issues or making nuclear issues a recurring topic (e.g., in the NATO Parliamentary Delegation)
- Conducting regular and confidential briefings in select committees (e.g., defense and/or foreign policy committee)
- Engaging with European experts by further liaising with parliaments in countries that are parties to the NATO nuclear sharing agreement (e.g., Germany, the Netherlands)

5.3. Focus on strategic issues in Danish defense planning

The possession of nuclear weapons remains limited to the great powers. Still, with the increasing importance of strategic non-nuclear weapons (SNNW), some of the (future) inventory of the Danish Armed Forces may have (local) effects proving them strategically relevant. This is a novelty for the Danish Armed Forces, and awareness that the new technologies affordable by the Danish Armed Forces can play a strategic role must be strengthened by:

- Recognizing the strategic effects of Danish conventional procurement decisions—especially if made in conjunction/cooperation with allies and partners
- Assessing the (local) deterrence and vulnerability effects of Danish procurement decisions (e.g., long-range strike missiles)
- Contemplating the effects of potentially increasing the Danish contribution to NATO's mixed deterrence posture (e.g., a Danish contribution to NATO ballistic missile defense capability)

5.4. Options for Danish diplomacy on nuclear issues

Current tendencies paint a bleak picture regarding future arms control agreements and other diplomatic efforts aimed at managing the role of nuclear weapons. Still, Denmark, as both a signatory to the Non-Proliferation Treaty and as member and beneficiary of NATO's nuclear deterrent, has an interest in as well as an obligation to working for increased strategic stability and nuclear security. Initiatives supporting such aims could include:

- Promoting diplomatic discussions on nuclear issues among small non-nuclear NATO states that share Denmark's geopolitical position, while simultaneously being exposed to the erosion of strategic stability in Europe. This would provide a venue for knowledge exchange and a forum for deliberating stabilizing initiatives among likeminded countries.
- Engaging global partners to build momentum and share the responsibility for renewed nuclear arms control agreements and regimes with wider reach when the conditions become more conducive to reengagement between the US, Russia, and China on strategic stability issues.
- Considering the use of Denmark's prospective 2025-26 seat at the UN Security Council, which precedes the next Non-Proliferation Treaty Review Conference in 2027 to promote renewed arms control efforts.

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List of References

- Acton, James M. "Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War." *International Security* 43, no. 1 (2018), 56-99.
- Acton, James M. "Reclaiming Strategic Stability." In *Strategic Stability: Contending Interpretations*, edited by Elbridge A. Colby and Michael S. Gerson Carlisle: US Army War College Press, 2013.
- Afina, Yasmin, Calum Inverarity, and Beyza Unal. *Ensuring Cyber Resilience in NATO's Command, Control and Communication Systems*. London: Chatham House, the Royal Institute of International Affairs, July 2020.
- Allen, Aaron. *Europe and the Future of Nuclear Strategic Stability*. Washington, Center for European Policy Analysis, December 2021.
- Arms Control Association. "The European Phased Adaptive Approach at a Glance." Accessed March 9, 2023. <https://www.armscontrol.org/factsheets/Phasedadaptiveapproach>.
- Arms Control Association. "U.S. Nuclear Modernization Programs." Accessed March 9, 2023. <https://www.armscontrol.org/factsheets/USNuclearModernization>.
- Arms Control Association. "US Russian Nuclear Arms Control Agreements at a Glance." Accessed March 9, 2023. <https://www.armscontrol.org/factsheets/USRussiaNuclearAgreements>.
- Arndt, Clara, Liviu Horovitz, Claudia Major, Jonas Schneider, and Lydia Wachs. *Euro-Atlantic Concerns regarding a US "Sole Purpose" Policy*. Berlin: German Institute for International and Security Affairs, December 4, 2021.
- Bhaskar, Uday C. "Nuclear Weapons and No First Use: Need for Strategic Restraint." *Strategic Analysis* XXII, no. 10 (1999).
- Borger, Julian, and Dan Sabbagh. "UK Military Vaults Upgraded to Store New US Nuclear Weapons." *The Guardian*, April 12, 2022.
- Boutwell, Jeffrey. *The German Nuclear Dilemma*. Cornell: Cornell University Press, 1990.

