

# France

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The French Ministry of Defense reports that it spent US \$5.3 billion (€4.7 billion) on “nuclear deterrence” in 2020,<sup>1</sup> an increase of more than 4 percent compared with 2019 (US \$4.9 billion, €4.5 billion),<sup>2</sup> and an increase of more than 17 per cent compared with 2018 (US \$4.5, €4 billion).<sup>3</sup> The total cost of developing and fielding the nuclear strike forces between 1960 and 1990 reached an estimated US \$170-180 billion (€150-160 billion).<sup>4</sup> The recent increase is part of an “exceptional increase”<sup>5</sup> of defense spending in response to what is seen as a deteriorating security environment in Europe and elsewhere.

France has recently completed fielding a new class of ballistic missile submarines and aircraft. A modified ballistic missile with a new warhead is being back-fitted onto the submarines. A new class of ballistic missile submarines and a new air-launched cruise missile are in development.

France is not increasing its nuclear forces, nor does it show any indication that it intends to reduce them in the near term or eliminate them in the foreseeable future. In a speech in early 2020 on French defense and deterrence strategy, President Emmanuel Macron stated: “I cannot... set France on the moral objective of disarming our democracies while other powers, or even dictatorships, would be maintaining or developing their nuclear weapons...And let us not be naïve: even if France...

were to give up its nuclear weapons, the other nuclear powers would not follow suit.”<sup>6</sup> Instead, French rhetoric and policy continue to reaffirm the importance of nuclear weapons and maintaining them “over the long term”, as stated by the 2017 *Defence and National Security Strategic Review*.<sup>7</sup>

Lack of additional reductions combined with increased spending and modernisation to retain nuclear weapons indefinitely appear to conflict with France’s obligations under the nuclear Non-Proliferation Treaty (NPT) article VI “to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament...”<sup>8</sup>

## Current status

As of early 2021, France possessed a stockpile of an estimated 290 nuclear warheads. Approximately 200 of these warheads are deployed or operationally available for deployment on short notice. This includes up to 240 warheads for three deployable submarines and up to 50 cruise missiles for land – and sea-based aircraft. The third submarine might take longer to ready and the cruise missiles for the *Charles De Gaulle* aircraft carrier are stored on land under normal circumstances.



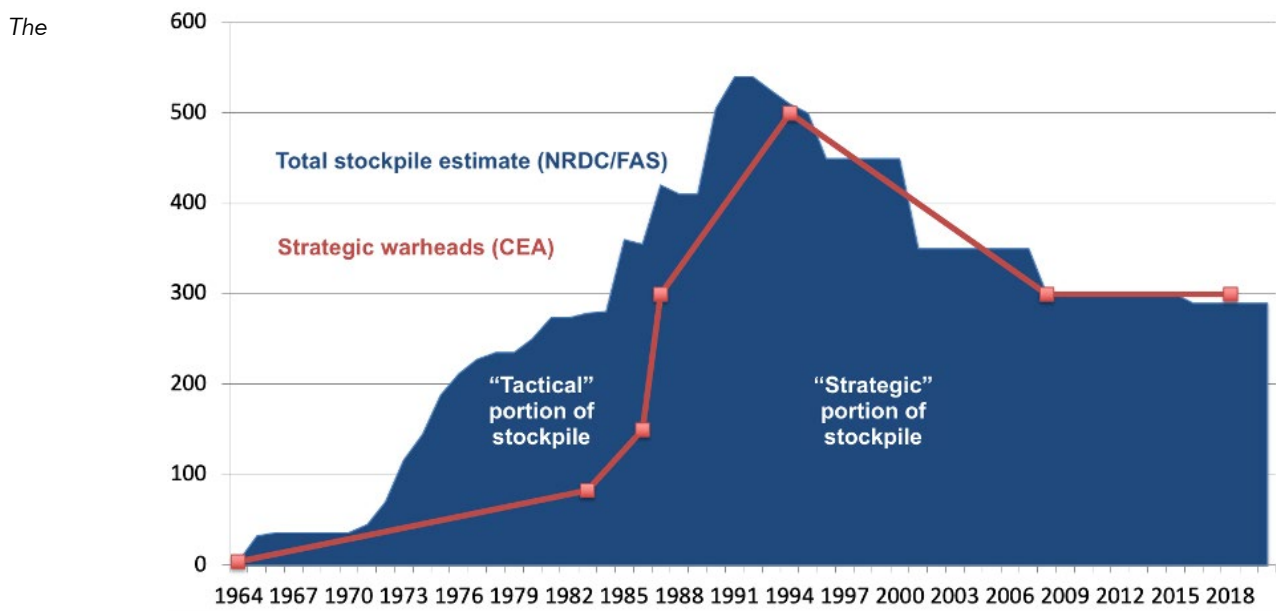
A gift from the students at Hiroshima Jogakuin to ICAN, the paper cranes adorned Oslo's Parliament building the morning of 8 December 2017. The cranes are not only a symbol of peace, but one of action © Ari Beser

