



Nuclear deterrence in Europe: points of convergence, singularities and prospects for cooperation

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Nuclear deterrence in Europe: points of convergence, singularities and prospects for cooperation

Introduction

In February 2020, President Macron invited his European partners to create a "common strategic culture" and to better appreciate the role of the French nuclear deterrent. NATO, meanwhile, declares more than ever that it is a nuclear alliance. At the same time, an unprecedented debate is taking place in certain European non-nuclear states, where experts on strategic issues are openly highlighting the role played by nuclear deterrence strategies,¹ while others, on the contrary, are supporting the entry into force of the Treaty on the Prohibition of Nuclear Weapons. In a context of tension between the major powers and the collapse of arms control agreements, nuclear issues have therefore become more prominent in European strategic affairs over the last decade.

Paradoxically, the positions of European states (in the broader sense, including members of the European Union and NATO) on military nuclear issues are not always taken into account in more general reflections on a stronger common defence policy. For several years, many European states have supported the goal of strengthening collective defence mechanisms. The four years of the Trump administration have convinced some countries of the risks of over-dependence on the United States. These circumstances have spurred projects to promote a form of strategic autonomy in Europe, even if the various partners are struggling to agree on the meaning of the term. Meanwhile, at the industrial level, there are prospects for significant progress with a view to enhancing the capabilities of European countries.

The idea of a stronger European collective defence — within NATO, the EU or on a more *ad hoc* basis — is thus gradually gaining ground. In the background is the key question of nuclear deterrence. It is indeed difficult to agree on a shared vision of strategic risks and defence policies without a shared perspective on the issue of strategic deterrence. This paper seeks to review the underlying nuclear issues for all European states and to clarify their respective approaches. It seeks to identify the extent to which these different positions play a role in the strategies adopted by each state regarding defence, doctrine, capabilities and industry.

The note begins by reviewing the different situations in European states concerning nuclear weapons and the way in which deterrence policies are planned and implemented. It then

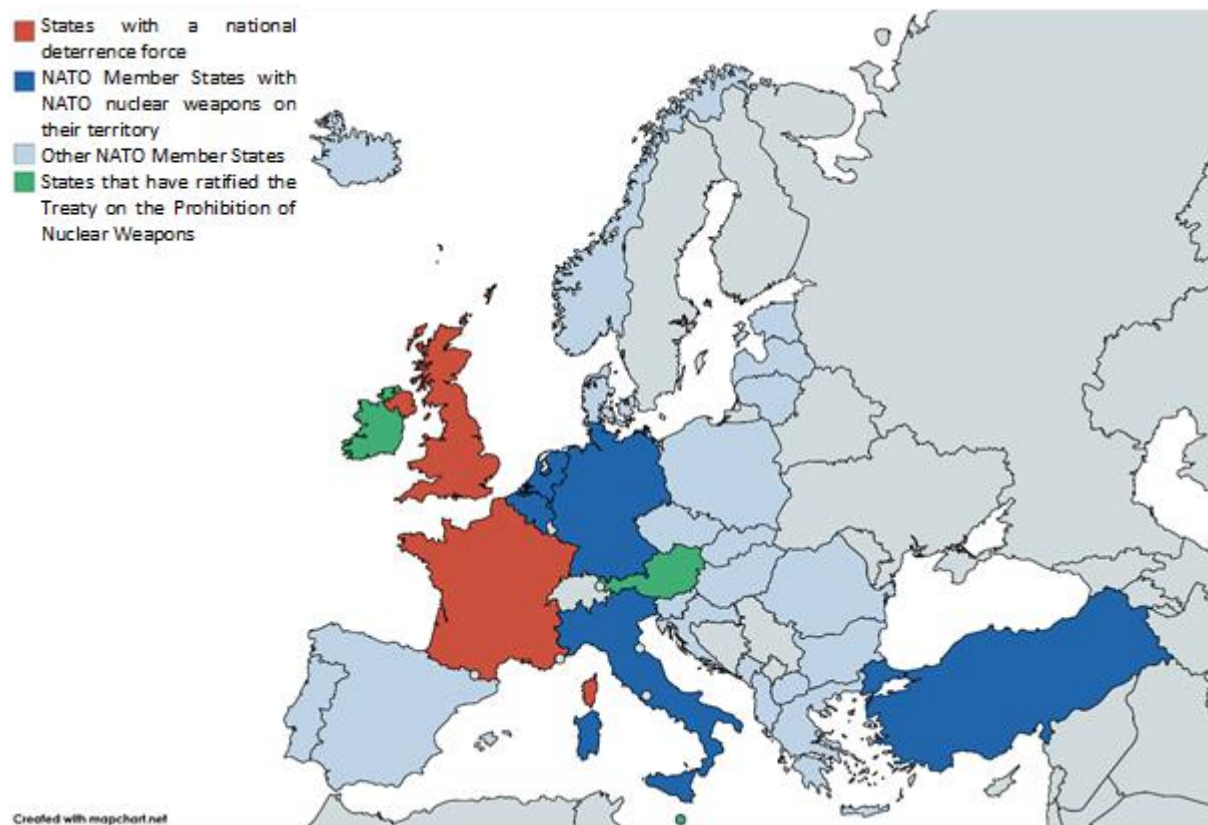
¹ Ulrich Kühn, Tristan Volpe, Bert Thompson, "Tracking the German Nuclear Debate," Carnegie Endowment for International Peace, updated 5th March 2020.

looks at the investments involved and the impact of these strategies on the defence sector as a whole. Finally, it highlights the main issues involved in perpetuating the nuclear deterrence strategies applied in Europe, particularly with respect to France and NATO.

