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NUCLEAR WEAPONS BAN MONITOR 2024

TRACKING PROGRESS TOWARDS A WORLD WITHOUT NUCLEAR WEAPONS

ABOUT THE NUCLEAR WEAPONS BAN MONITOR

The Nuclear Weapons Ban Monitor is a research project managed by Norwegian People's Aid with contributions from a broad range of external experts and institutions, including the Federation of American Scientists and the Norwegian Academy of International Law. It tracks progress towards a world without nuclear weapons and highlights activities that stand between the international community and the fulfilment of the United Nations' long-standing goal of the elimination of nuclear weapons. In measuring this progress, the Nuclear Weapons Ban Monitor uses the Treaty on the Prohibition of Nuclear Weapons (TPNW) as the primary yardstick, because this Treaty codifies norms and actions that are needed to create and maintain a world free of nuclear weapons. The TPNW is the only legally binding global treaty that outlaws nuclear weapons. It was adopted on 7 July 2017 and entered into force on 22 January 2021. The impact of the TPNW will be built gradually and will depend on how it is welcomed and used by each and every state.

The Nuclear Weapons Ban Monitor records progress in universalising the TPNW while also tracking gaps in adherence to other key global treaties in the existing legal architecture for disarmament and non-proliferation of nuclear weapons and other weapons of mass destruction. This concerns, specifically: the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the nuclear-weapon-free zone (NWFZ) treaties, the Comprehensive Nuclear-Test-Ban Treaty (CTBT), Comprehensive Safeguards Agreements (CSA) and Additional Protocols (AP) with the International Atomic Energy Agency (IAEA), the Biological Weapons Convention (BWC), and the Chemical Weapons Convention (CWC).

The Nuclear Weapons Ban Monitor also evaluates the nuclear-weapons-related policies and practices of each of the 197 states that can become party to the above-mentioned treaties. These are the 193 UN member states, the two UN observer states (the Holy See and the State of Palestine), and the two 'other' states (the Cook Islands and Niue). Finally, the Nuclear Weapons Ban Monitor sets out clear interpretations of each of the prohibitions and positive obligations of the TPNW and evaluates the extent to which the 197 states act in accordance with the Treaty. States parties and signatories are categorised as either 'compliant' or 'non-compliant' with the TPNW, whereas non-parties are categorised as either 'compatible' or 'non-compatible'. States where worrying developments warrant close attention are assessed to be 'of concern'.

State profiles for each of the 197 states can be viewed on the Nuclear Weapons Ban Monitor's website.

www.banmonitor.org

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Comments, clarifications, and corrections are welcome. Please email the Nuclear Weapons Ban Monitor at: banmonitor@npaid.org.

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Cover photo: A visitor watches a video of a nuclear bomb test while touring the Atom pavilion, a permanent exhibition centre designed to demonstrate Russia's main past and modern achievements of the nuclear power industry, at the All-Russia Exhibition Centre in Moscow on 6 December 2023. (Photo by Natalia Kolesnikova, AFP/NTB)

NUCLEAR WEAPONS BAN MONITOR 2024

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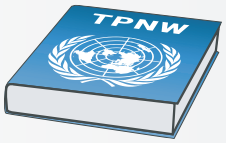
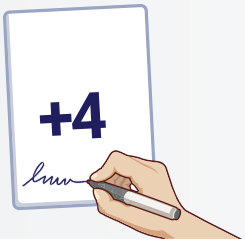
KEY 2024 FINDINGS

- Throughout 2024, the risk of the use of nuclear weapons persisted as a real and immediate feature of world politics. The danger of the escalation of conflicts involving nuclear-armed states was a **significant, and growing, concern.**
- UN Secretary-General António Guterres warned that 'Humanity is on a knife's edge'.

- The states parties to the Treaty on the Prohibition of Nuclear Weapons (TPNW) continued to challenge nuclear deterrence, calling it out as a **highly precarious** security logic that is fraught with unreliable assumptions and which is an existential risk to the entire planet.
- In 2024, the TPNW further embedded itself as the sole multilateral forum where states firmly demonstrate their rejection of nuclear deterrence and their will for nuclear disarmament, and cooperate on forging a path towards the elimination of nuclear weapons.





- Four states—**Indonesia**, **Sao Tome** and **Principe**, **Sierra Leone**, and the **Solomon Islands**—became parties to the TPNW in 2024.
- Of the states that have signed but not yet ratified the TPNW, several reported that their **domestic ratification processes were at an advanced stage** – suggesting the potential for further significant progress on universalisation of the Treaty in 2025.
- Every state that joins the TPNW provides **leadership** and takes action to create safety and stability.

- At the close of 2024, **98** states—**half of the world's total**—were states parties or signatories to the TPNW: 73 parties and 25 signatories that had not yet ratified.
- Among the world's 188 non-nuclear-armed states, **52%** were either parties or signatories to the TPNW as of 31 December 2024.

- An additional **40 states** were identified as 'other supporters' of the TPNW based on their voting on the annual UN General Assembly resolution on the TPNW.
- The overall share of states supportive of the TPNW increased to **138 states** in 2024 – exactly **70%** of the total of all states.

- Almost **58%** of the population in the world's 188 non-nuclear-armed states live in countries that are parties or signatories to the TPNW.
- When also the 40 states that are 'other supporters' of the TPNW are included, a total of **78.5%** of the population of the 188 non-nuclear-armed states are represented by governments that support the TPNW.
- As of 2024, five of the world's ten most populous states were states parties or signatories to the TPNW: Bangladesh, Brazil, Indonesia, Mexico, and Nigeria. The other five are nuclear-armed states: China, India, Pakistan, Russia, and the United States.

- A minority of **44** states (**22%** of all states)—one more than the year before—were opposed to the TPNW in 2024.
- First and foremost, it is the **nuclear-armed states** and **nuclear umbrella states** that stand in the way of progress towards universalisation of the TPNW and agreement on nuclear disarmament, while continuing their nuclear weapons-based defence postures that expose all states to unacceptable risk.
- The 35 non-nuclear-armed states that at the close of 2024 remained opposed to the TPNW constitute only **18.6%** of the 188 non-nuclear-armed states and represent **17.8%** of their population.

- Some nuclear-armed states and umbrella states continued their **obstructionism** of the TPNW in 2024, ignoring the fact that progress for the TPNW is to the deep and abiding benefit of the collective security of humanity, including for the Treaty's non-parties.
- The states parties to the TPNW called on the nuclear-armed states and all other non-parties to **engage constructively** with the Treaty and the security concerns created by nuclear deterrence.
- As in previous years, some opposed states were more **conflicted** on the TPNW than others. Discussion on the merits of the Treaty was ongoing in several umbrella states.

- A total of **15** states (**7.5%** of all states) were undecided on the TPNW in 2024. This number was **down two** from the year before.
- The 15 undecided states are spread out across all regions of the world, and include **three umbrella states**.

- Support for the TPNW is **high** in all regions of the world apart from Europe.
- In Africa, **all states but one**—South Sudan—formally supported the TPNW in 2024, either as states parties or signatories, or as other supporters.
- The Americas is the region with the highest share of states parties. More than **74%** of the states in the region are already parties to the Treaty.

- At the close of 2024, **57%** of the world's 104 members of nuclear-weapon-free zone (NWFZ) treaties were states parties to the TPNW. A declaration adopted at the Second Meeting of States Parties to the TPNW in 2023 made a special plea for adherence to the Treaty by members of NWFZs, 'in recognition of the shared basis of such treaties and the TPNW'.
- Of the 45 NWFZ members that are not yet party to the TPNW, **20** had already signed the Treaty and should urgently ratify it.
- Of the remaining 25 states, **20** are already in the other supporters category. They should urgently either sign and ratify or accede to the TPNW.

- In building upon and contributing to **the other multilateral treaties on weapons of mass destruction (WMD)**, the TPNW has the potential to reinforce the legitimacy of the legal WMD architecture as a whole.
- The world continued to **inch closer to universal adherence** to all five key WMD treaties in 2024. The Comprehensive Nuclear-Test-Ban Treaty gained one state party (**Papua New Guinea**), and the Biological Weapons Convention gained two states parties (**Micronesia** and **Tuvalu**).
- At the close of 2024, the number of **outliers** (states that were neither parties or signatories) to the other treaties in the WMD architecture were as follows:
  - Biological Weapons Convention – **6**
  - Chemical Weapons Convention – **3**
  - Comprehensive Nuclear-Test-Ban Treaty – **10**
  - Treaty on the Non-Proliferation of Nuclear Weapons – **5**

- **150** states—**76%** of the total in the world—had policies and practices in 2024 that were fully compliant with or compatible with all of the ten prohibitions contained in the TPNW.

- A sizeable minority of **45** states (almost **23%**) engaged in activities in 2024 that in different ways conflicted with the TPNW, while the conduct of two other states was 'of concern'.
- To avoid remaining between the international community and the fulfilment of the United Nations' long-standing goal of the elimination of nuclear weapons, these states would all have to make varying degrees of changes to their existing policies and practices.

- Europe continues to be the region with by far the most states with conduct that conflicts with the TPNW. A total of **32** of the 45 states (**71%**) that in 2024 were found by the Nuclear Weapons Ban Monitor to have policies and practices that contravene the TPNW were European.
- **70%** of the states in Europe were opposed to the TPNW also in 2024. This included 23 of the 27 members of the European Union.
- **Europe stands out** as a significant obstacle for further progress towards universalisation of the TPNW and agreement on nuclear disarmament. The European Union should initiate processes to reflect on and address this.

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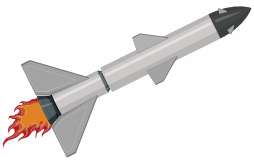
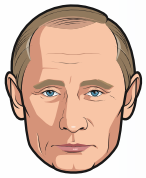
- The **only two** of the ten TPNW prohibitions that no state currently contravenes are the prohibitions on testing and use of nuclear weapons.
- This speaks volumes about the urgent need to **reject and roll back** the policies and activities that are conflicting with the other eight prohibitions, because this conduct compounds the risks of such new testing or use. These prohibitions are: development and production and possession of nuclear weapons; transfer or receipt of transfer or control of nuclear weapons; threatening to use nuclear weapons; assisting or encouraging prohibited conduct; seeking or receiving assistance with unlawful acts; and allowing stationing and deployment of nuclear weapons.

- No state acted in contravention of the TPNW's **prohibition on testing** of nuclear weapons in 2024. But this prohibition, already cemented in the Comprehensive Nuclear-Test-Ban Treaty, started to come under sustained **pressure** in 2024 and the risk of a new nuclear test detonation appears significant.
- The most likely state to conduct a nuclear test detonation remains **North Korea**, the only state to have done so since 1998. A test site in North Korea is said to have been made ready for a new nuclear test.

- Of the nine states that possess nuclear weapons, none used them in 2024. The TPNW's **prohibition on use** therefore remained intact.
- However, **22%** of all states had defence postures in 2024 that were based on preparedness for the use of nuclear weapons: The nine nuclear-armed states and the 34 nuclear umbrella states.

- The year 2024 saw the nuclear-armed states and umbrella states continue a trend of **reinforcing the value** of nuclear weapons, with discussion of the possible use of nuclear weapons becoming more normal and increasing numbers of test launches of nuclear-capable missiles, nuclear strike exercises and other demonstrations of readiness to use nuclear weapons.



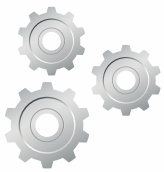


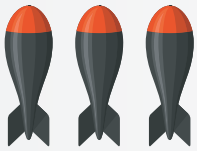
- The Nuclear Weapons Ban Monitor found that two states acted in contravention of the TPNW's **prohibition on threatening to use** nuclear weapons in 2024: **North Korea** and **Russia**.
- North Korea overtly threatened to use nuclear weapons against South Korea, while Russia implicitly threatened to use nuclear weapons against Ukraine.

- The TPNW's **prohibition on assistance, encouragement, or inducement** of activities that are unlawful under the Treaty continued in 2024 to be the Treaty norm contravened by the greatest number of states.
- A total of **40** states, including the 34 umbrella states, aided and abetted activities that are prohibited by the TPNW in 2024. This is laying bare the considerable degree of **responsibility** that umbrella states bear for the continued development and possession of nuclear weapons.
- The Nuclear Weapons Ban Monitor also observed a trend towards umbrella states aiding and abetting nuclear armament in **more ways** than they did before the full-scale Russian invasion of Ukraine that began in 2022.

- Seven states engaged in conduct in 2024 that was not compatible with the TPNW's **prohibition on allowing stationing, installation, or deployment** of foreign nuclear weapons: **Belarus**, **Belgium**, **Germany**, **Italy**, the **Netherlands**, **Türkiye**, and the **United Kingdom**.
- This was **two more** than in 2022. Belarus was added in 2023, and the United Kingdom in 2024.

- All **nine** nuclear-armed states continued to engage in conduct in 2024 that was not compatible with the TPNW's **prohibition on developing, producing, manufacturing, or otherwise acquiring** nuclear weapons.
- **Iran** and **Saudi Arabia** were recorded as states of concern in this regard.
- Discussion on the possibility of pursuing nuclear armament also mounted in several other states not party to the TPNW—and most notably in Germany, Japan, and particularly South Korea—despite their existing unequivocal obligations not to develop or acquire nuclear weapons under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The non-proliferation norm established by the NPT and reinforced by the TPNW is under **increasing pressure**.



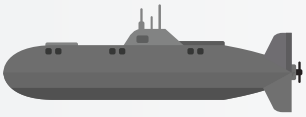


- At the beginning of 2025, it was estimated that the nine nuclear-armed states had a combined inventory of **12,331** nuclear warheads. This is, of course, incompatible with the TPNW's prohibition on possession and stockpiling of nuclear weapons.
- The total for early 2025 represents a **decrease of only 16** from the estimated 12,347 warheads a year earlier. This reduction was, however, due only to Russia and the United States dismantling a small number of previously retired nuclear weapons in the course of 2024.

- While the total number of nuclear weapons continued to slowly decrease, the global number of nuclear warheads available for use has been steadily **increasing** since 2017, and is expected to continue to do so. Soon, also the total number of nuclear warheads will therefore increase.
- At the beginning of 2025, the total number of nuclear warheads available for use had increased to **9,604**. This was **332** more than in 2017.
- **China**, **India**, **North Korea**, **Pakistan**, and **Russia** all continued to expand their nuclear arsenals in 2024.

- The estimated collective explosive yield of the 9,604 nuclear warheads available for use at the beginning of 2025 is equal to the yield of more than **146,500** Hiroshima bombs.

- Of the global total of warheads available for use in early 2025, an estimated total of **3,904** (more than **40%**) were at all times deployed – on siloed or mobile missiles, on nuclear-powered ballistic missile submarines (SSBNs), and at bomber bases.
- Only **France**, **Russia**, **the United Kingdom**, **the United States, and recently likely also China,** are believed to currently deploy nuclear warheads on launchers. The other four nuclear-armed states are believed to keep their warheads in central storage.