The current forces level is the result of adjustments made to the posture following President Nicolas Sarkozy's announcement March 2008, that the "arsenal" would be reduced to "fewer than 300 warheads" by cutting one of three nuclear bomber squadrons. Sarkozy also declared that France "has no other weapons besides those in the operational stockpile."<sup>9</sup>

President François Hollande modified the stockpile declaration a little in February 2015, when he declared that "France has been exemplary in terms of the volume of its weapons stockpile: 300."<sup>10</sup> But the current President Emmanuel Macron returned to the previous formulation in February 2020, when he declared that France had "reduced the size of its arsenal, which is currently *under* 300 nuclear weapons" (emphasis added).<sup>11</sup>

The current stockpile of approximately 290 warheads, Sarkozy explained, "is half of the maximum number of warheads we had during the Cold War."<sup>12</sup> The peak occurred in 1991–1992 at end of the Cold War, and the size of today's stockpile is about the same as in 1984 (see Figure 1), although the composition and capabilities are significantly different. The Nuclear Energy Commission (Le Commissariat à L'énergie Atomique et aux énergies Renouvelables, CEA) recently published strategic warhead numbers (les Forces Nucléaires Stratégiques, FNS) that help illustrate the difference between tactical and strategic warhead inventories in the stockpile between the early-1980s and 1993 when the last tactical warhead was retired.<sup>13</sup>

**Figure 1: French nuclear weapons stockpile 1964-2020**



*roughly 290 nuclear warheads in the current French nuclear weapons stockpile correspond to about half of the peak stockpile size at the end of the Cold War, and about equal to the stockpile size in 1984.*

Consecutive presidents have been relatively consistent over the past two decades about the role that French nuclear forces play. But the context has recently changed.

According to President Macron, "some states are knowingly opting for opaque and even aggressive nuclear postures, which include a dimension of blackmailing or seeking *fait accompli*," a thinly veiled reference to Russia. "The deterrence-based power balances have thus become unstable" and although French nuclear forces remain "a last resort," France "may for the first time in a long time have to meet a third challenge, that of directly facing in an uncontrolled escalation, a hostile power,

which could have a nuclear weapon or be an ally of a power owning weapons of mass destruction."<sup>14</sup>

Macron reaffirmed that "France will never engage into a nuclear battle or any forms of graduated response." Nonetheless, "a unique and one-time-only nuclear warning could be issued to the aggressor State to clearly demonstrate that the nature of the has changed and to re-establish deterrence." If that failed, the leader of that state "must realize that our nuclear forces are capable of inflicting absolutely unacceptable damage upon the State's centres of power: its political, economic, and military nerve centres."<sup>15</sup>