- Brustlein, Corentin. *The Erosion of Strategic Stability and the Future of Arms Control in Europe*. Paris: French Institute of International Relations, November 2018.
- Colby, Elbridge A., and Michael S. Gerson. *Strategic Stability: Contending Interpretations*. Carlisle: US Army War College Press, 2013.
- Colby, Elbridge A. "Defining Strategic Stability: Reconciling Stability and Deterrence." In *Strategic Stability: Contending Interpretations*, edited by Elbridge A. Colby and Michael S. Gerson. Carlisle: US Army War College Press, 2013.
- Conrad, Naomi. "In Germany, Gridlock over Nuclear-Capable Fighter Jet." *Deutsche Welle*, October 1, 2020.
- Danish State Department. Press Meeting in Danish State Department, 6 March 2022. The Conservative Party leader Søren Pape and Jakob Elleman Jensen, party leader of Venstre, Denmark's Liberal Party. <https://www.stm.dk/presse/pressemoedearkiv/pressemoede-soendag-den-6-marts-2022/>.
- Dasgupta, Prateek. "Why Did France Leave NATO at the Height of the Cold War?" *Medium*, April 26, 2022.
- Episkopos, Mark. "Russia's Crazy Nuclear War Strategy: Escalation...to De-escalate?" *The National Interest*, March 19, 2021.
- Erästö, Tytti. *Between the Shield and the Sword: NATO's Overlooked Missile Defense Dilemma*. San Francisco: Ploughshares Fund Study Report No. 3, July 2017.
- European Council. "A Strategic Compass for a Stronger EU Security and Defence in the Next Decade." Accessed March 9, 2023. <https://www.consilium.europa.eu/en/press/press-releases/2022/03/21/a-strategic-compass-for-a-stronger-eu-security-and-defence-in-the-next-decade/>.
- European Leadership Network. "Statement by the Euro-Atlantic Security Leadership Group: Advancing Strategic Stability in the Euro-Atlantic Region." Accessed March 9, 2023. <https://www.europeanleadershipnetwork.org/group-statement/statement-by-the-euro-atlantic-security-leadership-group-ea-slg-advancing-strategic-stability-in-the-euro-atlantic-region-2021-and-beyond/>.
- European Research Council Project. "Towards a Third Nuclear Age: Strategic Conventional Weapons and the Next Revolution in the Global Nuclear Order (NUCLEARREV)." Accessed March 9 2023. <https://thethirdnuclearage.com/>.
- Ewers-Peters, Nele M., and Cornelia Baciu. "Differentiated Integration and Role Conceptions in Multilateral Security Orders: A Comparative Study of France, Germany, Ireland and Romania." *Defence Studies* 22, no. 4 (2022): 666-8.
- Fasola, Nicolo. "The Shaky Grounds of Russia's 'Escalate to De-Escalate' Doctrine." In *Challenges to NATO's Nuclear Strategy*, edited by Andrea Gilli, 3-16. NDC Research Paper No 22, NATO Defence College, 2021.
- Futter, Andrew. *The United Kingdom and the Future of Nuclear Weapons*. London: Rowman and Littlefield 2016.

- Futter, Andrew. "Strategic Non-Nuclear Weapons and the Onset of a Third Nuclear Age." *European Journal of International Security* 6, no. 3 (February 2021): 1-21.
- Gilli, Andrea. (ed.) *Challenges to NATO's Nuclear Strategy*. NDC Research Paper No 22, NATO Defence College, 27-34.
- Gottemoeller, Rose. "Russia Is Updating Their Nuclear Weapons: What Does That Mean for the Rest of Us?" *Carnegie Endowment for International Peace*, January 29, 2020.
- Government of the United Kingdom. *Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy*. London: Government of the United Kingdom, March 2021.
- Government of the United Kingdom. *The Future of the United Kingdom's Nuclear Deterrent*. London: Government of the United Kingdom, December 2006.
- Government of the United Kingdom. *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*. London: Government of the United Kingdom, October 2010.
- Greenham Common Protest: The National Archives. Accessed March 9, 2023. <https://www.nationalarchives.gov.uk/education/resources/cold-war-on-file/greenham-common-protest/>.
- Gregory, James. "Putin: Russia to Station Nuclear Weapons in Belarus – BBC News." Accessed March 27, 2023, BBC News. <https://www.bbc.com/news/world-europe-65077687>.
- Hadley, Greg. "55 Democrats Urge Biden to Adopt 'No First Use' Nuclear Policy." *Air & Space Forces Magazine*, January 26, 2022.
- Hautecouverture, Benjamin, Emmanuelle Maitre, and Bruno Tertrais. *The Future of Strategic Stability*. Paris, Fondation pour la Recherche Stratégique No. 7, March 2021.
- Horowitz, Liviu, and Lydia Wachs. *Russia's Nuclear Threats in the War against Ukraine, SWP Comment*. Berlin: German Institute for International and Security Affairs, April 2022.
- Isachenkov, Vladimir. "New Russian Policy Allows Use of Atomic Weapons against Non-Nuclear Strike." *Defence News*, June 2, 2020.
- Isachenkov, Vladimir. "Putin Signs Bill to Suspend Last Nuclear Arms Pact with US." *AP News*. Accessed March 9 2023. <https://apnews.com/article/russia-us-nuclear-pact-suspension-ukraine-putin-c579b7562fb816d899e037d1d271a8c5>.
- IISS, "The US Nuclear Posture Review in limbo." *Strategic Comments* 28, no. 4 (2022), v-vi.
- Johnson, James. "Inadvertent Escalation in the Age of Intelligence Machines: A New Model for Nuclear Risk in the Digital Age." *European Journal of International Security* 7, no. 3.
- Kristensen, Hans M., and Matt Korda. "United Kingdom Nuclear Weapons 2021." In *Bulletin of the Atomic Scientists* (2021). doi: 10.1080/00963402.2021.1912309.