1. Nuclear deterrence in Europe: a contrasting picture

1.1. *Different positions and singularities*

European territory, whether viewed from a geographical perspective or from the political perspective of the European Union, comprises multiple territories with regard to nuclear defence capabilities. States that share many security interests and policies have diametrically opposed views on the contribution of nuclear deterrence to their own security. As a result, these states made contrasting choices in this respect throughout the Cold War and they continue to follow diverging paths.



Broadly speaking, there are four categories of states. On the one hand, since the 1950s the UK and France have taken the view that their security can only be ensured by the possession of a purely national nuclear arsenal. While the security situation has changed since the end of the Cold War, both nations regularly declare that their nuclear forces are the ultimate guarantee of survival and cannot be called into question. Both states are recognized nuclear powers under the Nuclear Non-Proliferation Treaty (NPT). The French arsenal consists of a submarine component (four nuclear-powered ballistic missile submarines (SSBNs) operated by the Strategic Oceanic Force) and an airborne component (Rafale armed with ASMPA cruise missiles operated by the Strategic Air Forces and the Navy). On the British side, there

is only the oceanic leg, operated by the Royal Navy; a programme to replace the four SSBNs was launched in 2016.

For the other European states that are members of NATO, nuclear deterrence is a strategy implemented within the framework of NATO. The Alliance regularly reaffirms that "*as long as there are nuclear weapons in the world, NATO will remain a nuclear alliance.*"² Since the 1950s, the U.S. nuclear umbrella has resulted in the presence of nuclear weapons on the European continent. Five countries currently host these weapons, without this being officially acknowledged either in NATO strategies or by the countries themselves (Belgium, Germany, Italy, the Netherlands and Turkey). These countries are non-nuclear weapon states under the terms of the NPT and cannot therefore pursue an independent policy in this respect, as the weapons stationed on their territory are under the control of the U.S. armed forces. As members of NATO, these countries, like the other allies, therefore provide a form of indirect support for the broader deterrence strategy adopted in particular by the United States.

Outside the Atlantic Alliance, some states take the opposite view and consider that nuclear weapons pose a risk to their security, in particular because of the potential for accidental, unintended or unauthorised use or uncontrolled escalation. The ratification of the Treaty on the Prohibition of Nuclear Weapons (TPNW) by three EU Member States, namely Austria, Ireland and Malta, is the best illustration of this. It highlights their hostility to any defence policy based on nuclear weapons, a position which *de facto* eliminates any prospect of a common policy on this subject at European level.

Between these two postures, states such as Finland, Sweden or Switzerland represent an intermediate position, with a strong inclination in favour of disarmament but a current policy that tends to consider that nuclear deterrence can still play a beneficial role in strategic stability and in the security of the continent. This intermediate position includes a strong partnership with NATO and a refusal for the time being to sign the TPNW.³

1.2. An accepted role for NATO's extended deterrence

1.2.1. A policy that is regularly formalised and debated

While it was the subject of major debates and disagreements among allies until 2010, NATO's nuclear strategy is now relatively consensual. The participating states are showing increased support for it. Discussions at recent summits have tended to show a greater convergence of views among Member States on the role of deterrence and the way it ties in with other defence strategies (conventional, missile defence). The deterioration of the European strategic environment and, in particular, greater fears about Russian policy, are narrowing the gap between states wishing to make progress on disarmament and those more committed to nuclear deterrence. There is therefore a form of consensus on preserving the compromise between deterrence and disarmament, but also with the Alliance's arms control and non-proliferation policy.

² Warsaw Summit Communiqué issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Warsaw on 8-9 July 2016, 9th July 2016.

³ Andrea Berger, "Swiss and Swedish Inquiries on the Nuclear Ban Treaty," *Arms Control Wonk*, 22nd January 2019.

This posture is set out in several key documents, including the *Strategic Concept* adopted in 2010,⁴ which recalls the importance of nuclear deterrence for Alliance security and the aim for the allies to participate fully in collective defence planning on nuclear matters. Published two years later, the *Deterrence and Defence Posture Review* (DDPR) focuses on deterrence issues.⁵ Presented at the Chicago Summit, it describes nuclear deterrence as a core component of NATO's defence posture in complement to conventional and missile defence forces and at the lowest possible level.

These statements have been repeated with only minor variations at recent NATO summits, notably in Wales (2014), Warsaw (2016) and more recently in Brussels (2018). The Warsaw Summit communiqué expressly mentioned the role of nuclear weapons stationed in Europe, with an agreed formula ("*capabilities and infrastructure provided by the allies concerned.*")⁶ In light of questions about Russian doctrine, the communiqué recalled that "*any employment of nuclear weapons against NATO would fundamentally alter the nature of a conflict*"⁷ and that "*NATO has the capabilities and resolve to impose costs on an adversary that would be unacceptable and far outweigh the benefits that an adversary could hope to achieve.*"⁸ The text reflects a compromise between allies wishing to insist on the nuclear mission at a time of tensions with Moscow and those preferring to stick to the language agreed in the DDPR.⁹

1.2.2. Capabilities inside and outside Europe

NATO's deterrence is provided first and foremost by the US strategic arsenal, as the DDPR notes, stressing that "*the supreme guarantee of the security of the Allies is provided by the strategic nuclear forces of the Alliance, particularly those of the United States.*"¹⁰ According to language agreed since 1974, it is specified that "*the independent strategic nuclear forces of the United Kingdom and France, which have a deterrent role of their own, contribute to the overall deterrence and security of the Allies.*"¹¹

In addition, NATO also employs non-strategic capabilities as part of nuclear sharing arrangements.¹² This involves the deployment of 140 to 185 B61 nuclear weapons on European soil. Some of these weapons, stored in air bases in Belgium, Germany, the Netherlands, Italy and Turkey, can be carried by fighter-bombers belonging to those countries. Other states participate in NATO's nuclear mission by providing the Alliance with specialised conventional capabilities to support a nuclear attack, under the so-called SNOWCAT proce-

⁴ *Strategic Concept For the Defence and Security of The Members of the North Atlantic Treaty Organisation*, Adopted by Heads of State and Government in Lisbon, Active Engagement, Modern Defence, 29th November 2010.