## Nuclear delivery systems

France's nuclear posture is based on two types of delivery vehicles: aircraft and ballistic missiles (see Table 1). France also used to deploy nuclear medium-range ballistic missiles in silos at Plateau d'Albion, but all were

deactivated in 1996. France considers all its nuclear forces to be strategic, even though the land – and carrier-based aircraft would be considered tactical if they were part of the Russian arsenal. President Macron reaffirmed the intention to retain a nuclear posture based on “two components” (land and sea) for the long term.<sup>16</sup>

**Table 1: French nuclear forces, 2020**

DELIVERY VEHICLE	NO. OPERATIONAL	YEAR DEPLOYED <sup>a</sup>	RANGE (KILOMETERS) <sup>b</sup>	WARHEADS X YIELD (KILOTONS)	WARHEADS
<b>Land-based aircraft</b>					
Rafale BF3 (ASMPA)	40	2008/2010	2,000	1 TNA x variable to 100 <sup>c</sup>	40
<b>Carrier-based aircraft</b>					
Rafale MF3 (ASMPA)	10	2010/2011	2,000	1 TNA x variable to 100 <sup>c</sup>	10
<b>Submarine-launched ballistic missiles<sup>d</sup></b>					
M51.1	48	2017	9,000+	Up to 6 TNO x 100 <sup>e</sup>	240
M51.3	0	(2025)	9,000+	Up to 6 TNO x 100	0
<b>Total</b>	<b>98</b>				<b>290<sup>f</sup></b>

a) For aircraft, the first number is for the aircraft, the second is for when the ASMP-A became operational with that aircraft.

b) For aircraft the range of the aircraft is listed. The maximum range of the ASMP-A is 600+ kilometers.

c) The ASMP-A carries a “medium” yield TNA warhead. Many unofficial sources credit the weapon with yield of 300 kt.

d) There are only three sets of missiles available for three of four SSBNs. A fourth boat is in overhaul.

e) The M51.1, which first became operational on the Terrible in late-2010, has “significantly greater range and payload capacity, as well as greater accuracy”<sup>17</sup> than the M45 it replaced and can carry up to six TN75 warheads. The M51.2, which became operational on the Triumphant in 2017, has a longer range than the M51.1 and carries the new TNO warhead. Loading varies depending on mission.

f) A small number of these warheads are undergoing surveillance and maintenance at any given time.

### Land-based aircraft

The land-based aircraft are organised under the Strategic Air Forces (Forces Aériennes Stratégiques, or FAS), which uses the Rafale BF4 fighter-bombers to deliver the nuclear ASMP-A (Air-Sol Moyenne Portée-Améliorée) medium-range cruise missile. There are 40 aircraft available for the Air Force's nuclear mission with up to 40 missiles.

The two-seater Rafale BF3 first entered service in 2009 at Saint Dizier airbase, has an unrefueled combat range of 1,850 kilometres (km). The standard nuclear strike configuration for the Rafale BF3 is with the ASMP-A on the centerline pylon and two fuel tanks under the wings. The Rafale programme has been scaled back significantly to 132 aircraft for the Air Force (and 48 Ms for the Navy). The BF3 model is being upgraded to the BF4 version.

To refuel the nuclear strike aircraft, France operates a fleet of Boeing-produced C-135FR tankers that are being replaced with the Airbus A330 “Phoenix.” The modernisation will be completed in 2025. The tankers are organised under the 4/31 “Sologne” squadron at Istres airbase.

The ASMP-A is a nuclear enhanced short-range air-to-ground missile with a ramjet engine and a maximum range of more than 600 km. The ASMP-A has significantly greater range and penetration capability than its predecessor, the ASMP. The ASMP-A carries the new TNA warhead with “medium” size warhead with an estimated yield of up to 100 kilotons.<sup>18</sup> Lowers yield options might be available. According to MBDA Missile Systems, the TNA is a “medium energy thermonuclear charge, a concept validated during the last nuclear testing campaign [in 1995-1996]. Simulators have proven its effective operation.”<sup>19</sup> The French Ministry of Defence states that the TNA (and the TNO) is the only

nuclear warhead that has been designed and certified by simulation rather than nuclear test explosions.<sup>20</sup>