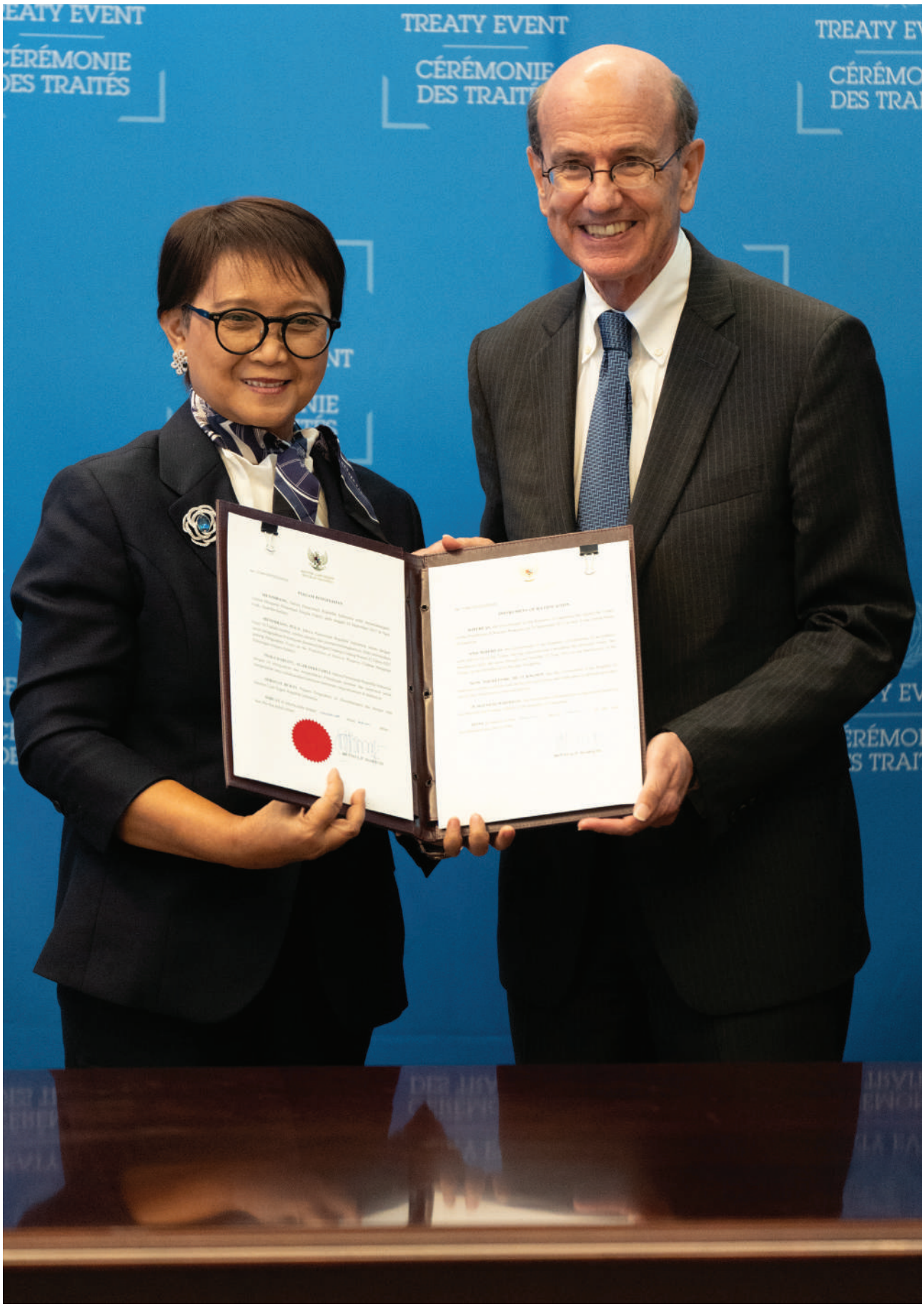


- Around 1,982 nuclear warheads—**more than half** of all deployed nuclear warheads—are deployed on SSBNs operated by the United States, United Kingdom, France, Russia, and possibly China.
- **At all times**, a significant number of nuclear warheads are carried through the world's oceans on SSBNs on active patrol, ready to be launched at short notice.
- The total firepower onboard a single SSBN can be larger than the entire arsenal of a lesser nuclear-armed state. For instance, the average destructive power of a single US Ohio-class SSBN is 19 Mt – **1,266 Hiroshima-bomb equivalents**. This is almost twice the nuclear arsenals of India, Israel, and Pakistan combined.

- Events in 2024 again showed that the conduct of all nine nuclear-armed states is incompatible with the TPNW's **obligation to eliminate** nuclear weapons.
- **No** nuclear disarmament initiatives are currently under consideration by these states, and the existing arms control architecture designed to constrain nuclear arsenals is under considerable stress.
- While all nuclear-armed states have expressed their support for nuclear disarmament, they are **not pursuing this goal**. They argue that this process requires creating a suitable environment first.

- States parties to the TPNW and civil society again met frequently in 2024 to advance implementation of the TPNW's **obligation to provide assistance** to individuals affected by nuclear-weapons use and testing and to **remediate** contaminated environments.
- A working group set up under the TPNW continued in 2024 to examine how to establish an **international trust fund** to support victim assistance and environmental remediation.
- As a result of the TPNW, interest in providing support to states affected by nuclear weapons testing continued to grow in 2024.

- States parties and signatories to the TPNW continued to pursue universalisation of the TPNW as a priority in 2024. They took a broad range of actions during the year to implement the Treaty's Article 12 **obligation to encourage further states to sign**, **ratify**, **or accede** to the Treaty, 'with the goal of universal adherence'.
- In particular, they issued a **joint appeal** to all states that have not yet joined the Treaty to do so without delay.



On 24 September 2024, at a ceremony in New York, Foreign Minister Retno Marsudi deposited Indonesia's instrument of ratification of the TPNW with the UN Secretary-General, who was represented by the Acting Under-Secretary-General for Legal Affairs and UN Legal Counsel, Stephen D. Mathias. Indonesia's parliament ('the People's Representative Council') had unanimously approved ratification in November 2023. According to the Indonesian government, its decision to ratify the TPNW aligns with its constitutional mandate to promote peace and security, and sent a clear message to the world that 'the possession and use of nuclear weapons cannot be justified for any reason'. (Photo by Derek French, ICAN)

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THE STATUS OF THE TPNW IN 2024

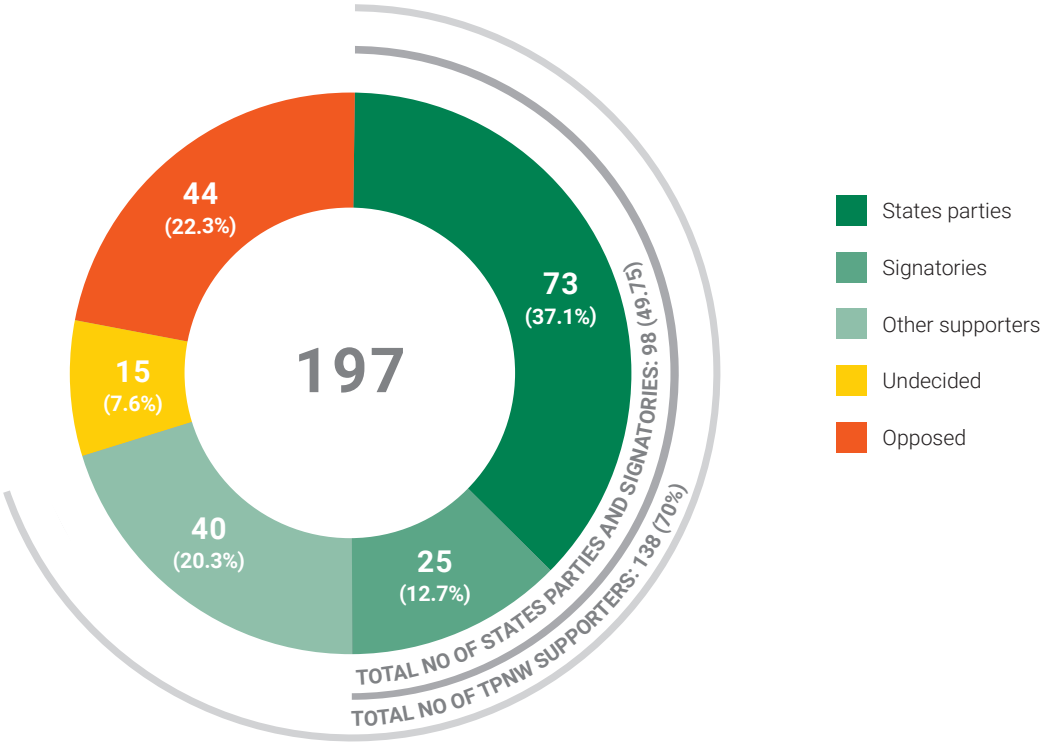
At the close of 2024, 98 states—half of the world's total of 197—had firmly demonstrated their rejection of nuclear weapons and their political will for progress in nuclear disarmament by becoming states parties or signatories to the Treaty on the Prohibition of Nuclear Weapons (TPNW). Overall, the share of states supportive of the TPNW increased to exactly 70%, and close to 80% of the population living in the world's 188 non-nuclear-armed states were represented by governments that support the TPNW.

Adherence to the TPNW continued its steady growth throughout 2024 among the 197 states that can adhere to the treaties in the legal architecture for weapons of mass destruction (WMD),[1] with four states—Indonesia, Sao Tome and Principe, Sierra Leone, and the Solomon Islands—becoming parties to the Treaty.

No nuclear-armed state has yet adhered to the TPNW. But for every non-nuclear armed state that joins the TPNW, the Treaty gains influence. By signing and ratifying or by acceding to the TPNW, a state guarantees it will never develop nuclear weapons or embrace extended nuclear deterrence (and thereby appropriate the security case for nuclear weapons made so consistently by the nuclear-armed states and their umbrella states). In doing so, adhering states provide leadership and take action to create safety and stability, and reduce tension in a world where the danger of escalation of conflicts involving nuclear-armed states is a significant—and growing—concern.

A case in point is the TPNW's new state party Indonesia, the fourth largest country in the world with rapidly growing influence and power. It is said to be 'a key stabilizing force in the Indo-Pacific, playing a crucial role in reducing tensions between nuclear-armed states in the region'.[2] Also the adherence to the TPNW in 2024 of the Solomon Islands—one of the smallest countries in the world—can be important for managing increasing tensions between the United States and China.

Figure 1: Global distribution of support for the TPNW, as of 31.12.2024



1 Some treaties allow only UN member states to become parties (the obvious example being the UN Charter), but most treaties—including all of the multilateral treaties in the legal architecture for disarmament and non-proliferation of WMD—use the 'all states' formula for adherence. This currently allows a total of 197 states to adhere: the 193 UN member states, the two UN observer states (Holy See and the State of Palestine), as well as the two 'other' states (Cook Islands and Niue).

2 B. Fihn, @BeaFihn, Post on X, at: https://bit.ly/4g2Qh5V

Seen in this light, it is difficult to understand the continued obstructionism of the TPNW in 2024 by nuclear-armed states and some nuclear umbrella states.[3] Progress for the TPNW should be acknowledged as being to the deep and abiding benefit of the collective security of humanity, including for the Treaty's non-parties. After all, fear of a 'proliferated planet' of many tens of nuclear-armed states was a driving force of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in the first place, and the TPNW takes forward that Treaty's disarmament commitment.

In a right of reply to the French delegation's criticism of the TPNW during First Committee of the UN General Assembly in October 2024, Austria said that the multilateral nuclear disarmament regime 'needs all the support it can get in light of the backtracking and erosion that we see'. Austria called on France and all other states not yet party to constructively engage with the TPNW and the security concerns that nuclear weapons raise. 'Such constructive engagement should really be a responsibility for the states that are the origin for the creation of this global existential risk', Austria said.[4]

States parties and signatories

As shown in Figure 1 above, the number of states parties to the TPNW had increased to 73[5] as of 31 December 2024, while 25 other states had signed but not yet ratified.

Several signatory states reported that their domestic ratification processes were at an advanced stage – suggesting the potential for further significant progress on universalisation of the Treaty in 2025. This included Colombia, Djibouti, Ghana, Mozambique, and Zimbabwe.

Other supporters

A total of 99 states were not yet states parties or at least signatories to the TPNW at the close of 2024. Forty of those, however, are identified by the Nuclear Weapons Ban Monitor as 'other supporters' of the Treaty, on the basis of their most recent voting record on the TPNW in the UN General Assembly. Tonga was added to this category in 2024, after it voted in favour of the annual UN General Assembly resolution on the TPNW for the first time. Thus, as of 31 December 2024, the overall number of TPNW supportive states had reached 138 (or exactly 70%). While they have not yet signed or adhered to the Treaty, these 'other supporters' have expressed their support to the TPNW by voting in favour (and in some cases also co-sponsoring) the annual UN General Assembly resolution on the TPNW. First introduced in 2018, the resolution calls upon all states that have not yet done so to sign, ratify, or accede to the Treaty 'at the earliest possible date'.[6]

Several of the 40 other supporters have already started domestic processes to sign or accede to the TPNW. Eight of the states in this category—Andorra, Egypt, Guinea, Iraq, Morocco, Qatar, Tunisia, and Yemen—participated as observers at the Second Meeting of States Parties to the TPNW (2MSP) in 2023.

Opposed states

The number of states opposed to the TPNW increased from 43 to 44 in 2024, when—after the election the year before of the right-wing populist Javier Milei as President—Argentina for the first time voted 'no' on the annual UN General Assembly resolution on the TPNW. Three other states with nuclear-free defence postures (Micronesia, Monaco, and Ukraine) also continued to vote 'no'. As in previous years, it is largely, however, the nuclear-armed states and nuclear umbrella states that stand in the way of progress towards universalisation of the TPNW and agreement on nuclear disarmament, while continuing their nuclear-weapons-based defence postures that expose all states to unacceptable risk. All nine nuclear-armed states again voted against the annual UN General Assembly resolution on the TPNW. A further 31 of the 32 states which, at the close of 2024, had arrangements of extended nuclear deterrence with the United States[7] (every one apart from Australia, which abstained) also voted 'no'. Australia ended its opposition to the TPNW already in 2022.

As in previous years, some of the opposed states were more conflicted on the TPNW than others. NATO states Belgium, Germany, and Norway had participated as observers at 2MSP,[8] and discussion on the merits of the Treaty was ongoing in these and several other opposed states. The Japanese government, for example, faced renewed domestic pressure to join the TPNW, or at least to observe its Meetings of States Parties, when the 2024 Nobel Peace Prize was awarded to Nihon Hidankyo, a Japanese confederation of atomic bomb survivors from Hiroshima and Nagasaki. In Australia, members of a cross-party parliamentary friendship group for the TPNW in April 2024 released a video message in support of Australia's ratification of the Treaty. 'The TPNW is giving countries and citizens across the world hope, and a new and promising pathway towards the abolition of these weapons', they said. 'As members of the Australian Parliamentary Friends of the TPNW, we are working together to see the nuclear weapons ban treaty signed and ratified.'[9]

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3 See e.g. France's right of reply in First Committee of the UN General Assembly on 21 October, at: https://bit.ly/4hka5CR
4 'First Committee – 79th Session Thematic Debate – Nuclear Weapons Right of Reply by the Republic of Austria delivered by George-Wilhelm Gallhofer Minister Plenipotentiary/Deputy-Director for Disarmament, Arms Control and Non-Proliferation, Federal Ministry for European and International Affairs', New York, 22 October 2024, at: https://bit.ly/4asnh6M
5 Of the 73 states parties, four—the Cook Islands, Mongolia, Niue, and Sri Lanka—have acceded to the Treaty while the 69 others have signed and ratified it.
6 UN General Assembly Resolution A/RES/79/38, at: https://bit.ly/4g00L6c
7 As of the end of 2024, 32 umbrella states were allies of the United States: 1) the 29 non-nuclear-armed states that had a multilateral arrangement of extended nuclear deterrence through NATO: Albania, Belgium, Bulgaria, Canada, Croatia, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Montenegro, the Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and Türkiye; and 2) three states—Australia, Japan, and South Korea—that have bilateral arrangements of nuclear deterrence with the United States.
8 'Report of the Second Meeting of States Parties to the Treaty on the Prohibition of Nuclear Weapons', Section IV, Attendance.
9 ICAN Australia, 'Campaign News', 30 April 2024, at: https://bit.ly/4a93yJ3

Undecided states

The total of undecided states at the end of 2024 was reduced to 15 from 17 the year before, with Argentina joining the opposed states and Tonga the other supporters category. The 15 undecided states are spread out across all continents, and include three umbrella states. As already mentioned, the category includes Australia, which is an ally of the United States. It also includes Armenia and Belarus – the only states with arrangements of extended nuclear deterrence with Russia. It should be noted that although Belarus meets the voting criteria set by the Nuclear Weapons Ban Monitor for inclusion in the undecided category with respect to the TPNW, its government most clearly demonstrates support for nuclear weapons. In Switzerland, another state in the undecided category, both houses of the parliament have previously instructed the government to proceed with signature and ratification of the TPNW without delay.[10] In March 2024, the Federal Council decided not to join the TPNW 'for the time being'.[11] In response, several non-governmental organisations based in Switzerland launched a popular initiative aimed at securing Swiss accession to the TPNW.[12] Once 100,000 signatures have been obtained, a referendum on the issue should take place.

The criteria for the Nuclear Weapons Ban Monitor's categorisation of states by their position on the TPNW are explained in Table A below while Table D on page 19 lists all the 197 states by their region and support category. For details about individual states, see the state profiles on www.banmonitor.org.

Table A: Criteria for TPNW support categories

Category	Criterion
1 States parties	States that have either signed and ratified or acceded to the TPNW.[13]
2 Signatories	States that have signed the TPNW but not yet ratified it.
3 Other supporters	States that are not in category 1 or 2 but whose most recent vote in the UN on the TPNW (the adoption of the Treaty on 7 July 2017 or on subsequent annual UN General Assembly resolutions on the TPNW) was 'yes'.
4 Undecided	All states that are not in category 1 or 2 and whose most recent vote in the UN on the TPNW (the adoption of the Treaty on 7 July 2017 or on the subsequent annual UN General Assembly resolutions on the TPNW) was an abstention, or which never participated in such a vote.
5 Opposed	All states that are not in category 1 or 2 and whose most recent vote in the UN on the TPNW (the adoption of the Treaty on 7 July 2017 or on the subsequent annual UN General Assembly resolutions on the TPNW) was 'no'.