⁵ *Deterrence and Defence Posture Review*, 20 May 2012, Press Release (2012) 063, 20th May 2012.

⁶ Warsaw Summit Communiqué issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Warsaw on 8th-9th July 2016, 9th July 2016.

⁷ *Ibid.*

⁸ *Ibid.*

⁹ Steve Andreasen, Isabelle Williams, Brian Rose, *op. cit.*

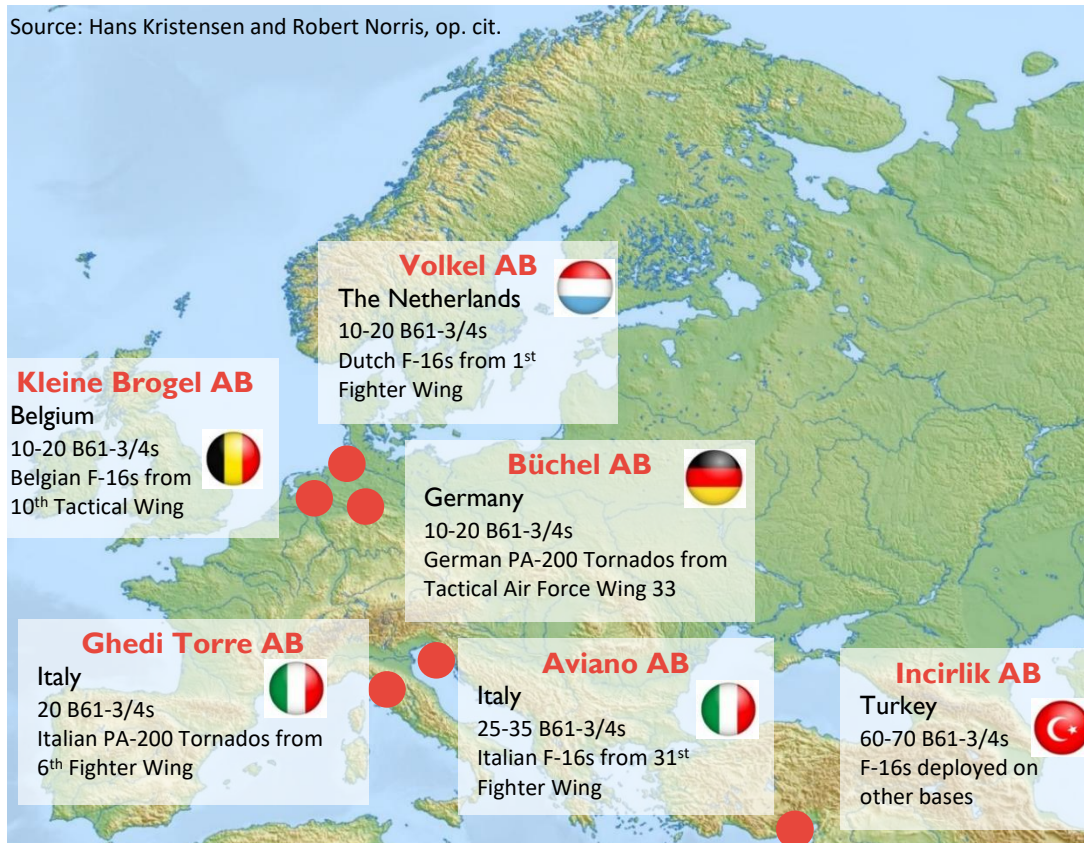
¹⁰ *Deterrence and Defence Posture Review*, 20 May 2012, Press Release (2012) 063, 20th May 2012.

¹¹ *Ibid.*

¹² Emmanuelle Maitre, "Forces aériennes européennes et mission nucléaire de l'OTAN," *Défense & Industries*, FRS, n° 13, June 2019.

dures.¹³ Regular exercises are performed to prepare for these missions, in which countries such as Poland and the Czech Republic have recently participated.

LOCATION OF NON-STRATEGIC NUCLEAR WEAPONS IN EUROPE



1.3. Growing reflection on the contribution of independent nuclear arsenals to European defence

Faced with this crucial investment in NATO's extended deterrence posture, the two independent nuclear powers, France and the UK, are pursuing strategies that are different but aim to address the continent's strategic challenges. The UK thus remains involved in NATO's nuclear deterrence mechanism and participates in nuclear planning within the Alliance. France on the other hand favours a more autonomous approach while reflecting on the link between its deterrent and European collective defence.

Although the principles of autonomy and sovereignty are the basis of French deterrence, its theorists and practitioners emphasised from the outset the fact that the French nuclear deterrent did not necessarily play an exclusively national role.¹⁴ Thus, the 1972 White Paper on Defence specified that "*France exists in a web of interests that extends beyond its borders. It*

¹³ SNOWCAT is an abbreviation for Support of Nuclear Operations with Conventional Attacks.