The ASMP-A programme cost US \$146 million (€110 million) in 2011, with another US \$68 million (€51 million) budgeted for 2012 as the programme neared completion.<sup>21</sup> The ASMP-A first became operational on 1 October 2009 on the Mirage 2000Ns at Istres airbase. Nine months later, on 1 July 2010, it became operational on the Rafale BK3 at Saint Dizier airbase. Production and delivery of the ASMP-A and its TNA warhead was completed in 2011. A mid-life upgrade is current underway to enable the ASMP-A to be in service until 2035. To eventually replace the ASMP-A, France has begun design development of a stealthier, extended-range nuclear missile

known as the ASN4G (air-sol nucléaire 4ème génération) that is envisioned to take over from the ASMP-A in 2035. The ASN4G might be hypersonic and reportedly has demonstrated Mach 6 speed in wind-tunnel tests.<sup>22</sup>

The Strategic Air Force has been significantly reorganised in recent years (see Table 2). Of the three nuclear fighter-bomber squadrons that existed a decade ago, two have been disbanded, one transferred, and an earlier disbanded squadron re-established at a new location. With the retirement of the Mirage-2000N in 2018, the 2/4 “La Fayette” squadron at Istres airbase near Marseille was moved to Saint Dizier airbase east of Paris where it joined the 1/4 “Gascogne” squadron in the 4th Wing at Saint Dizier airbase east of Paris.

**Table 2: French Strategic Air Force Nuclear Organisation, 2020**

BASE	UNITS
Avord (BA 702)	“K” weapons storage bunker and personnel
Istres (BA 125)	3/60 “Estérel” refueling squadron with C-135 tankers (being replaced with A330 “Phoenix” tankers “K” weapons storage bunker and personnel
Luxeuil (BA 116)	No nuclear units but serves as dispersal base
Saint Dizier (BA 113)	4 <sup>th</sup> Wing with two nuclear squadrons: 1/4 “Gascogne” squadron with 20 Rafale BF3/ASMP-A 2/4 “La Fayette” squadron with 20 Rafale BF3/ASMP-A “K” weapons depot and personnel

Key: ASMPA = Air-Sol Moyenne Portée Améliorée; BA – Base Aériennes; DAMS = Dépôt Atelier de Munitions Spéciales (special weapons depot); Sq = Squadron. \* Provided ASMP support to the 1/4 Dauphine squadron at Luxeuil.

The nuclear custodial units that maintain and protect the ASMPA missiles have also been reorganised. Between 2008 and 2010, special nuclear weapons bunkers were constructed at the Saint Dizier, Istres, and Avon airbases, and the DAMS (Dépôts-Ateliers de Munitions Spéciales) depots that previously housed the nuclear weapons were renamed “K Buildings.”<sup>23</sup> Although Istres airbase no longer has a nuclear bomber squadron, it remains a nuclear base. The Avord airbase (BA 702) in central France also has a nuclear weapons depot and continues to provide support to the nuclear bomber squadrons.

## Carrier-based aircraft

France is the only NATO country that still has a nuclear strike role from surface ships.

The force is known as the Naval Nuclear Aviation Force (Force Aéronavale Nucléaire, or FANu) and consists of one squadron (potentially two) of Rafale MF3 fighter-

bombers equipped to deliver ASMP-A cruise missiles from the aircraft carrier *Charles de Gaulle* (R91). When not deployed on the carrier, the air wing is based at Landivisau in northern France.

The *Charles de Gaulle* does not carry the nuclear missiles under normal circumstances. They are stored on land, possibly at Istres airbase, and would have to be loaded onboard for the carrier to perform its nuclear strike mission. Management of the ASMP-A cruise missile for the Rafale MF3 on the *Charles de Gaulle* carrier is supported by the centre d’expérimentations pratiques et de réception de l’aéronautique navale (the center for practical experiments and integration of naval aviation, CEPA/10S) at Istres airbase (AB 125).