Non-nuclear-armed states

Almost 47% of the world's population of more than eight billion people live in the nine nuclear-armed states, all of which continue to refuse to adhere to the TPNW. Five of the world's ten most populous states are nuclear-armed states: China, India, Pakistan, Russia, and the United States. The other five are states parties or signatories to the TPNW: Bangladesh, Brazil, Indonesia, Mexico, and Nigeria.[14] In the shorter term, an achievable objective for the TPNW is to mobilise all of the world's 188 non-nuclear-armed states, thus isolating the nine nuclear-armed states and exerting pressure on them to start negotiations on nuclear disarmament.

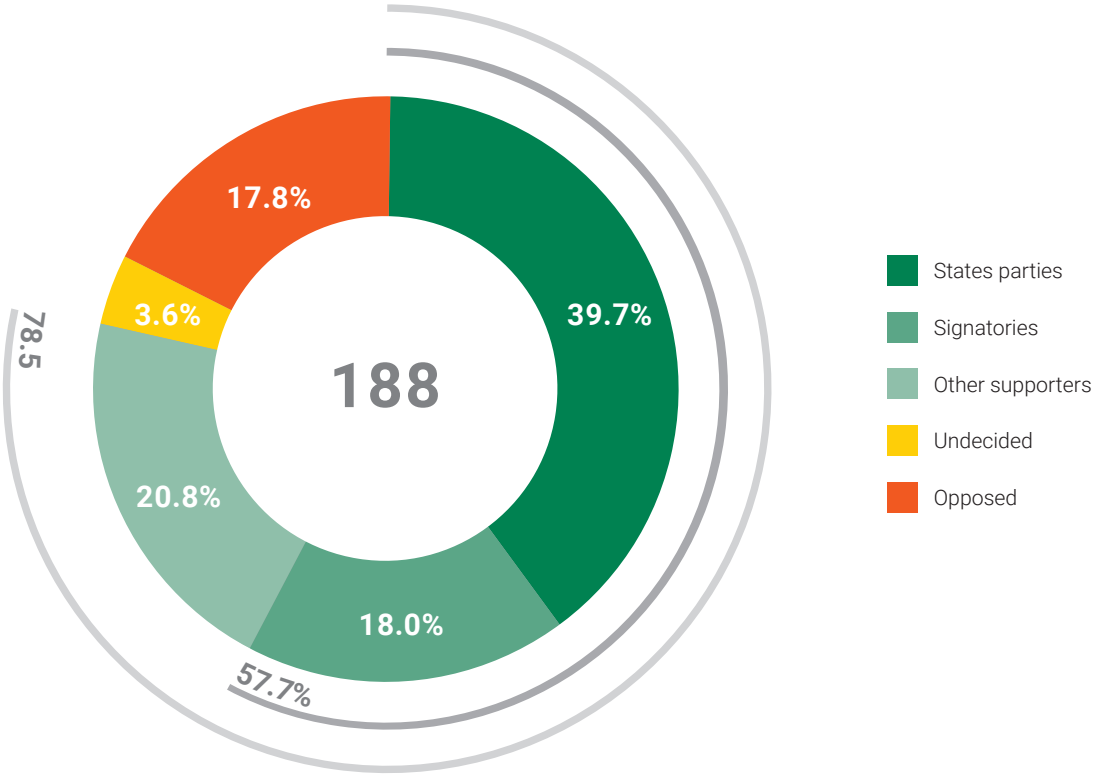
As Table B and Figure 2 overleaf show, a majority of 52% of the 188 non-nuclear-armed states were already states parties or signatories to the TPNW as of 31 December 2024. Since many of them are large and populous countries, the support in population terms is even higher. Almost 58% of the population in the 188 non-nuclear-armed states live in countries that are signatories or parties to the TPNW. When also the states that are so-called other supporters are included, a total of 73% of the non-nuclear-armed states are supportive of the TPNW, representing 78.5% of the population in non-nuclear-armed states. The 35 non-nuclear-armed states (31 of which are nuclear umbrella states) that at the close of 2024 remained opposed to the TPNW constitute only 18.6% of the 188 non-nuclear-armed states and represent 17.8% of their population.

Tong Zhao, Senior Fellow at the Carnegie Endowment for International Peace, said in 2024 that the TPNW has played an important role in raising public awareness and delegitimising nuclear weapons, and reminded the Treaty's states parties that they have 'a bigger potential' and that they 'have a lot of power', because they represent many Global South countries. When nuclear-armed states compete for greater geopolitical influence, 'they all want to win the hearts and minds of Global South countries. So if those countries [the states parties of the TPNW] work together, they actually have a great capacity to make the major powers hear their request. They need to stand up together … and demand these countries behave and reduce their reliance on nuclear weapons,' said Zhao.[15]

10 The Federal Assembly, Motion 17.4241, Signer et ratifier le traité sur l'interdiction des armes nucléaires, at: https://bit.ly/2kTeiql
11 Swiss Federal Council, 'Treaty on the Prohibition of Nuclear Weapons: Federal Council sees no need to change direction at this time', Press release, Bern, 27 March 2024, at: https://bit.ly/3PIY7ak
12 ICAN, 'New Swiss initiative calls for popular vote on UN nuclear weapons ban treaty', 2 July 2024, at: https://bit.ly/3Ct5S0S
13 In accordance with Article 15(2) of the TPNW, a state formally becomes party to the Treaty 90 days after it deposits its instrument of ratification or accession with the UN Secretary-General. For the purpose of this report, however, states are considered as parties from the date of their deposit.
14 Source: World Bank 2023 data, at: https://bit.ly/3CgeSqc
15 T. Zhao, statement during the Nobel Peace Prize Forum 2024, Oslo, 11 December 2024, at: https://bit.ly/3WsnEbp

Table B: Shares of population and shares of states, as of 31.12.2024								
TPNW support categories	**Shares of population**		**Numbers and shares of states**				**Populations** Source: World Bank 2023 data, at: https://bit.ly/3CgeSqc	
	All states (197)	Non-nuclear-armed states (188)	All states	Share of all states	Non-nuclear-armed states	Share of non-nuclear-armed states	All states	Non-nuclear-armed states
1 States parties	21.18%	39.7%	73	37.1%	73	38.8%	1,699,533,312	1,699,533,312
2 Signatories	9.59%	18.0%	25	12.7%	25	13.3%	769,315,134	769,315,134
3 Other supporters	11.10%	20.8%	40	20.3%	40	21.3%	890,911,248	890,911,248
4 Undecided	1.94%	3.6%	15	7.6%	15	8.0%	155,486,074	155,486,074
5 Opposed	56.19%	17.8%	44	22.3%	35	18.6%	4,508,195,604	760,358,197
Total	100%	100%	197	100%	188	100%	8,023,441,372	4,275,603,965

Figure 2: TPNW support as share of population in the 188 non-nuclear-armed states



Regional distribution of support

Breaking down all states' positions on the TPNW by region, Figure 3 opposite shows that support for the TPNW is high in all regions of the world apart from Europe, where 29 (or 85%) of the world's 34 nuclear umbrella states are concentrated. The only five umbrella states located outside of Europe are Armenia, Australia, Canada, Japan, and South Korea. Three of the world's nuclear-armed states are also located in Europe: France, Russia, and the United Kingdom. A total of 33 of the 47 states (70%) in Europe were opposed to the TPNW also in 2024. This included 23 of the 27 members of the European Union (EU). Europe stands out as a significant obstacle for further progress towards universalisation of the TPNW and agreement on nuclear disarmament. The EU should initiate processes to reflect on and address this. Europe has only five states parties: Austria, the Holy See, Ireland, Malta, and San Marino; and one signatory: Liechtenstein.

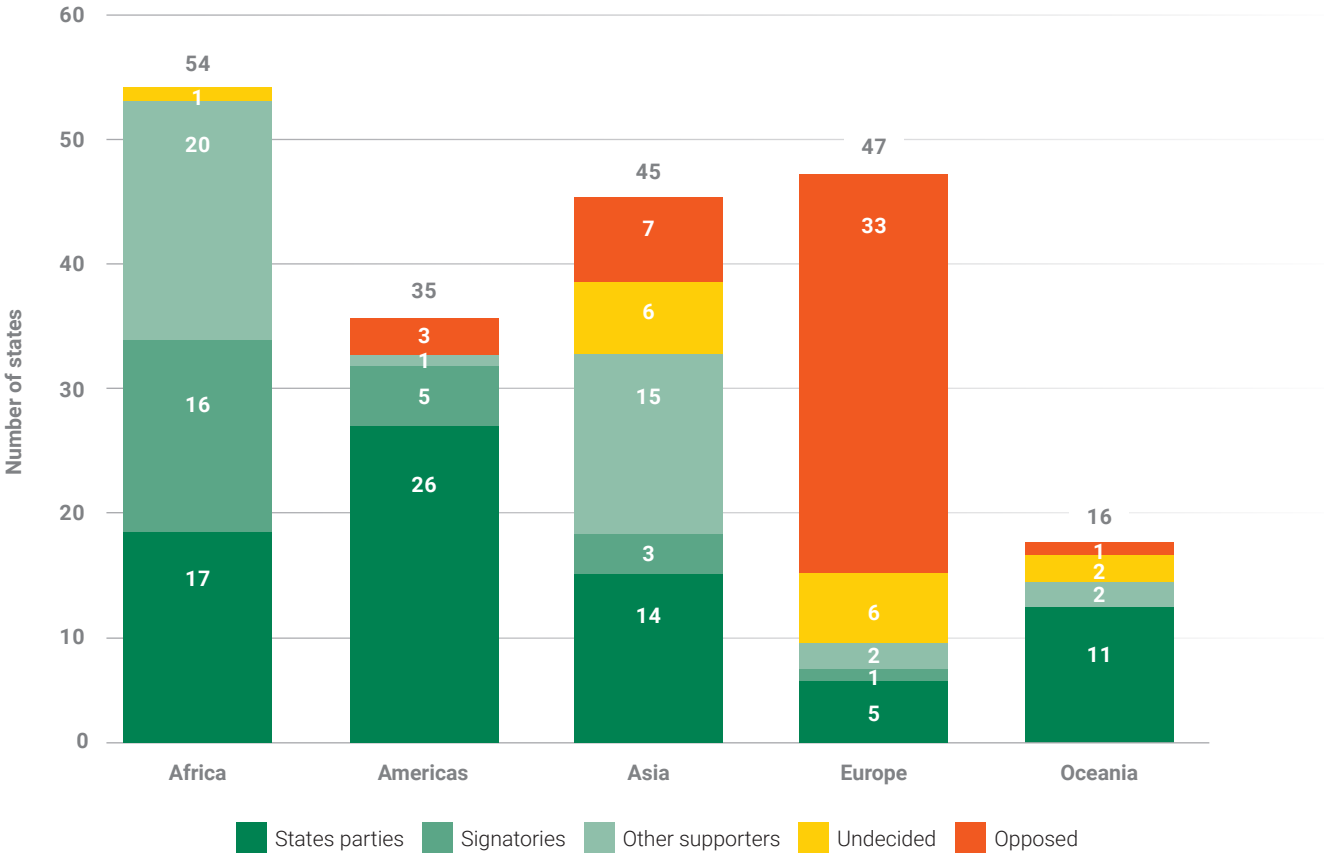
In Africa, all states but one—South Sudan—formally supported the TPNW in 2024, either as states parties or signatories, or as other supporters. South Sudan abstained on the annual UN General Assembly resolution on the TPNW in 2023 and did not vote in 2024.

The Americas is the region with the highest share of states parties. More than 74% of the states in the region are already states parties to the Treaty, while Argentina along with nuclear-armed United States and umbrella state Canada are the only opposed states in the region. In Oceania, too, the share of states parties is high, with 11 states parties (68%) among the 16 states in the region. Micronesia remains the only opposed state in this region, while umbrella state Australia along with the Marshall Islands are undecided.

In Asia, the five nuclear-armed states located in this region (China, India, Israel, North Korea, and Pakistan) were opposed to the TPNW also in 2024, together with US umbrella states Japan and the Republic of Korea (South Korea). Support for the TPNW, however, is relatively high also in Asia. A total of 32 of 45 states in the region (71%) are states parties, signatories, or other supporters.

For an overview of the states in each region by support category, see Table D on page 19.

Figure 3: TPNW support by region, as of 31.12.2024



NWFZ members

The world's five nuclear-weapon-free zone (NWFZ) treaties currently have 104 members.[16] Of those, 59 (or 57%) were at the close of 2024 states parties to the TPNW. Thus, as Figure 4 overleaf shows, 45 (or 43%) were not yet party to the TPNW. Of this number, however, 20 had already signed the TPNW and need only to ratify it. The other 25 states, 20 of which are already in the other supporters category, also constitute a significant and immediate potential for new signatories or acceders to the TPNW. The only four NWFZ members that as of 31 December 2024 were in the undecided category were Australia (Rarotonga), Singapore (Bangkok), and Kyrgyzstan and Tajikistan (Semipalatinsk). Argentina (Tlatelolco) is the only NWFZ member that in 2024 was opposed to the TPNW.

At 2MSP in November 2023, a declaration was adopted that made a special plea for adherence to the Treaty by members of NWFZs, 'in recognition of the shared basis of such treaties and the TPNW'.[17] Table C overleaf provides an overview of the outstanding NWFZ members that should be encouraged by their fellow NWFZ members to urgently ratify or sign or accede to the TPNW.

16 The five NWFZ treaties cover a total of 114 states, of which 104 are parties. The Treaty of Pelindaba has 10 signatories that have not yet ratified it. The UN has also recognised one additional state, Mongolia, as having nuclear-weapon-free status.

17 Revised draft declaration of the 2MSP: 'Our commitment to upholding the prohibition of nuclear weapons and averting their catastrophic consequences', TPNW doc. TPNW/MSP/2023/CRP.4/Rev.1, at: https://bit.ly/3VFH2St

Figure 4: Members of NWFZ treaties disaggregated by their support category under the TPNW, as of 31.12.2024

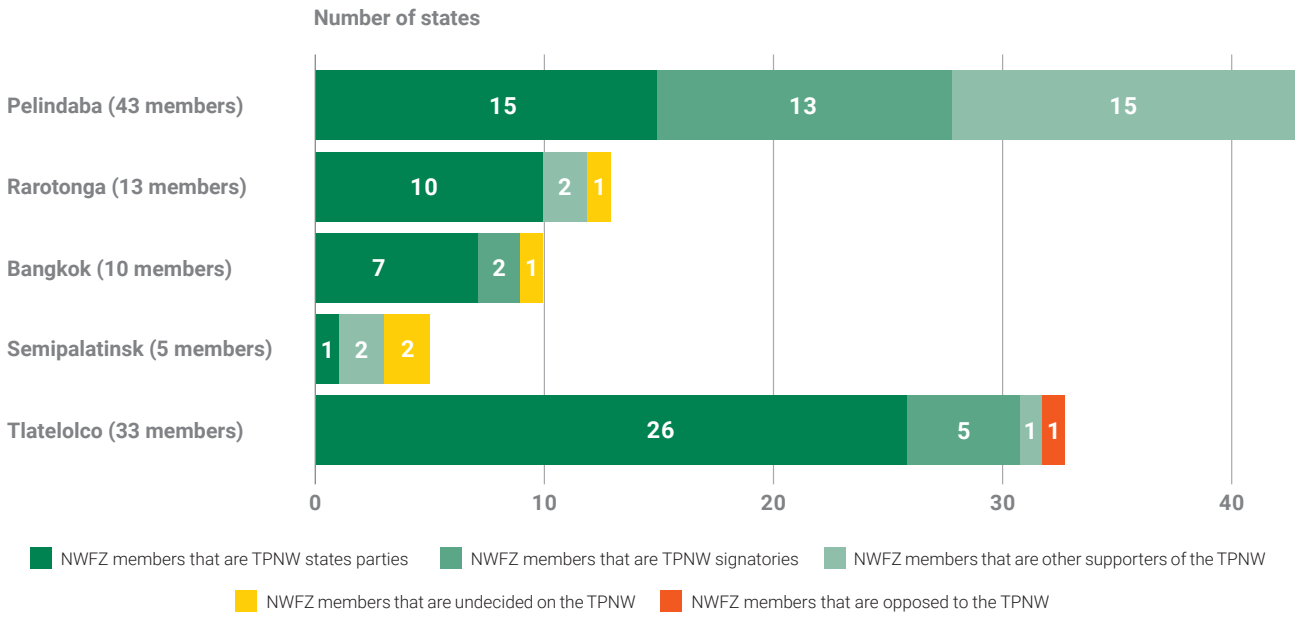
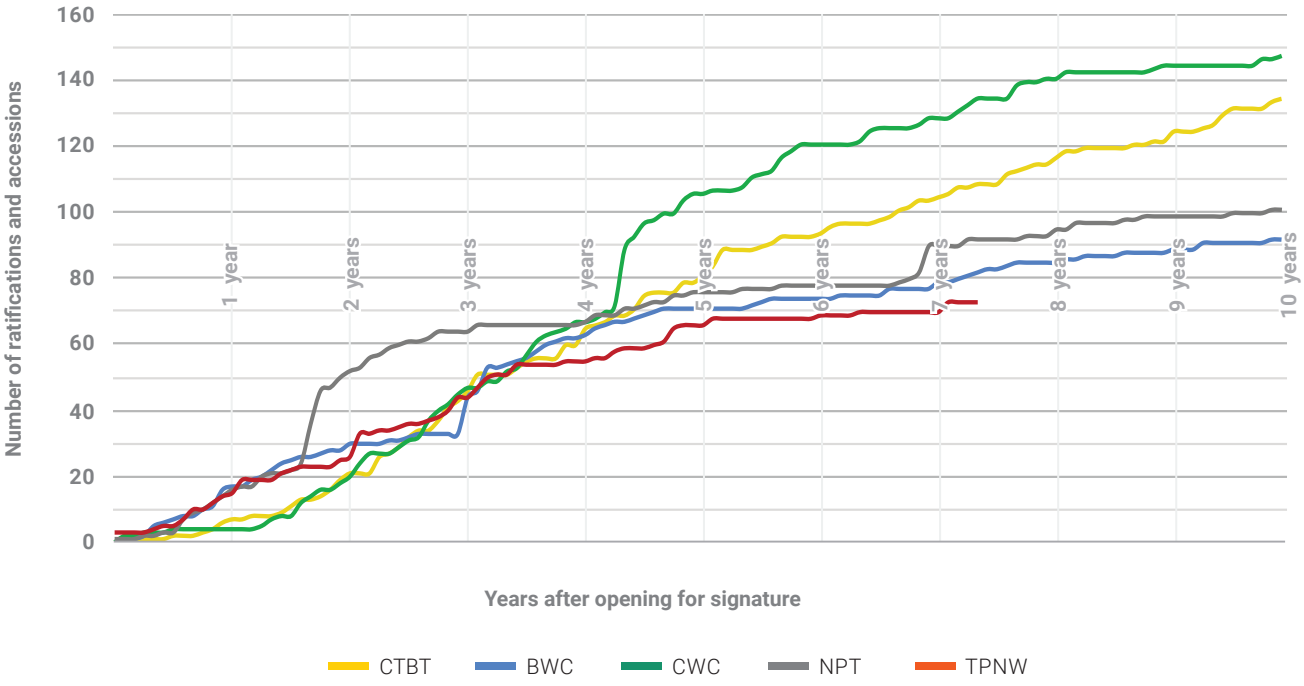