¹⁴ See Georges Pompidou's speech to the National Assembly, 13th April 1966: "*Independence does not suppress solidarity, it reinforces it, I would even say that it creates it. It is a question of placing France in its own hands. In doing so, we are serving Europe and preparing France to reappear and play its role.*" (cited by Céline Jurgensen, "L'Europe, la France et la dissuasion nucléaire," *Revue Défense Nationale* 2019/6, n° 821, 2019).

is not isolated. Western Europe as a whole cannot therefore fail to benefit indirectly from French strategy, which is a stable and determining factor in European security."¹⁵ This observation was reinforced as European construction moved forward, particularly at the end of the Cold War.¹⁶

Most recently, President Hollande insisted that France does not conceive its defence strategy, including deterrence, "in isolation". President Macron further highlighted this aspect in his speech at the *École de guerre* in February 2020, taking a standpoint consistent with his declarations in favour of the emergence of a form of strategic autonomy in Europe.¹⁷ His conclusion is straightforward: "*Our nuclear forces [...] strengthen Europe's security by their very existence and in this respect have a truly European dimension.*"¹⁸ This speech could pave the way for another step forward in opening up to European partners. On the one hand, it proposes to pursue a "strategic dialogue" on the role of nuclear deterrence with those European partners who so wish, an effort that began several years ago with discussions, visits, explanations and exchanges on the role of the nuclear deterrent as seen from Paris. These integration efforts are considered to have achieved positive results and they aim to create a "shared European strategic culture." This should lead to a better defence of the continent's interests in all fields. On the other hand, on a more practical level, the President's speech suggests the possibility of involving these same partners "in exercises by the French deterrent forces," a rather vague proposal designed to respect the different sensitivities regarding nuclear issues in Europe. This option does not mean setting up an "integrated structure" or "extended deterrence" such as those that exist in NATO. On the other hand, it resembles the mechanisms that allow certain members of the Alliance to participate in conventional missions as part of deterrent force exercises.

The wording used in the *École de Guerre* speech therefore envisages a deeper dialogue on deterrence between France and interested European countries. It meets certain expectations, while at the same time taking care to avoid exposing itself to rejection by certain other states for whom the unpopularity of nuclear weapons prevents any major and visible integration. President Macron is also being cautious in seeking not to compete with or duplicate NATO's shared nuclear deterrent, a very sensitive issue for those states that remain strongly committed to NATO's extended deterrence.

2. Substantial investments to perpetuate capabilities in a remodelled strategic environment

The various European states therefore have different viewpoints on the role of nuclear deterrence on the continent, with a wide gap between a small group of non-NATO states that

¹⁵ 1972 White Paper on Defence, p. 5.

¹⁶ Céline Jurgensen, *op. cit.*

¹⁷ Benjamin Hautecouverture, Emmanuelle Maitre, "La France et la dissuasion nucléaire : le discours de l'École de Guerre du président Macron," *Notes de la FRS*, n° 3/2020, 11th February 2020.

¹⁸ "Discours du Président Emmanuel Macron sur la stratégie de défense et de dissuasion devant les stagiaires de la 27^{ème} promotion de l'école de guerre," Elysee.fr, 7th February 2020.

are very hostile to nuclear weapons and Alliance members for whom, on the contrary, the deterioration in the strategic context seems to justify further investment in this area.

NATO's nuclear policy conditions the acquisition of specific capabilities for a small number of partners. For the two autonomous nuclear powers, the long-term sustainability of deterrence is a major strategic priority.

2.1. Participation in NATO's nuclear mission: a significant investment for some allies

On the European continent, one of the main projects to maintain NATO's nuclear capability was to modernise the weapons deployed on the territory of five allies, with the announced deployment of a new generation system, the B61-12 bomb. This upgrade programme has now entered its final phase after experiencing technical difficulties and delays due to the delivery of non-compliant parts. The B61-12 is expected to be deployed in Europe over the next five years. A first flight on an F-15E was carried out in March 2020 and, in August, a simulated release was performed from an F-35A.¹⁹ Actual production of the first weapon is scheduled for 2022.²⁰

Although it was planned as a "consolidation" of the various existing versions, the programme can be seen as creating a new weapon, with the addition of a "guidance kit" that will provide the B61-12 with a manoeuvring capability not available in the versions currently in service. This capability will be offered when the weapon is dropped from latest-generation bombers. The B61-12 is expected to have a relatively low yield. It is believed to feature a certain ground penetration capability.²¹

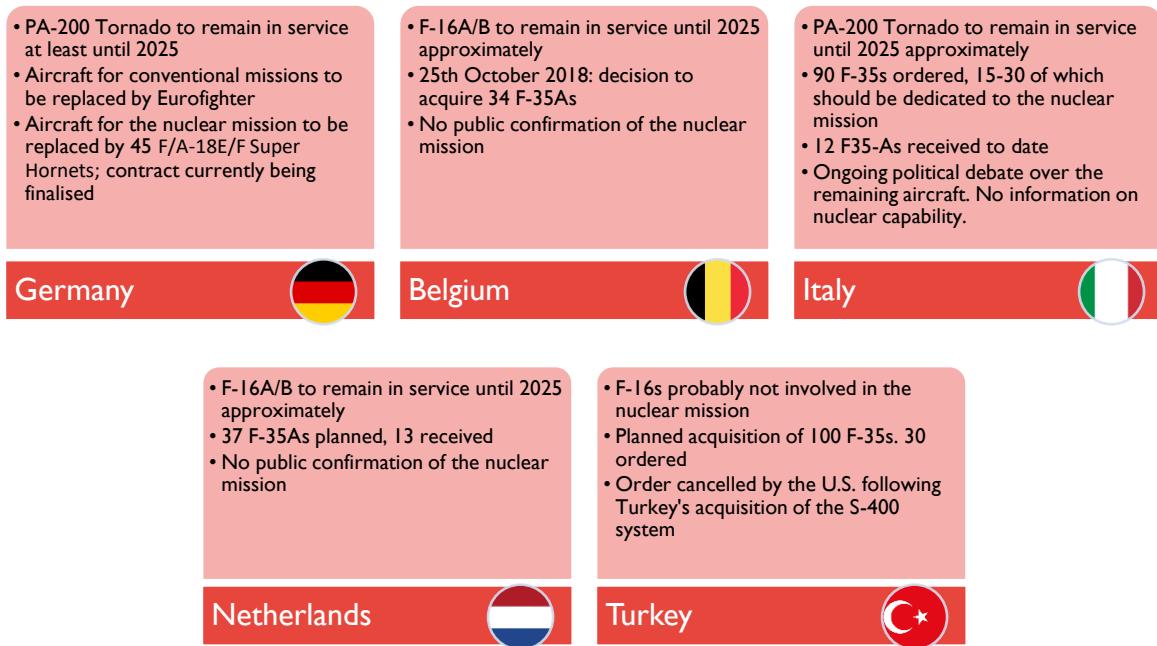
In Europe, these new weapons will initially be carried by the current F-16 and PA-200 Pannavia/Tornados,²² which will be withdrawn from service around 2025. They are due to be replaced by the F-35A — in addition to the U.S., four countries have acquired this aircraft specifically to carry out this mission. The F-35A is expected to be certified for the nuclear mission in 2024. While modernisation of the B61 is carried out solely by the United States, the upgrade and replacement of the platforms is the responsibility of the states involved in the shared nuclear deterrent, which is a decisive factor in defence equipment investment decisions.