- Kristensen, Kristian Søb, and Niels Byrjalsen. *Efter freden: Ukrainekrigens betydning for dansk og europæisk sikkerhed*. Copenhagen: Centre for Military Studies, 2022.
- Kunertova, Dominika. *New Missiles, Eroding Norms: European Options after the Demise of the INF Treaty*. CMS report. Copenhagen: Centre for Military Studies, April 2021.
- Körber Stiftung. *Körber Strategic Stability Initiative. Digital Working Sessions I-III*, 2021. https://ifsh.de/file/research/project_documents/20200817_KSSI_Summary_DWS_I-III.pdf.
- Lunn, Simon. "NATO Nuclear Policy Reflections on Lisbon and Looking Ahead to the DDP." *Nuclear Threat Initiative*, 2011.
- Lunn, Simon, and Ian Kearns. *ELN Background Brief NATO Nuclear Policy after Lisbon. The Summit Documents and Way Ahead*. Report prepared for the Meeting of the European Leadership Network. (January 2011). <https://www.europeanleadershipnetwork.org/wp-content/uploads/2017/10/NATO-Paper-by-Ian-Kearns-and-Simon-Lunn.pdf>.
- Lutsch, Andreas. *The Persistent Legacy. Germany's Place in the Nuclear Order*. NPIHP Working Paper. Washington: Woodrow Wilson International Center for Scholars, May 2015.
- Macias, Amanda. "China Is Rapidly Expanding Its Nuclear Arsenal, Pentagon Says in New Report." *CNBC*, November 3, 2021.
- Maitre, Emmanuelle. *Nuclear Deterrence in Europe: Points of Convergence, Singularities and Prospects for Cooperation*. Paris, Foundation pour la Recherche Stratégique, January, 2021.
- Maitre, Emmanuelle. *NATO, the F35 and European Nuclear Dilemmas*. Paris Foundation pour la Recherche Stratégique, February 2016.
- Mattelaer, Alexander. *Rethinking Nuclear Deterrence: A European Perspective*. Brussels: CSDS Policy Brief, Brussels School of Governance—Centre for Security, Diplomacy and Strategy, May 2022.
- Mead, Walter R. "The Return of Geopolitics: The Revenge of the Revisionist Powers." *Foreign Affairs* 93, no. 3 (May/June, 2014): 69-74, 75-79.
- Military.com. "Why Russia's Hypersonic Missiles Can't Be Seen on Radar." Accessed March 9, 2023. <https://www.military.com/equipment/weapons/why-russias-hypersonic-missiles-cant-be-seen-radar.html>.
- Mount, Adam. *What Is the Sole Purpose of U.S. Nuclear Weapons?* Washington: Federation of American Scientists, September 2021.
- Mills, Claire. *Nuclear Weapons at a Glance: France*. London: The House of Commons Library, July 2022.
- Missile Defense Advocacy Alliance. "Germany: Background." accessed March 9, 2023. https://missiledefenseadvocacy.org/intl_cooperation/germany/.
- Müller, Harald. *Nuclear Weapons and German Interests: An Attempt at Redefinition*. Peace Research Institute Frankfurt (PRIF), report no. 55/2000.