Table C: Members of NWFZ treaties that are not yet states parties to the TPNW, as of 31.12.2024

	Pelindaba	Rarotonga	Bangkok	Semipalatinsk	Tlatelolco
NWFZ members that have signed the TPNW and should ratify the Treaty (20)	Algeria, Angola, Burkina Faso, Equatorial, Guinea, Ghana, Libya, Madagascar, Mozambique, Niger, Tanzania, Togo, Zambia, Zimbabwe		Brunei Myanmar		Bahamas Barbados Brazil Colombia Haiti
NWFZ members that should sign and ratify or accede to the TPNW (25)	Burundi, Cameroon, Chad, Eswatini, Ethiopia, Gabon, Guinea, Kenya, Mali, Mauritania, Mauritius, Morocco, Rwanda, Senegal,Tunisia	Australia Papua New Guinea Tonga	Singapore	Kyrgyzstan Tajikistan Turkmenistan Uzbekistan	Argentina Suriname

Figure 5: Speed of ratification and accession in first ten years – WMD treaties compared

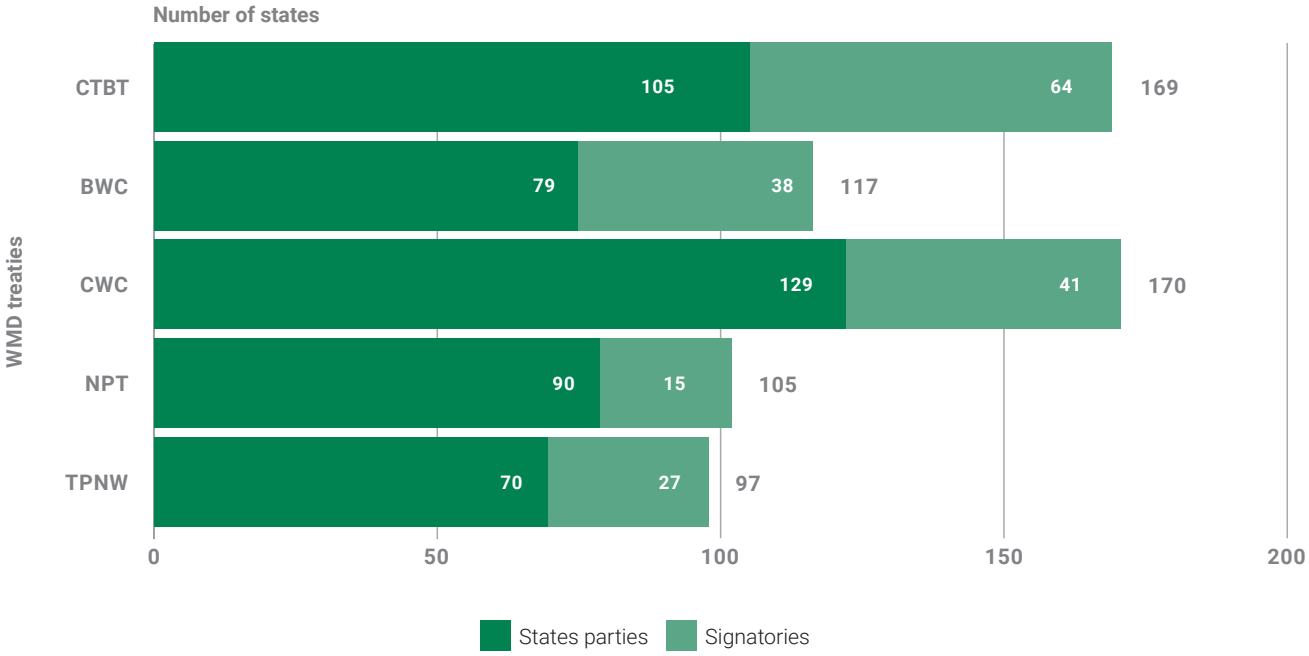


Speed of adherence across WMD treaties

On 20 September 2024, the TPNW passed its seventh year after opening for signature. Figure 5 opposite shows the speed of ratification and accession of the TPNW relative to the other key multilateral treaties in the legal architecture for WMD in the first 10 years after their opening for signature. As it shows, the TPNW fell behind the other treaties at approximately three-and-a-half years after opening for signature but then picked up more speed again after the COVID-19 pandemic. While still behind all of the other WMD treaties in numbers, the TPNW has since then largely followed the same trajectory of ratifications/accessions that the Biological Weapons Convention (BWC) and the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) did at the equivalent point in time. This serves as a reminder that it took several years also for those treaties to accrue the authority that they have today.

It is also relevant to look at the number of states parties and signatories combined, because the TPNW allows signature at any time while the other four key multilateral WMD treaties only allow accession after entry into force. At seven years after opening for signature, the TPNW was not much behind the NPT at the equivalent point in time. As Figure 6 below shows, the TPNW's number of states parties and signatories combined at seven years, was 97. By comparison, the status after seven years for the NPT was a combined total of 105 states parties and signatories.

Figure 6: Status after seven years - level of states parties and signatories combined



Level of adherence across WMD treaties

In building upon and contributing to the other multilateral WMD treaties, the TPNW has the potential to reinforce the legitimacy of the legal WMD architecture as a whole. The objective must be universal adherence to all of the components in this architecture, meaning that all states should be party to each and every one of them. Figure 7 overleaf therefore highlights the gaps in adherence as of 31 December 2024 among the 197 states that may adhere to the WMD treaties.

The world continued to inch closer to universal adherence to all five key WMD treaties in 2024. The Comprehensive Nuclear-Test-Ban Treaty (CTBT) gained one new state party (Papua New Guinea), and the BWC gained two new states parties (Micronesia and Tuvalu). As mentioned above, the TPNW gained four new states parties (Indonesia, Sao Tome and Principe, Sierra Leone, and the Solomon Islands). For the Chemical Weapons Convention (CWC), the latest development was Palestine's accession back in 2018. Palestine was also the most recent country to adhere to the NPT, in 2015.

The most ratified WMD treaty is the CWC, to which only four states are not yet party. One of the four have signed, and three are outliers.[18] The NPT has five outliers,[19] the BWC had four signatories and six outliers at the end of 2024,[20] and the CTBT nine signatories and ten outliers.[21] As discussed above, at the end of 2024, a total of 99 states were not yet parties or at least signatories to the TPNW, the youngest treaty in the legal WMD architecture.

18 CWC: Israel has signed, while the three outliers are Egypt, North Korea, and South Sudan.
19 NPT: The five outliers are India, Israel, North Korea, Pakistan, and South Sudan. Note that the Cook Islands and Niue have not adhered to the NPT in their own right, but New Zealand's ratification of the NPT included territorial application to both states, which remain bound by the Treaty's provisions.
20 BWC: The four signatories are Egypt, Haiti, Somalia, and Syria, and the six outliers are Chad, Comoros, Djibouti, Eritrea, Israel, and Kiribati.
21 CTBT: The nine signatories are China, Egypt, Iran, Israel, Nepal, Russia, Somalia, the United States, and Yemen. The ten outliers are Bhutan, India, Mauritius, North Korea, Pakistan, Palestine, Saudi Arabia, South Sudan, Syria, and Tonga.

As shown in Figure 8 below, a total of 70 states have adhered to all of the five key multilateral WMD treaties, while 105 have adhered to four of the five treaties, fourteen states to three of the five, four states (India, Pakistan, Somalia, and Syria) to only two of the treaties, and three (Egypt, North Korea, South Sudan) to only one of the treaties. Only one state, Israel, has not adhered to any of the five key WMD treaties.

Where a state is not yet a state party to a treaty, this is noted in its respective state profile on www.banmonitor.org, along with a recommendation for urgent adherence. States that have adhered to all of the five treaties and in addition also to Comprehensive Safeguards Agreements (CSAs) and Additional Protocols (APs) with the International Atomic Energy Agency (IAEA) are highlighted in their state profiles as examples to be followed by other states.

Figure 7: Gaps in adherence – WMD treaties compared, as of 31.12.2024

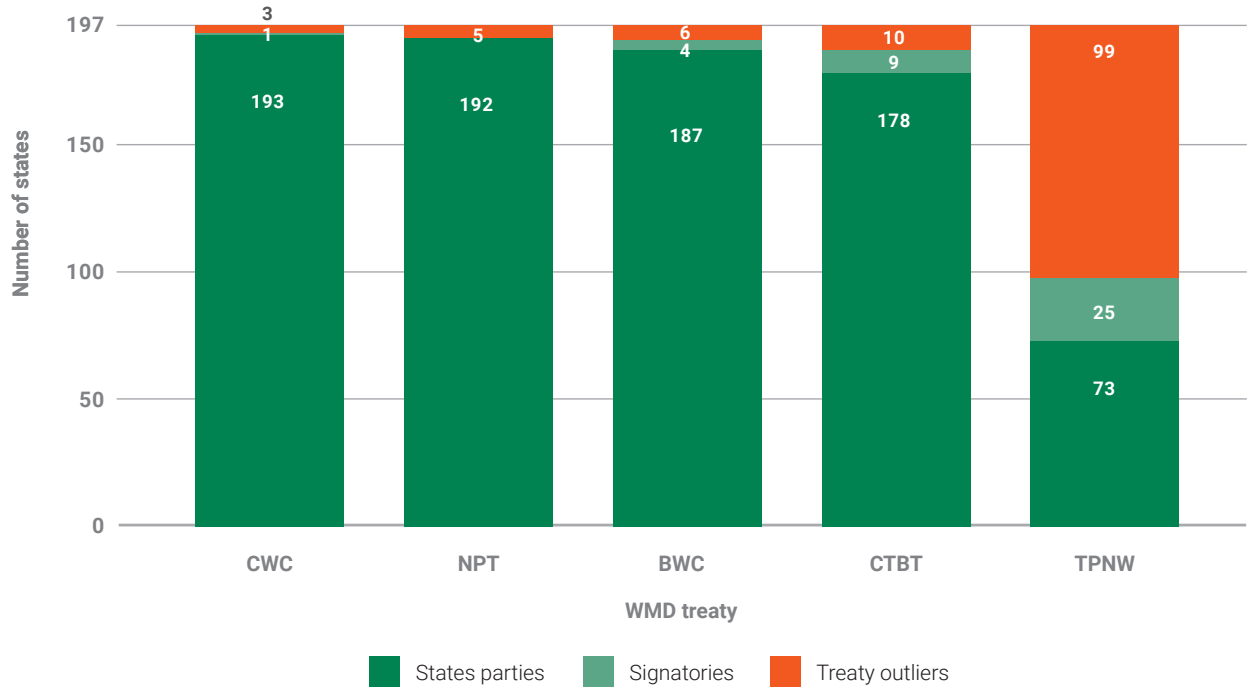


Figure 8: Progress towards universalisation of the five key WMD treaties, status as of 31.12.2024

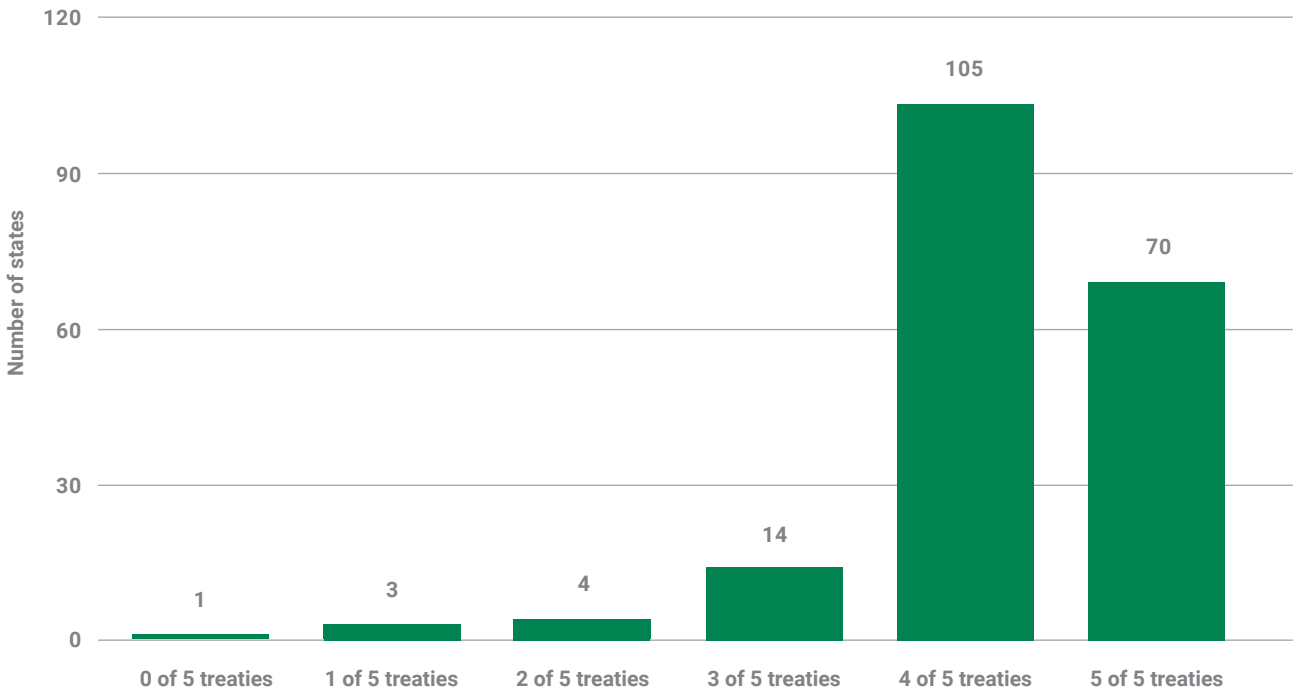


TABLE D: ALL STATES BY REGION AND THEIR POSITION ON THE TPNW
Umbrella states identified in red, and nuclear-armed states in red and underlined.