¹⁹ "Sandia completes first flight tests of B61-12 nuclear bomb with F-35A," *Airforce Technology*, 24th November 2020.

²⁰ Aaron Metha, "F-15E becomes first aircraft compatible with new nuclear bomb design," *Defense News*, 8th June 2020.

²¹ Hans Kristensen, "B61-12: The New Guided Standoff Nuclear Bomb," Federation of American Scientists, Third Preparatory Committee Meeting for the Nuclear Non-Proliferation Treaty United Nations, New York, 2nd May 2014.

²² Hans Kristensen, Robert Norris, "United States nuclear forces, 2018," Nuclear Notebook, *Bulletin of the Atomic Scientists*, vol. 74, 2018.



Three NATO Member States (the Netherlands, Italy and Turkey) decided to join the U.S. F-35 fighter programme at the upstream stage. Orders have been placed (see illustration above) and the first aircraft are being received, except in the case of Turkey. Indeed, its involvement in the programme and its order were called into question by the United States after the announcement of Turkey's acquisition of the Russian S-400 missile defence system.²³ The three states that have acquired the F-35A have not indicated whether their aircraft will be certified for the nuclear mission, even though everything indicates that they will be.

In Belgium, several aircraft were offered in response to a call for tenders to replace the country's F-16s: Lockheed Martin's F-35 of course, but also Boeing's F/A-18E/F Super Hornet, Saab's Gripen, Dassault Aviation's Rafale and the Eurofighter. In February 2018, two manufacturers submitted bids to Brussels, Lockheed Martin and the Eurofighter consortium. France chose to offer the Rafale as part of an intergovernmental cooperation agreement.²⁴ A document issued by the Belgian defence minister indicated that the ability to perform the nuclear mission was a fundamental selection criterion. The decision, which was postponed several times, was made public on 25th October 2018 when the government announced the acquisition of 34 F-35s for €4 billion.²⁵

In Germany, there has been a lively debate on this issue since 2010. After much hesitation, press reports suggested that the government was preparing to replace the Tornado / Panavia 200 with Eurofighters for conventional missions.²⁶ Reports also indicated a desire to acquire in parallel a small fleet of 45 Boeing F/A-18 Super Hornets to replace the Tornado

²³ Valerie Insinna, "It's official: US Air Force to buy Turkish F-35s," *Defense News*, 20th July 2020.

²⁴ Laurent Lagneau, "Rafale : Dassault Aviation abat ses cartes en Belgique," *Zone militaire*, 14th February 2018.

²⁵ Anne Bauer, Derek Perrotte, "La Belgique préfère le F-35 américain au Rafale et au Typhoon," *Les Échos*, 25th October 2018.

²⁶ Laurent Lagneau, "Le Parlement allemand autorise l'achat de 38 Eurofighter; Les F/A-18 attendront encore," *Zone Militaire*, opex360.com, 6th November 2020.

for NATO's nuclear mission.²⁷ These aircraft were certified to carry American weapons in the 1990s and could be recertified at a lower cost than the Eurofighters and in a shorter period of time.²⁸ The Ministry of Defence has confirmed its intention to proceed with this dual acquisition in answers to parliamentary questions.²⁹ Although the German government does not provide public information on NATO's nuclear policy, it pointed out that this acquisition was essential to "*cement the transatlantic partnership and to support [Germany's] credibility within NATO.*"³⁰ The Bundestag has so far authorised the purchase of Eurofighter aircraft, with a decision on the F/A-18 expected next year.³¹ In the longer term, Berlin wants to work on a new-generation aircraft as part of the large-scale, multinational FCAS programme.³²

Apart from the very specific case of Turkey, the other four NATO countries participating in the Alliance's nuclear mission have thus recently confirmed capability choices that should give them the medium-term possibility of continuing to be able to carry the U.S. nuclear weapons deployed on their territory.

This aspect has sometimes taken on secondary importance in debates on future combat aircraft fleets. It is true that the nuclear mission represents only a fraction of the activities carried out by these aircraft. However, in the Belgian and German cases, this mission appears to have played a significant role in the decisions ultimately taken.