- Nielsen, Kristian L. "Beware the Folly of Pride: Europe, Trump and the Enduring Need for the Transatlantic Alliance." *L'Europe en Formation* 382, no. 1 (2017): 63-81.
- North Atlantic Treaty Organization (NATO). "NATO Ballistic Missile Defence: factsheet." Accessed March 9, 2023. https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2016_07/20160630_1607-factsheet-bmd-en.pdf.
- North Atlantic Treaty Organization (NATO). "NATO's Nuclear Deterrence Policy and Forces." Accessed, March 9, 2023. https://www.nato.int/cps/en/natohq/topics_50068.htm#:~:text=The%20fundamental%20purpose%20of%20NATO's,a%20world%20without%20nuclear%20weapons.
- North Atlantic Treaty Organization (NATO). "Relations with the European Union." Accessed March 9, 2023. https://www.nato.int/cps/en/natolive/topics_49217.htm.
- Olsen, B. Kim. "Zeitenwende." *Danish Institute for International Studies*, August 17, 2022.
- Onderco, Michal, and Michal Smetana. "German Views on US Nuclear Weapons in Europe: Public and Elite Perspectives." *European Security* 30, no. 4 (2021): 630-48.
- Panda, Ankit and Vipin Narang. "Sole Purpose Is Not No First Use: Nuclear Weapons and Declaratory Policy." *War on the Rocks*, February 22, 2021.
- Portela, Clara. "Weapons of Mass Debate – Spain: A Dispassionate Supporter of Nuclear Deterrence." *Institut Montaigne*, July 15, 2021.
- Rumer, Eugene. "The Primakov (Not Gerasimov) Doctrine in Action," Carnegie Endowment for International Peace, June 5, 2019.
- Salisbury, Daniel. "Seventy Years of British Nuclear Debates (a short overview)." In *The United Kingdom and the Future of Nuclear Weapons*, edited by Andrew Futter. London: Rowman and Littlefield, 2016.
- Sorg, Alexander. "Nuclear Weapons in Germany: Mitigating a Hypothetical End of the Nuclear-Sharing Arrangements." In *Challenges to NATO's Nuclear Strategy*, edited by Andrea Gilli, 27-34. NDC Research Paper No 22, NATO Defence College, December, 2021.
- Sprengrer, Sebastian. "Germany to Buy F-35 Warplanes for Nuclear Deterrence." *Defense News*, March 14, 2022.
- Tannenwald, Nina, and James M. Acton. *Meeting the Challenge of the New Nuclear Age*. Cambridge, MA: American Academy of Arts & Sciences, 2018.
- Tertrais, Bruno. *French Nuclear Deterrence Policy, Forces, and Future: A Handbook*. Paris: Fondation pour la Recherche Stratégique, February 2020.
- The French Government. *Defence and National Security Strategic Review 2017*, 6. Paris: The French Government, October 2017.
- The French Government. *The French White Paper on Defence and National Security*. Paris: The French Government, July 2008.
- HM Government, *Global Britain in a competitive age. The Integrated Review of Security, Defence, Development and Foreign Policy* (London, March 2021).

- Van Hoof, Paul, Lotje Boswinkel, and Tim Sweijs. *Shifting Sands of Strategic Stability: Towards a New Arms Control Agenda*. The Hague: The Hague Centre for Strategic Studies, February 2022.
- Vicente, Adérito. "European Nuclear Deterrence and Security Cooperation: Post-Brexit Relations and Challenges." In *Peace, Security and Defence Cooperation in Post-Brexit Europe – Risks and Opportunities*, edited by Cornelia-Adriana Baciu and John Doyle. Cham: Springer, 2019.
- Walton, C. Dale, and Colin S. Gray. "Looking beyond Cold Warriors and Nuclear Weapons." In *Strategic Stability: Contending Interpretations*, edited by Elbridge A. Colby and Michael S. Gerson. Carlisle: US Army War College Press, 2013.
- Woolf, Amy F. *U.S. Nuclear Weapons Policy: Considering "No First Use."* Congressional Research Service Insight. IN10553, Version 11. 2022.
- Wolf, Christopher. "These Countries Have Sent the Most Aid to Ukraine." U.S. News, February 24, 2023.
- YouGov. "What Should Happen to Trident at the End of Its Useful Life?" Accessed March 9, 2023. <https://yougov.co.uk/topics/economy/trackers/what-should-happen-to-trident-at-the-end-of-its-useful-life>.
- Yazigioglu, Ezgi. "A Look upon Turkey's Future Nuclear Weapons Policy." *Institut de Relations Internationales et Stratégiques*, September 25, 2019.
- Zala, Benjamin and Andrew Futter, "Strategic non-nuclear weapons and the onset of a Third Nuclear Age." *European Journal of International Security* 6, no. 3 (2021), 1-21.

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