Category	Asia	Europe	Africa	Americas	Oceania
States parties (73 states)	Bangladesh, Cambodia, Indonesia, Kazakhstan, Lao PDR, Malaysia, Maldives, Mongolia, Palestine, Philippines, Sri Lanka, Thailand, Timor-Leste, Viet Nam	Austria, Holy See, Ireland, Malta, San Marino	Benin, Botswana, Cabo Verde, Comoros, Congo, Côte d'Ivoire, DR Congo, Gambia, Guinea-Bissau, Lesotho, Malawi, Namibia, Nigeria, Sao Tome and Principe, Seychelles, Sierra Leone, South Africa	Antigua and Barbuda, Belize, Bolivia, Chile, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Uruguay, Venezuela	Cook Islands, Fiji, Kiribati, Nauru, New Zealand, Niue, Palau, Samoa, Solomon Islands, Tuvalu, Vanuatu
Signatories (25 states)	Brunei, Myanmar, Nepal	Liechtenstein	Algeria, Angola, Burkina Faso, Central African Rep., Djibouti, Equatorial Guinea, Ghana, Libya, Madagascar, Mozambique, Niger, Sudan, Tanzania, Togo, Zambia, Zimbabwe	Bahamas, Barbados, Brazil, Colombia, Haiti	
Other supporters (40 states)	Afghanistan, Azerbaijan, Bahrain, Bhutan, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Turkmenistan, United Arab Emirates, Uzbekistan, Yemen	Andorra, Cyprus	Burundi, Cameroon, Chad, Egypt, Eritrea, Eswatini, Ethiopia, Gabon, Guinea, Kenya, Liberia, Mali, Mauritania, Mauritius, Morocco, Rwanda, Senegal, Somalia, Tunisia, Uganda	Suriname	Papua New Guinea, Tonga
Undecided (15 states)	Armenia, Kyrgyzstan, Saudi Arabia, Singapore, Syria, Tajikistan	Belarus, Bosnia and Herzegovina, Georgia, Moldova, Serbia, Switzerland	South Sudan		Australia, Marshall Islands,
Opposed (44 states)	China, India, Israel, Japan, North Korea, Pakistan, South Korea	Albania, Belgium, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Monaco, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Türkiye, Ukraine, United Kingdom		Argentina, Canada, United States	Micronesia

A woman reacts in front of Russian Yars intercontinental ballistic missile launchers during a rehearsal for a military parade, in downtown Moscow, Russia, 26 April 2024. (Photo by Yuri Kochetkov, EPA/NTB)

2

COMPLIANCE AND COMPATIBILITY IN 2024 WITH THE PROHIBITIONS OF THE TPNW

One hundred and fifty states—76% of the total in the world—already abide by all of the prohibitive norms that the Treaty on the Prohibition of Nuclear Weapons (TPNW) has established. But a sizeable minority of 45 states (almost 23%), engaged in a range of activities in 2024 that in different ways conflicted with the TPNW, while the conduct of two states was of concern. Of the 45 states, 32—more than 70%—are European. To avoid remaining between the international community and the fulfilment of the United Nations' long-standing goal of the elimination of nuclear weapons, they would all have to make varying degrees of changes to their existing policies and practices.

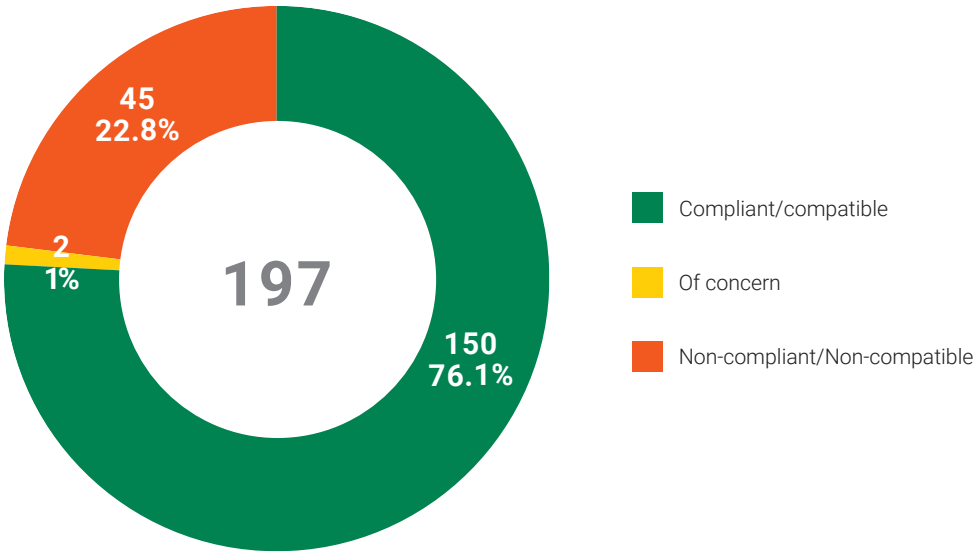
The prohibitions of the TPNW are contained in Article 1 of the Treaty. The Nuclear Weapons Ban Monitor sets out interpretations of each of the prohibitions and assesses whether each of the 197 states that can adhere to the TPNW—regardless of whether it has consented to be bound by the Treaty—acts in accordance with its prohibitions. On the basis of their policies and practices, states parties and signatories are categorised as either 'compliant' or 'non-compliant', whereas non-parties are categorised as either 'compatible' or 'non-compatible'. Where a state has been assessed to be 'of concern', this means that worrying developments in the state warrant close attention as a possible breach of the standards is on the horizon.

The Nuclear Weapons Ban Monitor finds that 97 of the 98 states that as of 31 December 2024 were parties or signatories to the TPNW were compliant with all of the Treaty's ten principal prohibitions in 2024. One state party—Kazakhstan—was found compliant with nine prohibitions but non-compliant with the tenth: the prohibition on assisting a prohibited activity.

The conduct of 53 of the 99 non-parties was also fully compatible with all of the Treaty prohibitions, while 44 non-parties—the same number as in 2023—engaged in conduct that was not compatible with one or more of the prohibitions. Non-parties Iran and Saudi Arabia, which have different degrees of latent nuclear weapons development capabilities, were again recorded as states of concern.

Every state may lawfully sign and ratify the TPNW, but those 53 states not yet party whose conduct is fully compatible with all of the prohibitions can adhere to the Treaty in the knowledge that they already meet its obligations without the need to change existing policies and practices.

Figure 9: Compliance and compatibility with the prohibitions of the TPNW in 2024: Summary of findings across all states.

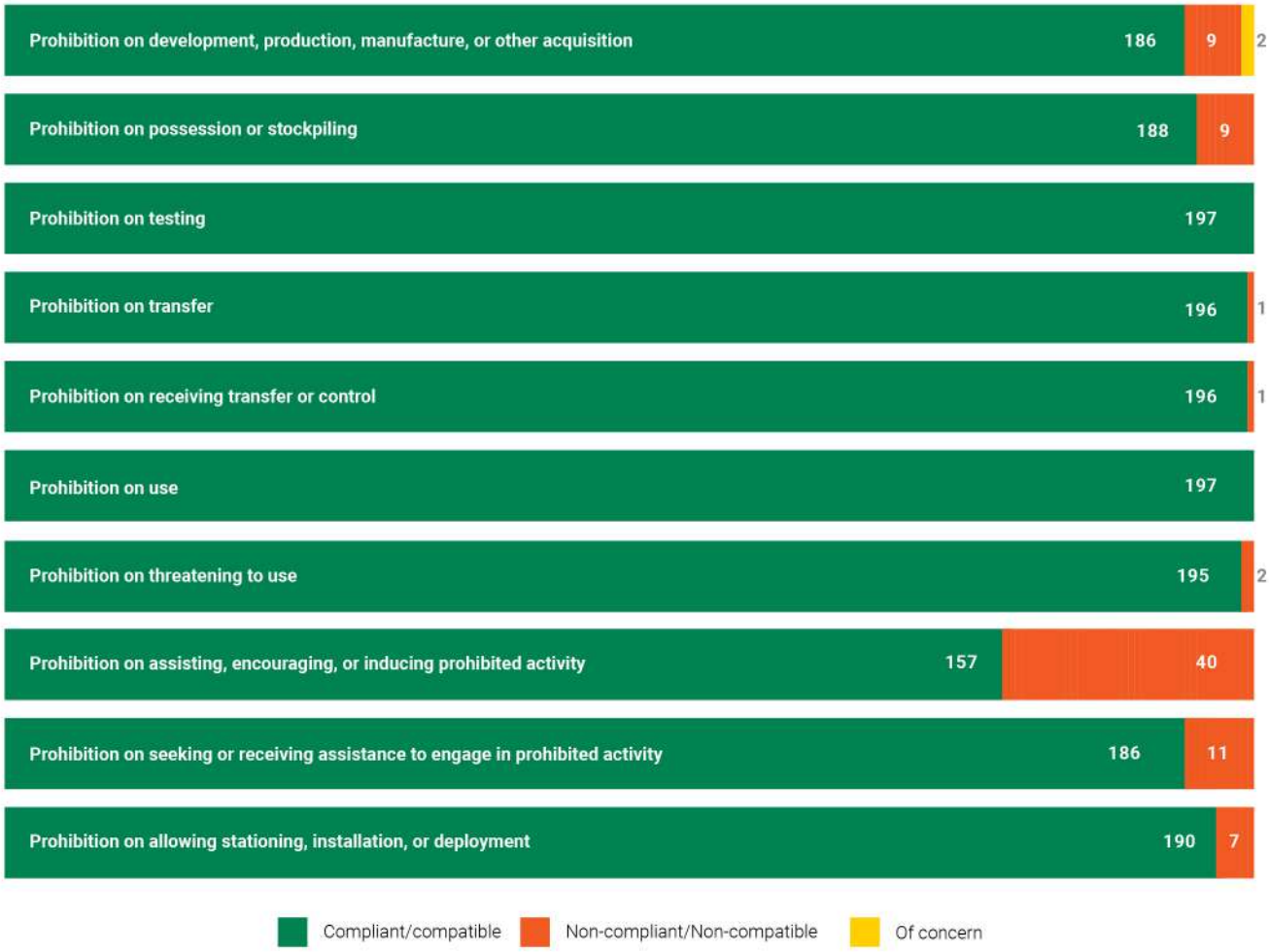


Assessments of all states' compliance or compatibility in 2024 with each of the prohibitions of the TPNW are detailed in ten separate subchapters below but the findings are summarised here.[1]

Compliance and compatibility by prohibition

Figure 10 below disaggregates the Nuclear Weapons Ban Monitor's findings for 2024 by each of the prohibitions. As they show, the large majority of states in the world have policies and practices that are compliant or compatible with all of them. But the only two TPNW norms that no state currently contravenes are the prohibitions on testing and use of nuclear weapons. This speaks volumes about the urgent need to reject and roll back the policies and activities that are conflicting with the other prohibitions, because this is all conduct that compounds the risks of new testing or use of nuclear weapons.

Figure 10: Number of states compliant or compatible with the prohibitions of the TPNW in 2024: Summary of findings by prohibition.



THE TPNW AND NUCLEAR DETERRENCE

The TPNW does not explicitly prohibit or even mention 'nuclear deterrence'. The reason for this is that deterrence is not a specific act or behaviour, but a psychological state that may or may not exist inside an adversary's head. However, the TPNW prohibits a range of specific actions that are typically performed with the aim of fostering deterrence, including possessing nuclear weapons, hosting nuclear weapons, threatening to use nuclear weapons, or assisting or encouraging other states to engage in such behaviour. Crucially, these behaviours are prohibited irrespective of whether they succeed in fostering 'deterrence' in the minds of potential adversaries.

1 Article 1(1)(e) of the TPNW contains eleven distinct prohibitions: To 1) develop, 2) test, 3) produce, 4) possess or stockpile, 5) use, 6) threaten to use, 7) transfer, 8) receive transfer or control, 9) assist, encourage, or induce anyone to engage in prohibited activity, 10) seek or receive assistance to engage in prohibited activity, and 11) allow stationing, installation, or deployment of nuclear weapons. Given their close relationship, the Nuclear Weapons Ban Monitor considers the two distinct prohibitions on development and production of nuclear weapons together. For practical reasons, therefore, the Nuclear Weapons Ban Monitor discusses below a total of ten principal prohibitions.

Nuclear-armed states

Most importantly, of course, in 2024 the world's nine nuclear-armed states continued to fall foul of several of the TPNW's prohibitions. The conduct of China, France, India, Israel, North Korea, Pakistan, Russia, the United Kingdom, and the United States was again not compatible with the prohibition in Article 1(1)(a) on developing, producing, manufacturing, or otherwise acquiring nuclear weapons, or with the prohibition in the same article on possessing or stockpiling them.

Two nuclear-armed states (North Korea and Russia) also fell foul of the prohibition in Article 1(1)(d) on threatening to use nuclear weapons; one state (the United States) continued to contravene the Treaty's prohibition on transfer of nuclear weapons; and one state (the United Kingdom) contravened the prohibition on receiving transfer of or control over nuclear weapons.

France, Russia, the United Kingdom, and the United States also assisted and encouraged prohibited activities by other states, and received assistance for their own prohibited activities.

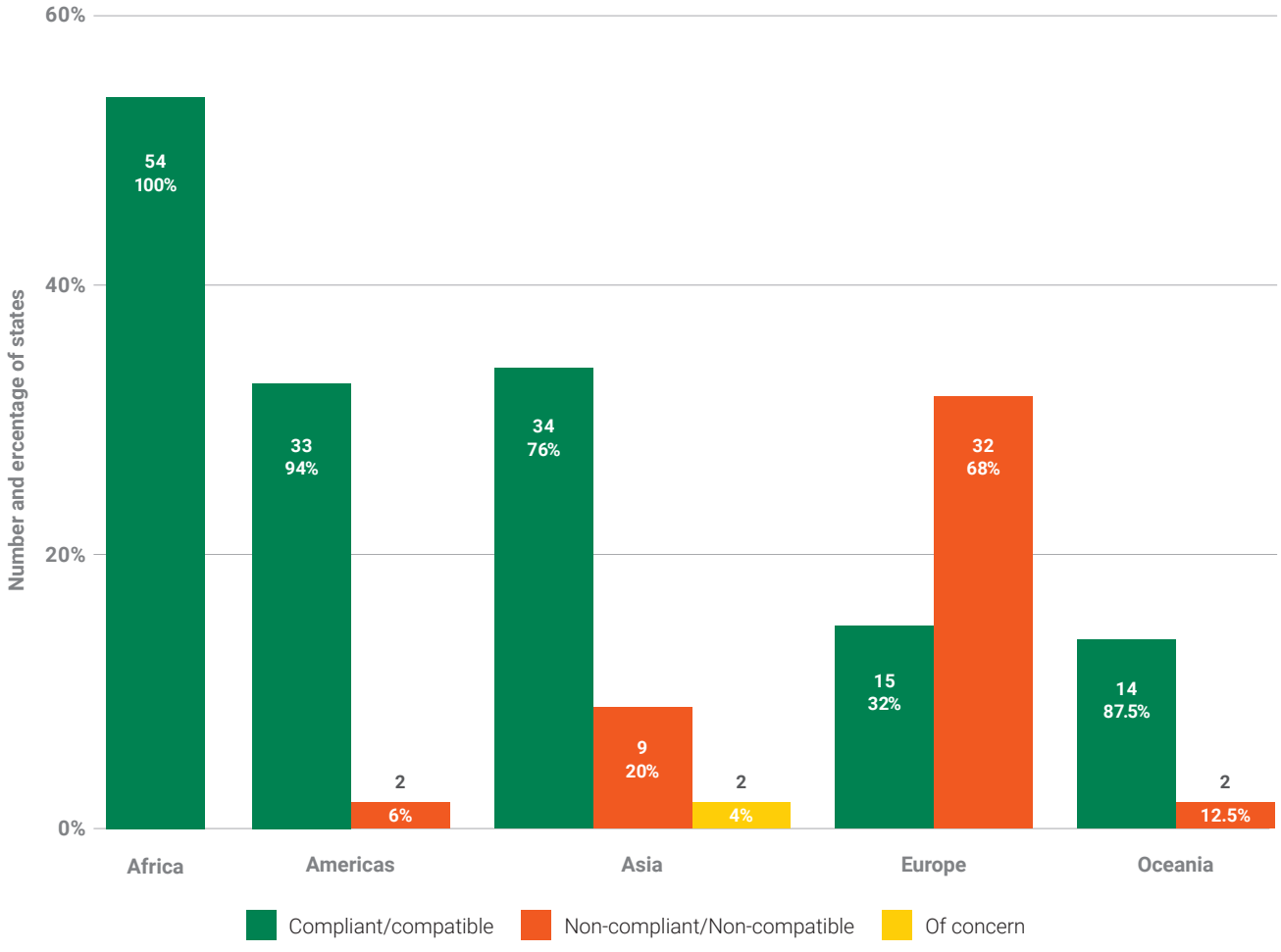
Nuclear umbrella states

The addition to the nuclear order of the TPNW and its comprehensive set of prohibitions is also laying bare the considerable degree of responsibility that the world's 34 states with arrangements of extended nuclear deterrence with nuclear-armed states (the so-called 'nuclear umbrella states') bear for the continued development and possession of nuclear weapons and the associated nuclear risks that the entire international community is forced to endure.