The decision of the Belgian authorities has been criticised in some quarters for not preferring a European aircraft manufacturer.³³ Moreover, there are major questions concerning the reality of the offset agreements promised by Lockheed Martin during the contract negotiations³⁴ (partnerships and offset orders for Belgian industry). Some observers think that the choice of the F-35 could lead to Belgium being excluded from participating in a European consortium working on a future system — specifically the Franco-German-Spanish FCAS project — for budgetary and technical reasons.³⁵ Brussels interprets the decision differently and Belgian industry has clearly expressed its intention to join the multilateral European programme.³⁶

²⁷ "Eurofighter und F-18-Jets sollen offenbar Bundeswehr-Tornados ersetzen," *Handelsblatt*, 26th March 2020.

²⁸ Sebastian Sprenger, "Boeing's F-18 jet may have a leg up in Germany over Eurofighter," *Defense News*, 4th October 2019.

²⁹ Antwort der Bundesregierung auf die Kleine Anfrage der Abgeordneten Sevim Dağdelen, Heike Hänsel, Christine Buchholz, weiterer Abgeordneter und der Fraktion DIE LINKE.— Drucksache 19/19057, Das Waffensystem „Tornado," die Nachfolge und die nukleare Teilhabe, Drucksache 19/19884, 5th August 2020.

³⁰ Sebastian Sprenger, "German Government Cites US Ties in Choice of F-18 Planes for Nuclear, Jamming Missions," *Defense News*, 22nd April 2020.

³¹ Laurent Lagneau, *op. cit.*

³² "Deutschland peilt neuen Eurofighter für Tornado-Nachfolge an," Reuters, 11th December 2017. Extracts from letter: "*Primär wird dabei das europäische Kampfflugzeug Eurofighter betrachtet, sekundär auch drei US-amerikanische Muster [...]Dieses Projekt ist ein wichtiger Meilenstein in der Kontinuität der engen und richtungsweisenden Zusammenarbeit dieser beiden Nationen für Europa. Die Bundesregierung ist fest entschlossen, die Entwicklung eines gemeinsamen Waffensystems voranzutreiben; erste gemeinsame Aktivitäten haben bereits begonnen.*"

³³ AFP, "Belgium to buy US F-35 fighters in blow to EU's defence policy," *Euroactiv*, 26th October 2018; Jean Quatremer, "F-35 : la Belgique ne volera pas européen", *Coulisses de Bruxelles*, *Libération*, 30th October 2018.

³⁴ Olivier Gosset, "La Belgique a-t-elle fait preuve de naïveté lors de l'achat du F-35 ?", *L'Echo*, 4th March 2020.

³⁵ Claude-France Arnould, "Er is geen druk, er is geen chantage," *De Standaard*, 1st June 2018.

³⁶ "L'industrie aéronautique belge veut monter à bord des futurs avions de combat," *L'Echo*, 20th June 2019.

On the German side, discussions between opponents and promoters of the F-35 also focused on Berlin's ability to sign a contract with a U.S. contractor while supporting a European vision of defence industrial capabilities. In this context, the choice of the F/A -18 can be seen as a compromise: the purchase of a small number of American aircraft makes it possible to ensure NATO's nuclear mission in the short term without undermining the preference for a European solution for the immediate requirement (with a fleet mainly composed of Eurofighters) and in the long term (FCAS).³⁷

2.2. Renewing the components of deterrence: critical choices for the UK and France

The programmes to modernise the British SSBNs and renew all the components of the French nuclear deterrent represent major investments of key importance to the defence efforts of these two countries.

Considered a major project across the Channel, the *Dreadnought* programme is leading to a major mobilisation of the British industrial base.³⁸ The programme, worth an estimated £31-41 billion, aims to have the first vessel in service by the early 2030s, with the ultimate goal of renewing the entire fleet of four submarines.³⁹

On the French side, the SSBN modernisation programme provides for a renewal of the various components and support missions while retaining the current format. This programme aims to ensure that the deterrence mission is fulfilled until 2070.⁴⁰ It is progressing in relatively gradual phases with a significant peak in investments around 2020-2021, leading to a twofold increase in the budget traditionally earmarked for deterrence.⁴¹ Thus, deterrence is also a critical choice for the French defence industry — for the naval sector (submarines and propulsion)⁴² and for two other sectors: combat aircraft (design of dual-capability fighter-bombers) and missiles (cruise missiles and ballistic missiles). The industry players concerned must be capable of meeting the operational requirements of the strategic forces in all circumstances. More generally, the capabilities and format of the French Air Force and Navy are largely determined by the operational needs of the strategic forces, whose requirements are deemed to be a priority and which must be capable of carrying out their mission without interruption.

³⁷ "Race for Germany's Next Fighter Jet Ends in Compromise," *T-intell.com*, 26th March 2020.

³⁸ Emmanuelle Maitre, "Programme Dreadnought : progrès et interrogations," Bulletin n° 55, *Observatoire de la dissuasion*, June 2018.

³⁹ Claire Mills, "Replacing the UK's Strategic Nuclear Deterrent: Progress of the Dreadnought Class," *Briefing Paper*, Number 8010, House of Commons, updated on 17th July 2020.

⁴⁰ "La nécessaire modernisation de la dissuasion nucléaire," Information Report No. 560 (2016-2017) by Xavier Pintat, Jeanny Lorgeoux, André Trillard, Pascal Allizard and Claude Haut, submitted on behalf of the Committee on Foreign Affairs, Defence and Armed Forces, tabled on 23rd May 2017.

⁴¹ Corentin Brustlein, "Forces nucléaires françaises : quel renouvellement ?," *Politique étrangère*, vol. 3, 2017.

⁴² Hélène Masson, Bruno Tertrais, "Impact économique de la filière industrielle « Composante océanique de la Dissuasion » – Volet 1.SNLE," *Recherches & Documents*, FRS, n° 2/2017.

3. Prospects and questions relating to nuclear weapons in Europe

3.1. *Variable political acceptability*

Nuclear deterrence remains unpopular in a number of European countries. Three EU states now consider it illegal under international law.