The FANu mission was uniquely affected by the outbreak of the Corona-virus in April 2020 when more than 1,000 of the crew on the *Charles de Gaulle* were found to be infected, forcing the carrier to return to port with its nuclear strike mission.<sup>24</sup>



## Sea-launched ballistic missile submarines

France operates four Triomphant-class nuclear-powered ballistic missile submarines (SSBNs), each equipped with 16 nuclear-armed long-range ballistic missiles (SLBMs). The fleet, which is known as the FOST (La Force Océanique Stratégique), is based at the l'Île Longue peninsula near Brest. Of the four SSBNs, at least two are always fully operational, one of them at sea of deterrent patrol. A deterrent patrol reportedly lasts about 10 weeks.<sup>25</sup>

Ballistic missiles boosters are thought to be stored at the missile depot near Saint-Jean approximately four kilometres south of the base. The l'Île Longue island itself also includes a unique arrangement of what appear to be 24 missile silos, although the precise function is unclear, and appears to be expanding with a second missile

storage bay. Warheads arrive in unassembled form and are assembled at the base before deployment.<sup>26</sup>

All French SSBNs are equipped to carry the M51 SLBM. Three operational submarines carry the M51.2 equipped with the new TNO (tête nucléaire océanique) warhead. The TNO is based on a design that was tested during France's final nuclear test series at Mururoa in 1995–1996. The fourth SSBN will receive the M51.2 in 2020. The M51.2 is thought to have a range of over 9,000 km, depending on how many warheads it is loaded with. The production contract for the M51 was awarded to EADS Astrium SPACE Transportation in 2004 at a price of US \$3 billion (€3 billion).<sup>27</sup> A third M51 version known as the M51.3 is in development and scheduled for completion by 2025 and will incorporate a new third stage for extended range and further improvement in accuracy.<sup>28</sup>

**Table 3: French SSBN missile and warhead modernisation, 2020**

SSBN NAME	2008	2015	2020
Le Triomphant	M45/TN75	M51.1/TN75	M51.2/TNO
Le Téméraire	M45/TN75	M51.1/TN75	M51.2/TNO
Le Vigilant	M45/TN75	M51.2/TNO	M51.2/TNO
Le Terrible	M45/TN75	M51.1/TN75	M51.2/TNO*

*Note: The M51.1 was said to have a much greater range than the M45, and the M51.2 has greater range than the M51.1. An M51.3 upgraded is planned for the mid-2020s. Each M51 can carry up to six warheads but may carry fewer depending on mission. Only three sets of missiles were produced. A fourth SSBN will be in overhaul at any given time.*

*\* Missile upgrade scheduled was completed in 2020.*

*To replace the Triomphant-class SSBNs, development of a next-generation SSBN known as SNLE-3G (Sous-Marin Nucléaire Lanceur d'Engins de 3<sup>rd</sup> Génération) has begun. Although longer than the Triumphant, the SNLE-3G will carry the same number of missiles (16).*

Although not nuclear armed themselves, nuclear-powered attack submarines (SSNs) play an important part in the nuclear mission by providing protection to SSBNs deploying on patrol. Six Rubin-class SSNs will be replaced by the new Barracuda-class between 2020 and 2030.

à L'énergie Atomique et aux énergies Renouvelables, CEA). Established in 1958, DAM is responsible for research, design, manufacture, operational maintenance, and dismantlement of nuclear warheads. DAM also builds nuclear reactors for France's nuclear-powered submarines and aircraft carrier. Of CEA's nearly 20,000 employees, more than 4,500 are working for the DAM.

## The nuclear weapons complex

France's nuclear weapons complex is managed by the DAM (Direction des Applications Militaires), a department within the Nuclear Energy Commission (Le Commissariat

Following the decision to end nuclear testing in 1996, France has reorganised its nuclear weapons centres. Today, DAM operates five major sites (see Table 4).