Together with the United Kingdom, six umbrella states (Belarus, Belgium, Germany, Italy, the Netherlands, and Türkiye) contravened the TPNW's prohibition on allowing stationing, installation or deployment of nuclear weapons. In doing so, they also contravened the prohibition on seeking or receiving assistance to engage in prohibited activity.

Finally, the prohibition in Article 1(1)(e) on assistance, encouragement, or inducement of prohibited activities continues to stand out as the provision of the TPNW that is contravened by the greatest number of states. In 2024, a total of 40 states, including the 34 umbrella states, aided and abetted activities that are prohibited by the TPNW.

Figure 11: Compliance and compatibility with the prohibitions of the TPNW in 2024: Summary of findings by regions



Compliance and compatibility by region

Figure 11 above breaks down the compliance and compatibility findings for 2024 by region. As it shows, compliance and compatibility with the prohibitions of the TPNW is generally high, but Africa continues to be the only region where all states have policies and practices that are compliant or compatible with all of the prohibitions of the TPNW.

Europe also continues to be the region with by far the most states with conduct that conflicts with the Treaty. A total of 32 of the 45 states (71%) that in 2024 were found by the Nuclear Weapons Ban Monitor to have policies and practices that contravene one or more of the prohibitions of the TPNW, were European. The 32 states in question account for 68% of all the 47 European states: three nuclear-armed states (France, Russia, and the United Kingdom) and 29 umbrella states.

In Asia, where five of the world's nuclear-armed states are located, nine of 45 states in the region were found to be non-compliant or non-compatible. In addition, the only two states listed as being 'of concern'—Iran and Saudi Arabia—are both in Asia.

In the Americas, only two states (Canada and the United States) of the total of 35 across engage in conduct which is not compatible with the Treaty.

Among the 16 states in Oceania, Australia and the Marshall Islands are the only two with policies and practices that are not fully compatible with the TPNW.

Table E opposite provides an overview of the states that engaged in conduct that was not compatible with all of the prohibitions, or that were of concern in relation to any of the prohibitions, broken down by region and prohibition. As the Table shows, some states engage in more conduct that conflicts with the TPNW than others.

For information on specific states, see the state profiles on www.banmonitor.org

TABLE E: OVERVIEW BY REGION OF STATES WITH POLICIES OR PRACTICES THAT IN 2024 WERE NON-COMPLIANT OR NON-COMPATIBLE WITH, OR OF CONCERN IN RELATION TO, ONE OR MORE OF THE TPNW'S PROHIBITIONS

TPNW Article	Art 1(1)(a)	Art 1(1)(a)	Art 1(1)(a)	Art 1(1)(b)	Art 1(1)(c)	Art 1(1)(d)	Art 1(1)(d)	Art 1(1)(e)	Art 1(1)(f)	Art 1(1)(g)
Prohibition	Prohibition on development, production, manufacture, or other acquisition	Prohibition on possession or stockpiling	Prohibition on testing	Prohibition on transfer	Prohibition on receiving transfer or control	Prohibition on use	Prohibition on threatening to use	Prohibition on assisting, encouraging, or inducing prohibited activity	Prohibition on seeking or receiving assistance to engage in prohibited activity	Prohibition on allowing stationing, installation, or deployment
ASIA										
Armenia								Non-compatible		
China	Non-compatible	Non-compatible								
India	Non-compatible	Non-compatible								
Iran	Of concern									
Israel	Non-compatible	Non-compatible								
Japan								Non-compatible		
Kazakhstan								Non-compliant		
North Korea	Non-compatible	Non-compatible					Non-compatible			
Pakistan	Non-compatible	Non-compatible								
Saudi Arabia	Of concern									
South Korea								Non-compatible		
EUROPE										
Albania								Non-compatible		
Belarus								Non-compatible	Non-compatible	Non-compatible
Belgium								Non-compatible	Non-compatible	Non-compatible
Bulgaria								Non-compatible		
Croatia								Non-compatible		
Czechia								Non-compatible		
Denmark								Non-compatible		
Estonia								Non-compatible		
Finland								Non-compatible		
France	Non-compatible	Non-compatible						Non-compatible	Non-compatible	
Germany								Non-compatible	Non-compatible	Non-compatible
Greece								Non-compatible		
Hungary								Non-compatible		
Iceland								Non-compatible		
Italy								Non-compatible	Non-compatible	Non-compatible
Latvia								Non-compatible		
Lithuania								Non-compatible		
Luxembourg								Non-compatible		
Montenegro								Non-compatible		
Netherlands								Non-compatible	Non-compatible	Non-compatible
North Macedonia								Non-compatible		
Norway								Non-compatible		
Poland								Non-compatible	Non-compatible	
Portugal								Non-compatible		
Romania								Non-compatible		
Russia	Non-compatible	Non-compatible					Non-compatible	Non-compatible	Non-compatible	
Slovakia								Non-compatible		
Slovenia								Non-compatible		
Spain								Non-compatible		
Sweden								Non-compatible		
Türkiye								Non-compatible	Non-compatible	Non-compatible
United Kingdom	Non-compatible	Non-compatible			Non-compatible			Non-compatible	Non-compatible	Non-compatible
AMERICAS										
Canada								Non-compatible		
United States	Non-compatible	Non-compatible		Non-compatible				Non-compatible	Non-compatible	
OCEANIA										
Australia								Non-compatible		
Marshall Islands								Non-compatible		
47 states	**9 + 2 states**	**9 states**	**0 states**	**1 state**	**1 state**	**0 states**	**2 states**	**40 states**	**11 states**	**7 states**

On 13 September 2024, North Korea for the first time publicly announced the existence of its facility for producing highly enriched uranium (HEU), a key component in nuclear weapons. The Korean Central News Agency (KCNA) released photos of North Korean leader Kim Jong Un touring a room filled with centrifuges and reported that the visit was part of his inspection of the country's nuclear weapons research and weapons-grade nuclear material production capabilities. (Photo by EPA/KCNA/NTB)

THE PROHIBITION ON

DEVELOPMENT, PRODUCTION, MANUFACTURING AND OTHER ACQUISITION

The nine nuclear-armed states continued to engage in conduct in 2024 that was not compatible with the Treaty on the Prohibition of Nuclear Weapons' (TPNW) prohibition on developing, producing, manufacturing, or otherwise acquiring nuclear weapons. Two further states not party to the TPNW—Iran and Saudi Arabia—were again recorded as states of concern. Disconcertingly, discussion on the possibility of pursuing nuclear armament also mounted in several other states not party to the TPNW—and most notably in Germany, Japan, and not least South Korea—despite their existing unequivocal obligations not to develop or acquire nuclear weapons under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The non-proliferation norm established by the NPT and reinforced by the TPNW is under increasing pressure.

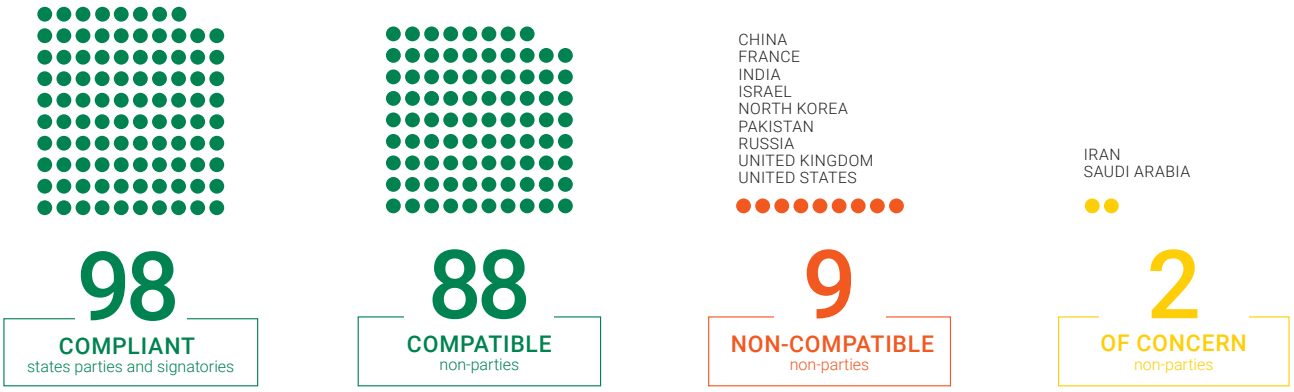


Figure 12: Compliance and compatibility in 2024 with the TPNW's prohibition on development, production, manufacturing and other acquisition

Although most nuclear-armed states brand their ongoing development and production efforts as nuclear 'modernisation', their actions go well beyond simple maintenance and sustainment operations. In reality, every nuclear-armed state in 2024 continued to actively develop and produce new nuclear warheads and/or delivery vehicles, in addition to upgrading their existing nuclear capabilities. Moreover, against the backdrop of rising global tensions, many nuclear-armed states are increasing the roles of nuclear weapons in their military doctrines.

In 2024, the International Campaign to Abolish Nuclear Weapons (ICAN) documented that the nine nuclear-armed states' spending on their arsenals surged to a combined total of US$91.4 billion in 2023. This was US$10.7 billion more than in the preceding year.[1] Citing the report in his address to the UN General Assembly in September 2024, Brazilian President Luiz Inácio Lula da Silva commented: 'These resources could have been used to combat hunger and address climate change.'[2]

Nuclear deterrence is an increasingly fragile system and nuclear weapons are a source of constant insecurity. Nevertheless, nuclear deterrence as a security ideology remains a core driver of investment in expensive and expansive nuclear modernisation. Nuclear modernisation is also typically prompted by several other interlocking factors. These

WHAT IS A NUCLEAR WEAPON?

- As is the case with the NPT, the TPNW does not define 'nuclear weapons' or 'other nuclear explosive devices'. There is, though, a settled understanding among states of these terms.
- A nuclear explosive device is an explosive device whose effects are derived primarily from nuclear chain reactions.
- A nuclear weapon is a nuclear explosive device that has been weaponized, meaning that it is contained in and delivered by, for example, a missile, rocket, or bomb.
- Thus, all nuclear weapons are a form of nuclear explosive device but not all nuclear explosive devices are nuclear weapons.

1 ICAN, 'Surge: 2023 Global Nuclear Weapons Spending', June 2024, at: https://bit.ly/3E3gWlO
2 Government of Brazil, 'Speech by President Lula at the opening of the 79th UN General Assembly in New York', 24 September 2024, at: https://bit.ly/4fXF5HK

include the long timelines of weapons development, the tremendous influence of corporate lobbyists on nuclear policy decisions, and the lack of arms control treaties keeping arsenals in check. Nuclear modernisation is also an inherent feature of the 21st-century nuclear arms competition, as states continuously seek to negate their adversaries' advantages. Finally, nuclear-armed states are becoming increasingly opaque about their nuclear forces. This is highly problematic, as ambiguity about nuclear stockpiles, deployments, and employment policies can lead to worst-case assumptions about how countries will develop or use nuclear weapons in the future.

During the Cold War, the two superpowers took pains to make sure their nuclear and conventional military capabilities were operated separately. But increasingly that line is being blurred. Russia and China, in particular, continue to develop dual-capable systems that are specifically designed to deliver either nuclear or conventional payloads. This poses a serious challenge for crisis stability: if a salvo of dual-capable missiles were to be detected in flight, how would the targeted country know whether the payloads were nuclear or conventional? And would countries be able to target those dual-capable missiles without that same country assuming that a nuclear attack was incoming?

The year 2024 also saw the rise of a renewed intermediate-range nuclear arms race – a class of weapon that had previously been banned for the United States and Russia under the now-defunct 1987 Intermediate-Range Nuclear Forces (INF) Treaty.[3] Both the United States and Russia are developing weapons that would have fallen within the scope of that treaty.

The Nuclear Weapons Ban Monitor collaborates with the Federation of American Scientists' (FAS) Nuclear Information Project to estimate and analyse global nuclear forces. The following summary provided by FAS is intended to be a snapshot of each of the nine nuclear-armed states primary nuclear developments in 2024. It is not an exhaustive overview.[4]

ARTICLE 1(1)(a) - INTERPRETATION

Each State Party undertakes never under any circumstances to: 'Develop, … produce, manufacture, otherwise acquire … nuclear weapons or other nuclear explosive devices.'

- The prohibited 'development' of a nuclear weapon or other nuclear explosive device encompasses any of the actions and activities intended to prepare for its production. This covers relevant research, computer modelling of weapons or warheads, and the testing of key components, as well as sub-critical testing (i.e. experiments simulating aspects of nuclear explosions using conventional explosives and without achieving uncontrolled nuclear chain reactions).
- The concepts of 'production' and 'manufacture' overlap significantly, covering the processes that are intended to lead to a completed, useable weapon or device. In general parlance, 'production' is a broader term than 'manufacture': manufacture describes the use of machinery to transform inputs into outputs. Taken together, these concepts encompass not only any factory processes, but also any improvisation or adaptation of a nuclear explosive device.
- The prohibition on 'otherwise acquiring' a nuclear weapon or other nuclear explosive device is a catch-all provision that encompasses any means of obtaining nuclear weapons or other nuclear explosive devices other than through production. This could be through import, lease, or borrowing from another source or, in theory, by recovering a lost nuclear weapon or capturing or stealing one. This prohibition overlaps with the one in Article 1(1)(c) on receiving the control over nuclear weapons or other nuclear explosive devices (discussed below).
- The prohibition on development, production, manufacturing, and acquisition also covers key components. It is widely accepted that the missile, rocket, or other munition, including both the container and any means of propulsion and launch capability, are key components in a nuclear weapon. Test-launches of missiles designed to carry nuclear weapons are often used to validate particular systems or subcomponents and therefore constitute prohibited development of nuclear weapons. Delivery platforms such as aircraft and submarines are not key components of nuclear weapons as such, and are therefore not in and of themselves captured by the prohibitions in Article 1. They may, however, of course be integral to a nuclear-weapon system, and any components of a delivery platform that are designed specifically for the launching of nuclear weapons, are indeed captured by the prohibitions in Article 1.
- Development and production of dual-use components, such as navigation or guidance systems, which could be used in both nuclear and conventional weapons, would only be prohibited under the TPNW when they were intended to be used in nuclear weapons.
- Key components are also the fissile material (plutonium or highly enriched uranium) and the means of triggering the nuclear chain reaction. Production or procurement of fissile material constitutes prohibited development when this is done with the intent to produce nuclear weapons or other nuclear explosive devices. To research, produce, and use nuclear energy for peaceful purposes is permitted both under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and the TPNW.
- Under Article II of the NPT, a similar obligation is imposed not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, but this applies only to the non-nuclear-weapon states designated under the Treaty and does not prohibit the designated nuclear-weapon states from continuing to develop, produce, and manufacture nuclear weapons or other nuclear explosive devices.

3 Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles; signed at Washington, DC, 8 December 1987; entered into force 1 June 1988. The Treaty was defunct as of 2 August 2019.

4 For more detailed overviews of each state's nuclear developments, see Federation of American Scientists, 'Status of World Nuclear Forces', at: http://bit.ly/2B71Qcf

RUSSIA

Despite a series of test failures, including one in September 2024 that significantly damaged the Plesetsk launch site, Russia appears to be very close to deploying its next-generation Sarmat intercontinental ballistic missile (ICBM).[5] The Sarmat, alongside other new classes of ICBM weapons like the Yars-M and Avangard hypersonic glide vehicle, will replace the remainder of Russia's Soviet-era ICBMs. In November 2024, Russia also used a new type of nuclear-capable experimental intermediate-range ballistic missile (IRBM) in combat in Ukraine: the Oreshnik is capable of carrying at least six multiple independently targetable re-entry vehicles (MIRVs), each of which is also capable of carrying multiple submunitions.[6] When used in Ukraine, the missile carried conventional submunitions, but it is also able to carry nuclear weapons, further complicating the dual-capable entanglement challenge described above.

In 2024, Russia's eighth improved Borei-class nuclear-powered ballistic missile submarine (SSBN)—the Knyaz Pokharsky—began sea trials, preparing it to be delivered to the Navy in June 2025.[7] Russia has also continued to modernise its fleet of legacy strategic bombers, although some of its newer bomber development programmes are suffering from significant delays.

New in 2024 were reports of plans by Russia to place nuclear weapons in space, according to US Assistant Secretary of Defense for Space Policy, John Plumb.[8] Although Russia denied these claims,[9] in April 2024 it vetoed a UN Security Council resolution, proposed jointly by the United States and Japan, which would have reaffirmed the obligation of states parties to the 1966 Outer Space Treaty not to place nuclear weapons in orbit around the Earth.[10]

THE UNITED STATES

The United States is in the midst of a wide-ranging modernisation programme to upgrade or replace every nuclear warhead and delivery system in its nuclear arsenal. The cost of this programme could reach US$2 trillion, and it is expected that this will serve to maintain nuclear weapons in the US nuclear arsenal through most of the remainder of this century.