Even within certain NATO member countries, the subject of nuclear power remains particularly sensitive and provokes acute opposition within the political class. This is the case in Germany, Belgium, the Netherlands and Norway. In the states that host American nuclear weapons, this opposition takes the form of demonstrations organised by anti-nuclear NGOs around air bases, parliamentary petitions for the withdrawal of these weapons or strong opposition to dual-capable aircraft modernisation programmes.

Since the Ukrainian crisis, governments themselves seem less sensitive to calls for disarmament and are more inclined to speak publicly of their support for the Atlantic Alliance's extended deterrence policy. As a result, anti-nuclear movements do not seem to have enough weight to challenge NATO's extended deterrence in the short term, though they can influence the evolution of the Alliance's doctrine and capabilities, making any debate on the subject difficult and politically risky in those countries. Outside NATO, the subject of nuclear weapons is raised very cautiously by France with its partners, particularly Germany. Thus, while Berlin seems to have an interest in discussing these issues bilaterally, the German government remains reluctant to take a completely open and public stance on the subject for political reasons.

3.2. *Limited prospects for cooperation*

The desire for openness — encouraged by France — must not hide an essential principle of deterrence, namely independence and sovereignty at all levels of the system, whether in terms of doctrine, employment, or industrial capabilities, etc.

Thus, unlike the UK, which is closely tied to the United States, notably for the design and manufacture of its ballistic missiles, France's strategy is to avoid dependence on any foreign state, even a strategic partner. Consequently, proposals for cooperation with the UK or any other non-nuclear weapon state are subject to red lines. On the one hand, France does not wish to engage in doctrinal discussions with its partners or become involved in shared planning, hence its constant refusal to join NATO's Nuclear Planning Group. On the other hand, it wants to retain the ability to conduct a dialogue on deterrence on its own. This *de facto* limits the partners' scope for action, for example during nuclear force exercises, insofar as the French military authorities would no doubt oppose any initiative likely to weaken the internal competences required for the strategic forces to fulfil their mission.

A second avenue of openness, pursued by successive French governments since the end of the Cold War, concerns cooperation with the United Kingdom. At the strategic level, this was expressed in the 1995 Checkers declaration, according to which "*the vital interests of one*

could not be threatened without the vital interests of the other also being threatened."⁴³ In practice, "gradual" cooperation was formalised in the Treaty of Lancaster House signed in 2010. The decision was taken to "*build and operate jointly dedicated radiographic and hydrodynamic facilities.*"⁴⁴ Since then, the cooperation centred on the EPURE project has led to the construction of the installations at Valduc and the acquisition of machines enabling hydrodynamic and detonation experiments to be carried out. The programme also provides for the construction of a joint technology development centre.⁴⁵ However, there are few concrete proposals to go beyond these programmes while strictly respecting the sovereignty of both partners.

Finally, the lack of consensus on the role of nuclear deterrence within the European Union rules out any ambition for cooperation at the EU level. This is not an option that is currently on the table, but it was considered when some countries, such as Italy and Germany, joined the NPT in the 1970s as non-nuclear states.⁴⁶ Three European states are currently parties to the Treaty on the Prohibition of Nuclear Weapons. They are thus prohibited from assisting, aiding or encouraging any state to threaten the use of nuclear weapons. There is therefore no prospect now of an integrated nuclear deterrence strategy at EU level.

3.3. Budgetary and industrial issues

The implementation of nuclear strategies in Europe has budgetary and industrial consequences. Investments in deterrence, whether by France, the UK or the countries participating in nuclear sharing within NATO, can be significant, particularly when it comes to modernisation, e.g. the acquisition of new, specially equipped fighter-bombers.

At a time when European states are under strong pressure to preserve or even increase defence budgets in a very tight budgetary context, prioritising nuclear deterrence can have contradictory effects. In certain segments, it can lead to increased investment because mission implementation requires advanced capabilities and larger equipment orders (e.g. in numbers of fighters, tanker aircraft, nuclear attack submarines to support SSBNs, etc.). In other respects, it can lead to crowding-out effects or controversial choices. Thus, in terms of platform characteristics, aircraft selected for their ability to participate in a nuclear mission may prove less adapted to certain others conventional operations.

Moreover, participation in a nuclear deterrence mission has consequences in industrial terms. Some European countries, such as Sweden (Saab's Gripen offer),⁴⁷ refuse to sell equipment that could be used for a nuclear mission. In other cases, such as Eurofighter,

⁴³ Joint press conference by Jacques Chirac, President of the Republic, and John Major, Prime Minister of the United Kingdom, on Franco-British cooperation, on the nuclear test ban, on the European Union, EMU and Bosnia, London, 30th October 1995.

⁴⁴ *Ibid.*

⁴⁵ Information report filed pursuant to Article 145 of the Regulations by the National Defence and Armed Forces Commission following a fact-finding mission on the results of the Lancaster House Agreements of 2nd November 2010 and presented by Jacques Marilossian and Charles de la Verpillière.

⁴⁶ This option was conceived in the event of the creation of a federal Europe that could inherit the nuclear weapons of its member countries.

⁴⁷ Ian Anthony, "NATO and Nuclear Weapons," *Politique étrangère*, n° 5, 2009.

there is no opposition in principle to nuclear certification, nor is there any proven material difficulty, but there are cost and time constraints which convinced Germany, for example, to prefer a U.S. aircraft.⁴⁸

These capability-related, financial and industrial issues are at the heart of discussions on the FCAS. France sees this project as a successor to the Rafale and wants its future fighter aircraft to have the capability to carry French nuclear cruise missiles.⁴⁹ At the same time, other states, including Germany, will need to ensure that the system is compatible with NATO's nuclear sharing arrangements.⁵⁰

3.4. Nuclear deterrence and new technologies

The importance attached to nuclear deterrence, which is evident in some European states and more discreet in others, therefore determines certain investments. However, deterrence cannot be considered in isolation. Whether at the level of French doctrine, as set forth in the *École Militaire* speech, the British Strategic Defence Review or NATO strategy, there are clear links with other areas of defence strategy. In fact, the various stakeholders believe that future technological developments pose challenges to deterrence strategies and require an overall review of future capability choices. In this context, while certain key technologies will be able to benefit from work on nuclear deterrence, convergence is not systematic in all cases.