**Table 4: French nuclear weapons complex**

NAME OF FACILITY	LOCATION (COORDINATES)	ROLE
Centre d'Etudes de Valduc (CEA Valduc)	Burgundy (47°34'37.02"N, 4°52'6.79"E)	Warhead production and dismantlement. French-British Epure facility added since 2014 to study hydrodynamic behavior of warheads. This includes Airix X-Ray accelerator, previously located at Moronvilliers.
CES/DAM Ile-de-France (CEA Bruyères-le-Châtel)	Ile-de-France (48°35'40.53"N, 2°12'0.30"E)	Warhead design research and computer simulation.
Centre d'Etudes de Ripault (CEA Ripault)	Centre (47°17'26.05"N, 0°40'13.66"E)	Research and production of non-nuclear components, including high explosives.
Centre d'Études Scientifiques et Techniques d'Aquitaine (CESTA)	Aquitaine (44°38'46.70"N, 0°47'42.20"W)	Design of equipment for nuclear weapons, reentry vehicles, and coordinates the development of nuclear warheads. The site is the location of the Megajoule laser facility designed to study the fusion process of secondaries.
Centre d'études de Gramat (CEA Gramat)	Midi-Pyrénées (44°44'23.44"N, 1°44'3.05"E)	National center for studying vulnerability of nuclear weapons systems to nuclear effects.

Warhead design and simulation of nuclear warheads take place at the DAM-Ile-de-France (Bruyères-le-Châtel) Centre approximately 30 km south of Paris. The centre houses Tera 100, a supercomputer that went into operation in July 2010. The previous generation supercomputer, Tera 10, is also located at the centre, which employs about half of the people affiliated with the military section (DAM) of the CEA. An even faster supercomputer named Joliot-Curie under construction is designed to reach 22 petaflops.<sup>29</sup>

The Valduc Center (Centre d'Etudes de Valduc, or CEA Valduc) is responsible for nuclear warhead production, maintenance, and dismantlement. It is located approximately 30 km northwest of Dijon and is undergoing expansion to accommodate new facilities resulting from the 2010 French-British defence treaty. The AIRIX x-ray radiography facility was moved to Valduc from the Moronvilliers center in 2014, a second radiography facility was added by 2019, and a third is planned for 2022 to form the Epure facility.

The Ripault Centre (Centre d'Etudes de Ripault, or CEA Ripault) is located south of Tours and is responsible for studying and design of new materials used in nuclear weapons and naval reactors. The centre also works on nonproliferation issues.

The CESTA (Centre d'études Scientifiques et Techniques d'Aquitaine) near Le Barp is responsible for the design of equipment for nuclear weapons, reentry, and coordinates the development of nuclear warheads. The site is also the location of the Megajoule laser, France's equivalent of the US National Ignition Facility, and was completed in 2014. CESTA, which was established in 1965, covers an area of 700 acres and employs 1,000 people.

The Gramat Centre (Centre d'études de Gramat) is responsible for hardening nuclear weapons and electronics against radiation. The centre was transferred to the CEA in 2010.

## Fissile materials

France is no longer thought to be producing fissile materials for nuclear weapons. Large quantities produced during the Cold War are more than sufficient for the current warhead level. Plutonium production at the Marcoule facility ceased in 1992 with an estimated six tons remaining. HEU production ended in 1996 with an estimated 26 tons remaining, and the HEU production plant at Pierrelatte has been dismantled.<sup>30</sup>

## Naval nuclear propulsion

In addition to nuclear weapons production, France spends considerable resources on building nuclear propulsion for naval vessels that carry the nuclear weapons. France currently has 12 nuclear-powered naval vessels in operation: four Triumphant-class ballistic missile submarines, six Rubis-class attack submarines, one Barracuda-class attack submarine undergoing sea trials, one Charles de Gaulle-class aircraft carrier. Although nuclear-powered attack submarines are not nuclear-armed, they play an important role in the nuclear posture by protecting SSBNs on patrol. The first Barracuda-class attack submarine undergoing sea trials—the *Suffren*—is one of six boats intended to replace the Rubis-class.<sup>31</sup>

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Sources: see [icanw.org/healthcare\\_costs](https://www.icanw.org/healthcare_costs)



ICAN has calculated how the annual cost for French nuclear weapons could pay for health care services.