In 2024, the United States continued its construction of prototype test silos for the incoming Sentinel ICBM and passed the 50 per cent construction completion metric for the lead boat of the new Columbia-class SSBN.[11] Work also proceeded apace on the new B61-12 gravity bomb, which has now entered the US stockpile and has been deployed to bases in Europe. In April 2024, the National Nuclear Security Administration (NNSA) reported delivering more than 200 modernised nuclear weapons to the US Department of Defense (DoD) during the previous fiscal year – the most since the end of the Cold War.[12]

Notably, in recent years, the expansion of China's nuclear arsenal and its growing economic and military power have been framed as a 'three-body problem', with particular emphasis on how the United States can deter both Russia and China in a tripolar nuclear relationship. While not yet official US policy, a prominent narrative continued throughout 2024 that this could require an increase in the number of deployed US nuclear weapons by reintroducing MIRVs to US ICBMs, as well as an expansion to the current modernisation programme of record that could ultimately increase the overall size of the US nuclear arsenal. New nuclear employment guidance released in 2024 concluded that 'it may be necessary to adapt current US force capability, posture, composition, or size', and directs the Pentagon 'to continuously evaluate whether adjustments should be made'.[13] It remains to be seen whether the new Trump administration intends to correspondingly expand current US nuclear force posture, although this seems likely.

CHINA

China's nuclear stockpile is expected to increase significantly in the next decade, although its arsenal is still expected to remain significantly smaller than that of either Russia or the United States. In 2024, satellite imagery indicated that China had begun test operations at its new CFR-600 fast-breeder reactor; which could ultimately be used to significantly increase China's plutonium stocks, although this would take several years and a political decision to divert the produced plutonium to military use.[14]

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5 M. Trevelyan, 'Images show Russia's new Sarmat missile suffered major test failure, researchers say', *Reuters*, 23 September 2024, at: https://bit.ly/4hebZ89; and M. Korda, and H. M. Kristensen, 'Upgrade Underway For Russian Silos To Receive New Sarmat ICBM', Federation of American Scientists, Strategic Security Blog, 19 October 2023, at: https://bit.ly/3RojGhH

6 S. Kullab and E. Morton, 'Ukraine shows AP the wreckage of a new experimental Russian missile', *Associated Press*, 24 November 2024, at: https://bit.ly/3PxIlJO

7 TASS. 'Атомный ракетоносец "Князь Пожарский" передадут ВМФ в июне', 4 December 2024, at: https://bit.ly/4fYN3Am

8 U. L. Harpley, 'DOD Official Confirms Russia Is Developing an "Indiscriminate" Space Nuke', *Air & Space Forces Magazine*, 2 May 2024, at: https://bit.ly/3DWSlPS

9 R. Greenall, 'Putin denies plans to deploy nuclear weapons in space', *BBC News*, 20 February 2024, at: https://bit.ly/42ed3EY

10 The White House, 'Statement from National Security Advisor Jake Sullivan on Russia's Veto of the UN Security Council Resolution on the Outer Space Treaty', 24 April 2024, at: https://bit.ly/40XAEY8

11 M. Parrella, 'Remarks at the Task Force 21 Nuclear Triad Symposium', Washington, DC, 20 September 2024.

12 J. Hruby, 'Testimony Statement of The Honorable Jill Hruby U.S. Department of Energy Under Secretary for Nuclear Security Administrator of the National Nuclear Security Administration Before the Senate Armed Services Committee Subcommittee on Strategic Forces', 17 April 2024, at: https://bit.ly/4hcqcCB

13 US Department of Defense, 'Report on the Nuclear Employment Strategy of the United States', 7 November 2024, at: https://bit.ly/4jc0Nuy

14 Y. Kobayashi, 'Water Drainage Observed at China's Fast Breeder Reactor Full-Scale Operation Likely in Near Future', Sasakawa Peace Foundation, 27 May 2024, at: https://bit.ly/427JOn6

In 2024, China continued rapid construction and likely loading operations at all three of its new solid-fuel missile silo fields and additional liquid-fuel missile silos further south, totalling approximately 350 new silos. China is upgrading its current ICBM force, including both its liquid- and solid-fuelled missiles, and is also developing a new dual-capable missile—the DF-27—which will likely be paired with a hypersonic glide vehicle.

China has also continued to build additional SSBNs, including Type 094s and next-generation Type 096s. The Pentagon assesses that China's construction of new silo fields and the expansion of its liquid-fuel propelled ICBM force indicates its intent to move to a launch-on-warning posture, known as 'early warning counterstrike', which would potentially increase instability.[15]

UNITED KINGDOM

The United Kingdom has committed to a comprehensive nuclear modernisation programme that includes replacing its SSBNs, re-entry bodies, and warheads. This programme is expected to keep nuclear weapons in the UK military arsenal until at least 2065. In 2024, the United Kingdom continued to build its next generation of Dreadnought-class SSBNs. The UK also continued to advance its programme to construct a new warhead, the Astrea, which is based on the United States' planned W93 warhead.

The Labour government elected in July 2024 declared an unshakeable 'triple lock' commitment to nuclear weapons,[16] committing to building four new nuclear submarines, to maintaining Britain's continuous at-sea nuclear deterrence, and to making all future upgrades that may be needed. It also commissioned a Strategic Defence Review (SDR) to examine 'all aspects of defence', including nuclear policy. It is currently unlikely that long-standing policies will change given that the SDR's parameters include a 'total commitment' to the nation's nuclear deterrent.[17]

FRANCE

France is modernising both of its nuclear delivery systems – its submarine-launched ballistic missiles (SLBMs) and air-launched cruise missiles (ALCMs). France is in the process of developing a third iteration of its M51 SLBM (M51.3). France's 'renovated' ALCM, the ASMPA-R, was test-launched for the first time as part of a simulated nuclear strike scenario in May 2024.[18] France is also developing a follow-on hypersonic ALCM—the ASN4G—scheduled for deployment in 2035.[19]

France's new SNLE 3G SSBN programme will replace the country's current generation of nuclear-armed submarines, and is expected to keep nuclear weapons in the French arsenal until at least 2070. Production on the first of these new SSBNs officially began in March 2024.[20]

ISRAEL

Israel is modernising its arsenal of land-based ballistic missiles and may be upgrading its plutonium and warhead production facility. In June 2024, Israel conducted a test of a missile propulsion system, likely related to its ongoing Jericho ballistic missile modernisation programme.[21] In 2024, Israel continued its significant construction effort at its Dimona nuclear weapons facility, which is likely to be associated with a life-extension campaign.

After launching its sixth submarine last year—the first of which to apparently feature a vertical launch system within its sail—the vessel continued to undergo tests at its shipyard in Germany.[22] The new submarine, as well as the future Dakar-class, could potentially be used to carry dual-capable missiles.

INDIA

India is in the midst of completing and operationalising its nascent nuclear triad, and is modernising its existing nuclear forces to place increased emphasis on prompt missile launches. This ongoing development was characterised in 2024 by a series of high-profile missile test launches. In March, India conducted 'Mission Divyastra', its first flight test of its Agni-V IRBM with MIRV capability, which would allow India to hit multiple targets with a single nuclear-capable missile.[23] In April, India conducted its second 'pre-induction' test of its Agni-P medium-range ballistic missile

15 US Department of Defense, 'Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2024', Office of the Secretary of Defense, 18 December 2024, at: https://bit.ly/40hXEAy
16 J. Jolly, 'Reality check: is Keir Starmer's triple lock on nuclear weapons anything new?', *The Guardian*. 3 June 2024, at: https://bit.ly/4fRf4Kp
17 C. Coleman, 'Strategic Defence Review', House of Lords Library, 2 October 2024, at: https://bit.ly/4fUW8ua
18 S. Lecornu, Post on X, 22 May 2024, at: https://bit.ly/4ajrdqo
19 Institut des hautes études de défense nationale, 'Hypervelocity: once a pioneer, France is back in the race', 26 June 2024, at: https://bit.ly/4gSNbTh
20 Naval Group, Press Release, 20 March 2024, at: https://bit.ly/4anKK96
21 Y. Lappin, 'Israel's missile propulsion test—part of arms race with Iran', JNS, 1 July 2024, at: https://bit.ly/3Ca6319
22 E. Wertheim, 'Dolphin-class Submarines: Israel's Undersea Arsenal', US Naval Institute, Proceedings, Vol. 150/6/1456 (June 2024), at: https://bit.ly/3C2RwEt
23 N. Modi, Post on X, 11 March 2024, at: https://bit.ly/3DME5ZF

(MRBM), indicating that the 'next-generation' system will likely be deployed in the next few years following additional tests.[24] Unlike earlier versions of Agni missiles, both the Agni-V and the Agni-P will be deployed in new mobile canister systems, which will reduce the time required to launch the missiles in a crisis because they can be transported with the warhead installed. India also conducted a test-launch of its Agni-IV IRBM in September 2024.[25]

After years of delays, India's second SSBN (INS Arighat) was commissioned into service with the Indian Navy in August 2024; in November, the submarine was used to conduct the first test of India's new K-4 SLBM, which is nearing serial production.[26]

PAKISTAN

Pakistan continued in 2024 to invest in its nuclear weapons programme despite substantial economic turmoil. It is in the process of building a nuclear triad, placing particular emphasis on developing several short-range, tactical nuclear-capable weapon systems specifically designed to deter large-scale conventional strikes against or incursions into Pakistani territory. In 2024, Pakistan also continued to develop its new dual-capable land-based ballistic missiles, including the capability to deliver MIRVs. It also conducted a test launch of its Shaheen-II MRBM in August 2024.[27]

NORTH KOREA

Throughout 2024, North Korea pledged to continue developing and increasing its nuclear arsenal,[28] with a new reactor operational at the start of year, a uranium enrichment plant unveiled, and a new, larger launch vehicle for long-range missiles.[29] In November 2024, North Korea's ambassador to the United Nations in New York, Kim Song, said that Pyongyang was accelerating its nuclear and missile programmes to 'counter any threat presented by hostile nuclear weapons states'[30] while Kim Jong Un called for a 'limitless' expansion of the nuclear programme.[31]

North Korea is simultaneously pursuing the development of tactical nuclear weapons for delivery by shorter-range, solid-fuel missiles, as well as the development of next-generation solid-fuel ICBMs and novel retaliatory capabilities. The UN Panel of Experts assessed in its 2024 report that North Korea's ballistic missile programme has made advancements in the past year on performance – including improved manoeuvrability and precision, survivability, and preparedness.[32]

In April 2024, North Korea conducted a 'combined tactical drill simulating nuclear counterattack', in which it simultaneously launched four KN25 missiles 'tipped with simulated nuclear warheads'. The drill was significant both as an apparent test of the KN25's 'tactical' nuclear capability and as the first test of North Korea's 'Nuclear Trigger' nuclear weapon management system with the KN25.[33] In July, South Korean officials warned that the development of North Korea's tactical nuclear weapon was in the 'final stages'.[34]

In recent years, North Korea has also taken great strides with its ICBM force: after testing several new ICBMs in 2023, in October 2024 North Korea tested its largest solid-fuel missile yet, the Hwasong-19. Following the test, Kim Jong Un declared that the Hwasong-19 was a 'final edition' ICBM that will operate alongside the similar but smaller Hwasong-18 'as the primary core weapon for defending the DPRK, thoroughly deterring acts of aggression and reliably safeguarding national security'.[35]

STATES OF CONCERN

The Nuclear Weapons Ban Monitor continues to list Iran and Saudi Arabia as states of concern in relation to the TPNW's prohibition on developing, producing, manufacturing, or otherwise acquiring nuclear weapons. Iran and Saudi Arabia do not possess nuclear weapons, but both have latent nuclear breakout capabilities. Therefore, in the event that either state intended to become party to the TPNW, possible compliance issues would need to be addressed by a meeting of states parties or review conference.

24 'New generation ballistic missile Agni-Prime successfully flight-tested', *The Hindu*, 5 April 2024, at: https://bit.ly/4h4uRXc
25 Indian Ministry of Defence, 'Successful Launch of Agni-4 Ballistic Missile', Press Information Bureau Delhi, 6 September 2024, at: https://bit.ly/4gQmbnr
26 'India tests K-4 nuclear-capable ballistic missile from nuclear submarine INS Arighaat', *ANI*, 28 November 2024, at: https://bit.ly/4fUWnW6
27 Inter-Services Public Relations (ISPR), PR-245/2024-ISPR, 20 August 2024, at: https://bit.ly/407d0ry
28 K. Davenport, 'North Korea Pledges Nuclear Buildup', Arms Control Today, June 2024, at: https://bit.ly/3PAmzKY
29 K. Davenport, 'North Korea Reveals Uranium-Enrichment Facility', Arms Control Today. October 2024, at: https://bit.ly/3DTNzCC; 'Second North Korean nuclear reactor appears to be operational, IAEA says', Reuters, 22 December 2023, at: https://bit.ly/4hfResC
30 A. Roth, 'North Korea tells UN it is speeding up nuclear weapons programme', *The Guardian*, 5 November 2024, at: https://bit.ly/4gRWJy4
31 K. Tong-Hyung, 'North Korean leader calls for expanding his nuclear forces in the face of alleged US threat', *Associated Press*, 18 November 2024, at: https://bit.ly/4jff3m7
32 United Nations, 'Report by the Panel of Experts Established Pursuant to Resolution 1874 (2009)', UN doc. S/2024/215, 7 March 2024, at: https://bit.ly/4adV1Vf
33 'Report on Participation of 600 Mm Super-Large Multiple Rocket Sub-Units in First Combined Tactical Drill Simulating Nuclear Counterattack Respected Comrade Kim Jong Un Guides Combined Tactical Drill Simulating Nuclear Counterattack', Korean Central News Agency via KCNA Watch, 23 April 2024, at: https://bit.ly/3WiZm3P
34 R. Chan, 'North Korean Tactical Nuclear Weapon in 'Final Stages': South', *Newsweek*, 25 July 2024, at: https://bit.ly/4gYS8dp
35 R. Sinmun, 'Significant test demonstrates the DPRK's resolve to fight back and the absolute superiority of its strategic offensive forces Under the leadership of the Supreme Leader Kim Jong Un, the DPRK successfully test-fired the latest intercontinental ballistic missile, the Hwasong-19', Korean Central News Agency via KCNA Watch, 1 November 2024, at: https://bit.ly/4gU9s3b

Iran

Iran continued in 2024 to develop its nuclear programme and to enrich uranium, increasing both its stockpile of enriched uranium as well as the degree of enrichment, fuelling fears it intends to develop nuclear weapons. In December 2024, the International Atomic Energy Agency (IAEA) reported that Iran was 'dramatically' accelerating its enrichment of uranium to 60% purity, and that Tehran would soon be able to produce approximately seven times its monthly stockpile of 60% uranium.[36]

As of November 2024, the IAEA estimated that Iran possessed a stockpile of 839.2 kg of uranium (in UF6 form – uranium hexafluoride) enriched up to 20% – an approximate 300 kg increase from the previous year. This represents approximately 34 'significant quantities' of enriched uranium, which the IAEA describes as the 'approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive device cannot be excluded.' This is particularly worrisome, because very little additional work is required to enrich uranium from 20% purity to weapons-grade quality. Additionally, the IAEA estimated that Iran possessed 182.3 kg of uranium enriched up to 60% – a 50% increase on the total quantity achieved the previous year.[37] These developments have reduced Iran's potential nuclear break-out time from around a year under the Joint Comprehensive Plan of Action (JCPOA) to just a couple of months.

In February 2024, Ali-Akbar Salehi, former head of Iran's nuclear agency and foreign minister in 2010–13, was asked if Iran has achieved the capability of developing a nuclear bomb. He replied: 'We have [crossed] all the thresholds of nuclear science and technology. Here's an example: Imagine what a car needs; it needs a chassis, an engine, a steering wheel, a gearbox. You're asking if we've made the gearbox, I say yes. Have we made the engine? Yes, but each one serves its own purpose'.[38] Despite Iran crossing many of the most critical technological thresholds, the decision to build nuclear weapons is a political one that, as of October 2024, the United States believed Iran had not yet decided to do.[39]

Saudi Arabia

Saudi Arabia's Crown Prince has long insisted that if Iran develops nuclear weapons, then so will Saudi Arabia.[40] Although Saudi Arabia's capabilities are much further behind Iran's, the country possesses a sizable stockpile of mineable uranium ore; has announced an intention to build several nuclear reactors across the country; and possesses several types of ballistic missiles that could be used to deliver nuclear warheads.