In terms of warhead delivery systems, a lot of work is being done in the hypersonic field. France seems to be prioritising expertise in hypersonic missiles for both conventional and nuclear deterrence missions.⁵¹ For an organisation such as ONERA, this area of research offers many opportunities, with a number of potential applications for the armed forces. Depending on political priorities and performance enhancements in this field, other countries could consider hypersonic missiles as complementary conventional deterrent weapons, or even as a substitute for nuclear deterrence. There were reflections along these lines in the United States in the 2000s when the *Conventional Prompt Global Strike* programme was launched.

Similarly, the various technologies related to artificial intelligence could have applications across the entire spectrum of defence activities, both conventional and nuclear. Strategic deterrence could be a field of application for AI on the defensive side (in particular in connection with cyber systems) or in an offensive perspective, with possibilities offered in sup-

⁴⁸ Andrea Shalal, "Eurofighter Doubts U.S. will Use Nuclear Certification to Tilt German Jets Bid," Reuters, 25th April 2018.

⁴⁹ "Lancement des travaux industriels des démonstrateurs du SCAF," Ministry of the Armed Forces, 20th February 2020.

⁵⁰ "2040, l'odyssée du SCAF – Le système de combat aérien du futur," information report on behalf of the Committee on Foreign Affairs, Defence and Armed Forces (1) on the Future Combat Air System (FCAS), by Ronan Le Gleut, Hélène Conway-Mouret, n° 642, 15th July 2020.

⁵¹ "La France envisage de disposer de moyens hypersoniques pour la composante aéroportée de sa dissuasion nucléaire à partir de 2035 dans le cadre du programme ASN-4G." in La Feuille de route scientifique et technologique de l'ONERA, Les fiches programmatiques, ONERA, éditions 2019.

port systems, C2, or C4ISR.⁵² The investments made by NATO or its Member States in this area could therefore have dual applications.⁵³

The recognition of the space sector's pivotal role in conflicts is leading many states today to increase their investments in this sector. These efforts will also have implications for nuclear deterrence strategies and policies. They can therefore be carried out together with the modernisation of nuclear capabilities. But the development of offensive and defensive capabilities to conduct military space operations goes far beyond strategic deterrence missions, as does the development of artificial intelligence and cyber capabilities in the military field. It cannot be ruled out, therefore, that the heavy investments for nuclear deterrence (in financial, human, scientific and technological, but also infrastructure-related terms) could, in the future and depending on the developments and applications of these technologies, have a crowding-out effect on the launch of dedicated programmes.

Similar reflections concern other technology fields which are less mature at present, such as laser technologies and directed energy weapons, biotechnologies or military applications of quantum physics (stealth, communications and cryptography, for example). While these technologies are not currently presented as candidates to replace nuclear deterrence strategies in Europe or the United States, their development might require a reconsideration of current budgetary and strategic priorities.

Conclusion

Nuclear issues, therefore, continue to weigh heavily on the way in which a number of European countries think about defence. Dependence on deterrence is more or less assumed, depending on political sensitivities.⁵⁴ It tends to be increasingly acknowledged among government officials in NATO countries, who consider that the deterioration of the strategic context in Europe makes it necessary to reinvest in nuclear deterrence.

However, nuclear defence remains a controversial issue in Europe. The continued rejection of nuclear deterrence in certain countries affects the nature of strategic and military cooperation across the continent. Moreover, in some states benefiting from NATO's extended deterrence, the continuing pressure of public opinion against nuclear weapons makes any capability enhancement in this area difficult, as well as any public promotion of deterrence or positive reassessment of this doctrine in national or allied strategic documents. Civil society usually experience challenges when attempting to transform its political capital with certain political parties into decisions taken when these parties are entrusted with government responsibilities. Nevertheless, it does play a role in the decisions taken on this subject across the continent, and it has a particular influence on the arms control and disarmament policies of European states.

⁵² Pierre Réal, "L'intelligence artificielle et ses applications : un défi stratégique pour la France," *Un monde en turbulence - Regards du CHEM 2019 - 68th session*.

⁵³ "Adapting NATO for 2030 and beyond," Speech by NATO Secretary General Jens Stoltenberg at the 66th Annual Session of the NATO Parliamentary Assembly, 23rd November 2020.

⁵⁴ Oliver Moody, "Germany Should join in French Nuclear Deterrent," *The Times*, 6th March 2020.

In this context, and in spite of these political and moral differences and challenges, the nuclear factor remains fundamental in strategic, operational, industrial and budgetary terms for defence policies in Europe. Participation in a nuclear mission, whether national or shared under NATO, has major implications for doctrines, operational concepts, capability choices and arms control and disarmament policies.

The four years of Donald Trump's mandate have given greater visibility to reflections on "European strategic autonomy". This concept includes the creation of capabilities allowing greater freedom of action, particularly in major domains of confrontation such as space, but also through the pursuit of large-scale shared industrial programmes such as FCAS. In any case, it is often important to take account of nuclear deterrence issues, as they can affect the understanding of these projects or have an impact on the capability-related aspirations of the different states.

Les opinions exprimées ici n'engagent que la responsabilité de leur auteur.