Construction of nuclear-powered vessels happens at the naval shipyard in Cherbourg on the English Channel. Development and testing of the nuclear reactors takes place at CEA Cadarache center north of Toulon. Production of the reactors happens near Nantes at the naval propulsion factory of DCNS (Direction des Constructions Navales), the manager of the naval shipyard at Cherbourg. Refueling of the nuclear-powered vessels takes place at the naval shipyard in Toulon. The fuel-life of French naval reactor cores is approximately 10 years. The reactor core for the next-generation SSBN (SNLE-3G) is in development in a test reactor known as RES (réacteur d'essais) and will have a longer core life.

## Economics

Assessing the total cost and breakdown costs of French nuclear forces is difficult. The French Ministry of Defense says France allocated at least US \$5.3 billion (€4.7 billion) on “nuclear deterrence” in 2020,<sup>32</sup> up from US \$4.9 billion (€4.5 billion) in 2019,<sup>33</sup> an increase of more than 17 per cent compared with €4 billion in 2018.<sup>34</sup> But the total apparently does not include all costs.<sup>35</sup> The increase is part of an “exceptional increase”<sup>36</sup> of military spending in response to what is seen as a deteriorating security environment in Europe and elsewhere. In total, the French government says it will spend €25 billion (US \$28 billion) on its nuclear forces in the five-year period between 2019 and 2023.<sup>37</sup>

## International law and doctrine

France is a state party to the nuclear Non-Proliferation Treaty (NPT) having ratified the Treaty in 1992.<sup>38</sup> It maintains it is in full compliance with its commitments under NPT's article VI, but does so “within the framework of a progressive and realistic approach, in order to promote regional and international stability, on the basis of undiminished security for all.”<sup>39</sup> In a statement to the 2019 NPT Preparatory Committee, France noted that “We share the ultimate goal of the total elimination of nuclear weapons, when the strategic context allows.”<sup>40</sup>

France has stressed for many years the importance of negotiating a Fissile Material Cut-off Treaty (FMCT) within the United Nations' Conference on Disarmament. France participated in an FMCT-relevant Governmental Group of Experts in 2014 and 2015 and in a High-level Experts' Preparatory Group in 2017 and 2018.

France signed the Comprehensive Test Ban Treaty (CTBT) in 1996 and ratified it jointly with the United Kingdom in 1998.<sup>41</sup> This brought to an end more than three decades of destructive and controversial nuclear weapon testing that involved a total of 210 tests, almost 200 of which took place in the South Pacific.<sup>42</sup>

France did not participate in the negotiations of the Treaty on the Prohibition of Nuclear Weapons (TPNW) and has indicated it does not intend to accede to it. “The entry into force of this Treaty could weaken the NPT as the cornerstone of the international non-proliferation regime by creating an alternative and contrary norm. For

this reason, France reiterates that it does not intend to accede to it. Those who have joined must explain how to preserve security and stability, particularly in Europe and Asia, in the absence of nuclear deterrence, in the face of rearmament and the resurgence of threats, without risking high-scale conventional warfare.”<sup>43</sup>

France regretted the decision of the United States (US) to withdraw from the Intermediate Range Nuclear Forces (INF) Treaty, concluding that Russia had developed a missile system in violation of the Treaty which effectively left the US with no choice but to withdraw.<sup>44</sup> At the time, it urged Russia to return to full compliance with the Treaty’s obligations.

France has also engaged in several rounds of multilateral diplomacy with Iran over its nuclear programme. This included the P5+1 talks that led to the 2015 Joint Comprehensive Plan of Action (JCPOA). French President Macron publicly regretted the US’ withdrawal from the agreement, and later worked with Germany and the United Kingdom (UK) to establish the Instrument in Support of Trade Exchanges (INSTEX) to facilitate trade with Iran.<sup>45</sup>

Finally, in February 2020, French President Macron delivered a speech outlining his vision for France’s nuclear “deterrence” strategy.<sup>46</sup> In it, he stressed the role of nuclear weapons within European security policy that was widely seen as offering a wider role for France’s nuclear weapons in the security of the rest of the continent,<sup>47</sup> including the suggestion that other countries could participate in French nuclear deterrence exercises and war games. Macron’s speech dismissed calls for nuclear abolition as an “ethical debate” that lacks “realism in the strategic context” and reiterated France’s position on the TPNW. In some respects, this builds on the statements of former leaders as well as more recent actions under Macron that have underlined an interest asserting a more prominent role in providing for European “security” in the face of growing hostility between the United States, China, and Russia.

## Public discourse

Although there is some debate in France over the composition and cost of the nuclear forces, it is not a prominent debate. Moreover, the French government has strongly opposed ideas for additional reductions in its nuclear forces—neither unilaterally nor as part of a potential NATO decision to reduce its nuclear forces in Europe. The condition in the NATO Lisbon Summit declaration that the Defence and Deterrence Posture Review would only examine the contribution of nuclear forces assigned to NATO apparently was included in the text at the insistence of the French government.<sup>48</sup> Although the French government will insist that its recent reduction of the land-

based air-delivered nuclear force is consistent with France’s obligations under article VI of the NPT to pursue nuclear reductions, its rejection of additional reductions and its ongoing modernisation of its nuclear forces might be seen as being out of sync with those obligations.

Recent polling, however, shows strong opposition to nuclear weapons amongst adults aged 20 to 35, referred to as “millennials”. A 2019 poll, commissioned by the International Committee of the Red Cross (ICRC), found that 81 per cent of French millennials think that it is never acceptable to use nuclear weapons in wars or any armed conflict, and 80 per cent agreed that the existence of nuclear weapons is a threat to humanity. Moreover, the same survey showed that 45 per cent of millennials also supported France’s accession to the TPNW, while 29 per cent would neither support or oppose France joining, and only 17 per cent opposed it.<sup>49</sup> Finally, a 2018 survey, commissioned by the French Peace Movement and the Catholic newspaper *La Croix*, found that amongst 1001 surveyed French citizens of age 18 and above, 67 per cent affirmed that France should join the TPNW.<sup>50</sup>

## Editor’s note:

There have been other relevant updates in the areas of law, doctrine, and public discourse that we wish to draw readers’ attention to.

In 2020 and 2021, civil society and academic organisations published reports exposing the extent and legacy of French nuclear weapons testing in Algeria<sup>51</sup> and the Pacific region,<sup>52</sup> as well the French government’s attempt to cover-up the extent of radiation. These have helped to propel media attention and public interest in France’s role as a nuclear-armed state. The French government has denied covering up the radiation levels left in the Pacific,<sup>53</sup> but the French constitutional court has since declared that the retroactive use of a 1 mSv exposure threshold to adjudicate the compensation of victims from French nuclear tests is unconstitutional.<sup>54</sup>

More recently, the announcement of a new military alliance between Australia, the UK, and the US (AUKUS)<sup>55</sup> in September 2021 prompted a strong reaction from the French government. France had had a previous agreement with Australia since 2016 to build 12 diesel electric-powered submarines to replace its existing Collins submarine fleet. Australia cancelled this deal in 2021 in favour of working with the UK and US in the Indo-Pacific region and to build a class of nuclear-propelled submarines. Described by one French diplomat as a “stab in the back,”<sup>56</sup> the announcement generated a strong diplomatic response and is now leading France to seek out other strategic partners.<sup>57</sup>



## References

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