In 2024, however, Saudi Arabia submitted a request to the IAEA to rescind its Small Quantities Protocol (SQP)—which exempted the country from IAEA monitoring and inspections obligations—and worked with the IAEA to implement a full-scale Comprehensive Safeguards Agreement (CSA).[41] Saudi Arabia's SQP was rescinded on 31 December 2024.[42] This allows for much more stringent monitoring of Saudi Arabia's nuclear facilities, although it remains unclear whether Riyadh intends to adopt the Additional Protocol (AP) as well.

NATIONAL DEBATES TO WATCH

In 2024, there was also increasing debate in several states on whether to acquire their own nuclear weapons. The national debate in the following states is now particularly important to monitor, and the states parties to the NPT and the TPNW should communicate to these states that any new state that develops or acquires nuclear weapons will be met with global condemnation and expansive sanctions.

Germany

In Germany, debate continued in 2024 on whether it should consider developing nuclear weapons in response to Russian aggression in Ukraine.[43] Where previous debates in Germany were led by commentators and political backbenchers, 'those who now favourably discuss deterrence alternatives increasingly include current and former heavyweights from across the political spectrum'.[44]

Japan

The Japanese government and policy elite continues to seek a balance between responding to military security threats posed by North Korea, China, and Russia through the development of its military forces and the nuclear alliance with the United States, and security through nuclear disarmament that is widely supported by Japanese civil society. The 2024 Diplomatic Bluebook published by the Ministry of Foreign Affairs reiterated the government's commitment to

36 A. Cornwell, F. Murphy, and J. Irish, 'Exclusive: Iran dramatically accelerating uranium enrichment to near bomb grade, IAEA says', *Reuters*, 6 December 2024, at: https://bit.ly/3CbuUBF
37 'Verification and monitoring in the Islamic Republic of Iran in light of United Nations Security Council resolution 2231 (2015), Report by the Director General', IAEA doc GOV/2024/61, 19 November 2024, at: https://bit.ly/3C9bUUi
38 'Iran Signals It Is Closer To Building Nuclear Weapons', Iran International Newsroom. 12 February 2024, at: https://bit.ly/428kcXe
39 P. Stewart and J. Landay, 'US still believes Iran has not decided to build a nuclear weapon, US officials say', *Reuters*, 11 October 2024, at: https://bit.ly/4fWeYB2
40 S. Fortinsky, 'Saudi crown prince on Iran acquiring nuclear weapons: "If they get one, we have to get one"', Thehill.com, 20 September 2023, at: https://bit.ly/4b05Ad4
41 F. Murphy, 'Saudi Arabia plans to allow tougher nuclear oversight by IAEA this year', *Reuters*, 16 September 2024, at: https://bit.ly/42eeflj
42 IAEA, 'Status List. Amendment to Small Quantities Protocols,' as of 31 December 2024, at: https://bit.ly/40sws2o
43 B. Benoit and B. Pancevski, 'Germans Debate the Once-Unthinkable: Do We Need Nuclear Weapons?', *The Wall Street Journal*, 27 February 2024, at: https://bit.ly/429m1Dn
44 U. Kuhn, 'Germany debates nuclear weapons, again. But now it's different', Bulletin of the Atomic Scientists, 15 March 2024, at: https://bit.ly/4gPtxHZ

'actively promote the realisation of a world without nuclear weapons'.[45] Prime Minister Shigeru Ishiba, who was elected in October 2024, has, however, called for a debate on nuclear sharing and a review of Japan's traditional three non-nuclear principles policy not to possess, manufacture, or host nuclear weapons.[46]

Some external analysts argued in 2024 that Japan has responded to Russia's invasion of Ukraine through evolutionary change in its policy on nuclear weapons, with no radical revision currently likely.[47] Others claim that Japan will almost certainly develop its own nuclear weapons in response to Russia and the expansion of nuclear arsenals in China and North Korea; it is just a question of when.[48]

South Korea

In South Korea, discussion about the acquisition of nuclear weapons continued in response to North Korea's nuclear arsenal and the 'strategic partnership' signed between Russia and North Korea in June 2024. The return to the US presidency of Donald Trump and concerns about the long-term reliability of US protection has also fuelled the debate.[49] In July 2024, it was reported that 66% of respondents to a survey by the state-affiliated Korea Institute for National Unification think-tank 'supported' or 'strongly supported' development of nuclear weapons – up 6% on the previous year.[50] Other polls indicate between 70% and 80% public support for either the development of nuclear weapons by South Korea or the redeployment of US nuclear weapons to the country.[51]

South Korean elites were far less supportive of the development of nuclear weapons, with President Yoon Suk-yeol reiterating that the country would not seek its own nuclear weapons,[52] and former foreign ministers stating that it was 'not a realistic option'.[53] However, there is evidence of growing elite support for 'nuclear latency' to develop capabilities and expertise to produce nuclear weapons quickly in the future, and it is becoming concerning from a non-proliferation standpoint that South Korea is developing the means, motive, and opportunity to acquire indigenous nuclear weapons.[54] In September 2024, the new South Korean Minister of Defence, Kim Yong-hyun, stood by an earlier comment that South Korea has 'no survival or future' without nuclear deterrence, and stated that 'all options' should remain open if the US nuclear umbrella proves insufficient.[55]

45 Ministry of Foreign Affairs of Japan, Diplomatic Blue Book 2024, at: https://bit.ly/4gSOlJh p. 25.
46 S. Kuramitsu, 'Japan's New Leader Stirs Debate on Nuclear Sharing', Arms Control Today, November 2024, at: https://bit.ly/3WhOZNC
47 T. Kim and D. Y. Lee, 'Continuity and changes: the effects of Russia's war against Ukraine on Japanese and South Korean nuclear-weapons discourse', *The Nonproliferation Review*, Vol. 30, Nos 4–6 (2023), 265–84, at: https://bit.ly/3PAtwf1 3
48 See, e.g., B. Gewen, 'Japan Is Destined to Have Nuclear Weapons', The National Interest, 8 December 2024, at: https://bit.ly/3Qqnpuk; and J. van de Velde, 'Japan's Inevitable Independent Nuclear Deterrent', Real Clear Defense, 23 October 2024, at: https://bit.ly/4hbAP8x
49 J. Ryall, 'Trump's comeback fuels nuclear debate in South Korea', *Deutsche Welle*, 14 November 2024, at: https://bit.ly/4i5QasH; and T. Dalton and G. Perkovich, 'South Korea Goes Nuclear. Then What?', *Foreign Policy*, 22 September 2024, at: https://bit.ly/4i68aTR
50 C. Davies, 'More South Koreans want Seoul to have its own nuclear weapons', *The Financial Times*, 16 July 2024, at: https://bit.ly/4hfbwCM
51 F. Klug, 'South Koreans want their own nukes. That could roil one of the world's most dangerous regions', *Associated Press*, 30 November 2023, at: https://bit.ly/4heO6xq
52 K. Tong-Hyung, 'South Korean president reiterates that Seoul will not seek its own nuclear deterrent', *Associated Press*, 8 February 2024, at: https://bit.ly/3C8xA2T
53 K. Han-joo, 'Ex-foreign ministers say S. Korea's nuclear armament not realistic option', Yonhap News Agency, 5 September 2024, at: https://bit.ly/40i7Xow
54 L. Kim, 'South Korea's Nuclear Latency Dilemma', War on the Rocks, 19 September 2024, at: https://bit.ly/3BWChNr
55 W. Gallo and L. Juhyun, 'Under Yoon, calls for South Korean nukes "normalized"', *Voice of America*, 9 September 2024, at: https://bit.ly/4gZgCDa

Pakistani military forces display NASR missiles to mark Pakistan's Republic Day in Islamabad, Pakistan, 23 March 2024. (Photo by Sohail Shahzad, EPA/NTB)

THE PROHIBITION ON

POSSESSION AND STOCKPILING

The Nuclear Weapons Ban Monitor collaborates with the Nuclear Information Project of the Federation of American Scientists to estimate and analyse global nuclear forces. At the beginning of 2025, the nine nuclear-armed states had a combined inventory of approximately 12,331 nuclear warheads, which is, of course, incompatible with the TPNW's prohibition on possession and stockpiling of nuclear weapons.

Figure 13: Compliance and compatibility in 2023 with the TPNW's prohibition on possession and stockpiling

The world's nuclear warhead inventories at the beginning of 2025 are summarised in Table F and Figure 14 overleaf. It is estimated that 9,604 of the world's total inventory of warheads are available for use by the military, with an estimated collective yield equivalent to more than 146,500 Hiroshima bombs. The remaining 2,727 warheads had previously been retired and are awaiting dismantlement in Russia and the United States.

The total inventory of warheads decreased by approximately 16 from 12,347 warheads in early 2024 to 12,331 in early 2025. This reduction was only, however, due to Russia and the United States dismantling a small number of previously retired nuclear weapons during the course of 2024. Indeed, that the total number of nuclear weapons in the world is slowly decreasing each year is entirely the result of dismantlement of retired warheads by these two states.

Scratching below the surface of the data produces a much bleaker picture: the global number of stockpiled nuclear weapons available for use has been steadily increasing since 2017, when it reached an all-time low of 9,272 warheads. China, India, North Korea, Pakistan, and Russia all continued to expand their nuclear arsenals in 2024, and China most dramatically by roughly 100 warheads per year and mainly for the hundreds of new ICBL siloes that it is constructing. As mentioned above, the total number of nuclear warheads available for use had increased to 9,604 at the beginning of 2025. Meanwhile, the number of warheads dismantled each year appears to be decreasing, and the dismantlement rate is no longer keeping pace with the number of new warheads that are entering global nuclear stockpiles. As demonstrated in Figure 15 on page 38, this means we could soon reach a point where also the total number of nuclear weapons in the world will actually increase for the first time since 1986.

Combined, the United States and Russia now possess approximately 87% of the world's total inventory of nuclear weapons and 83% of the stockpiled warheads available for use by the military. These percentages have been shrinking over the past few years and are likely to continue to do so as other states increase their nuclear arsenals.

ARTICLE 1(1)(a) – INTERPRETATION

Each State Party undertakes never under any circumstances to: '[…] possess or stockpile nuclear weapons or other nuclear explosive devices.'

- The prohibition on possession of any nuclear weapon or other nuclear explosive device under Article 1(1)(a) makes it illegal to have a nuclear weapon or other nuclear explosive device.
- Possession does not require ownership.
- One nuclear weapon or other form of nuclear explosive device is sufficient to constitute a stockpile.
- The prohibition on possession covers activities such as maintenance and deployment of nuclear weapons or other nuclear explosive devices. Indirectly, it also acts to render nuclear deterrence practices unlawful.

TABLE F: THE WORLD'S NUCLEAR WARHEAD INVENTORIES AT THE BEGINNING OF 2025[A]										
	Russia	United States	China	France	United Kingdom	India	Pakistan	Israel	North Korea	Total
 Total inventory of warheads	5,449 ⬇	5,277 ⬇	600 ⬆	290	225	180 ⬆	170 ⬆	90	50 ⬆	12,331 ⬇
 Retired warheads for dismantlement	1,150 ⬇	1,577 ⬇	0	0	0	0	0	0	0	2,727 ⬇
 Warheads available for use[B]	4,299 ⬆	3,700	600 ⬆	290	225	180 ⬆	170 ⬆	90	50 ⬆	9,604 ⬆
 Deployed strategic warheads[C]	1,710 ⬆	1,670	24 ⬆	280	120	0	0	0	0	3,804 ⬆
 Deployed non-strategic warheads[C]	0[D]	100	0	0	0	0	0	0	0	100
 Warheads in reserve	2,589 ⬆	1,930	576 ⬆	10	105	180 ⬆	170 ⬆	90	50 ⬆	5,700 ⬆
 Estimated yield in megatons	953.0 Mt	894.7 Mt	285.0 Mt	29 Mt	22.5 Mt	4.5 Mt	3.4 Mt	2.5 Mt	4.6 Mt	2,199.2 Mt⬆
 Hiroshima-bomb equivalents	63,532	59,644	18,997	1,933	1,500	301	226	165	307	146,605 ⬆

A Source: Nuclear Information Project, Federation of American Scientists. The arrows refer to general trends over the last few years. Red upwards arrows (⬆) indicate increasing numbers, and green downward arrows (⬇) indicate decreasing numbers.

B Includes both deployed warheads and warheads in reserve.

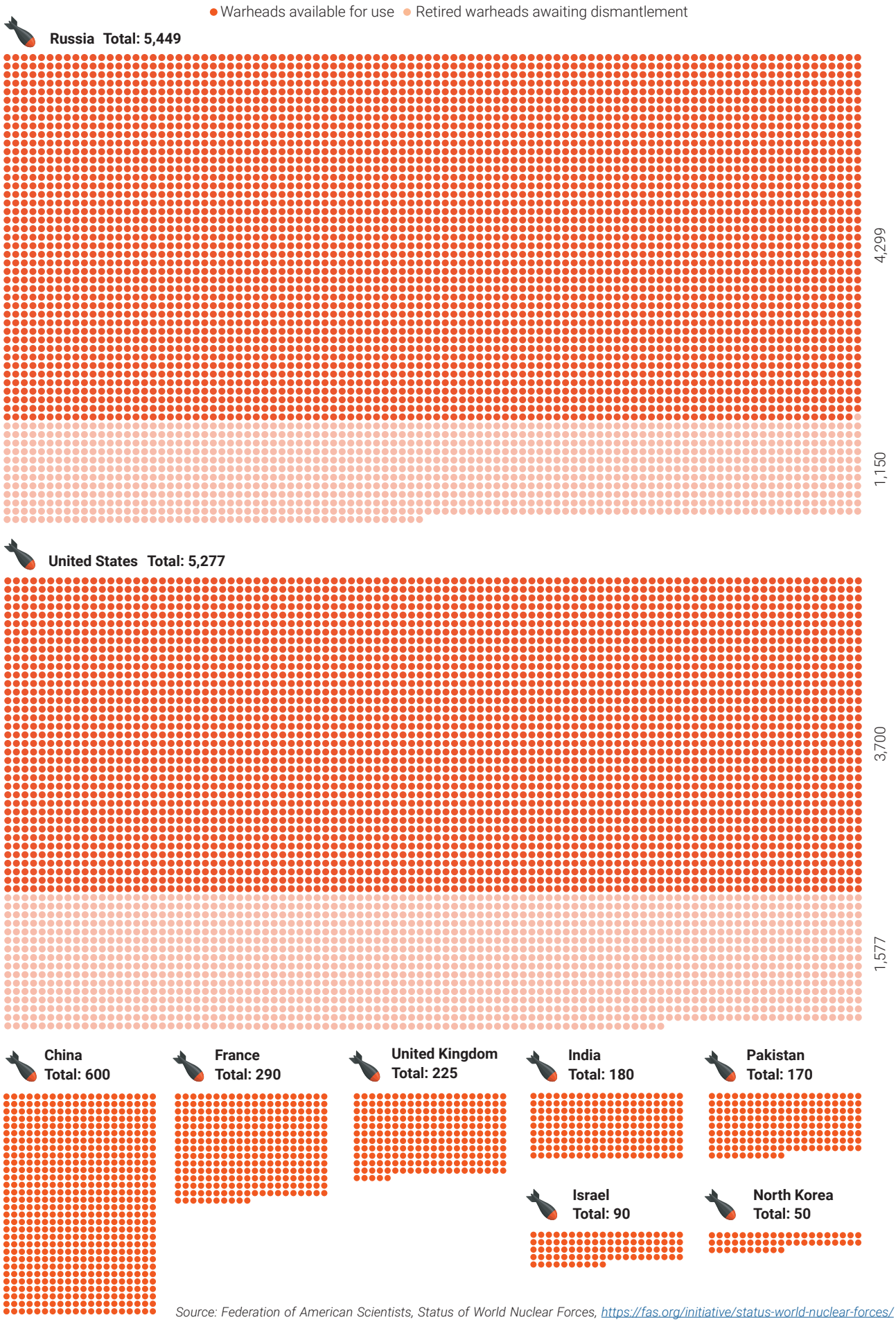
C Deployed warheads are either deployed on a delivery vehicle or at a base with delivery vehicles.

D Russia's non-strategic nuclear weapons are believed to be in storage and not co-located with their launchers, and therefore are not formally counted as 'deployed; however, many regional storage sites are located relatively close to their launcher garrisons and in practice warheads could be transferred to their launch units on short notice.

Estimates of nuclear warhead inventories can fluctuate from year to year depending on a variety of factors like routine maintenance, the changing pace of warhead retirement, and modernisation schedules. As a result, it is more appropriate to consider the general trends of each country's inventory over several years. As noted, China, India, North Korea, Pakistan, and Russia are all generally increasing the size of their nuclear stockpiles. In contrast, the stockpiles of France, Israel, and the United States are generally stable. The UK government in 2021 announced a significant increase to the upper limit of its warhead inventory compared with previous plans,[1] but there is no publicly available evidence to indicate that such an increase has begun.

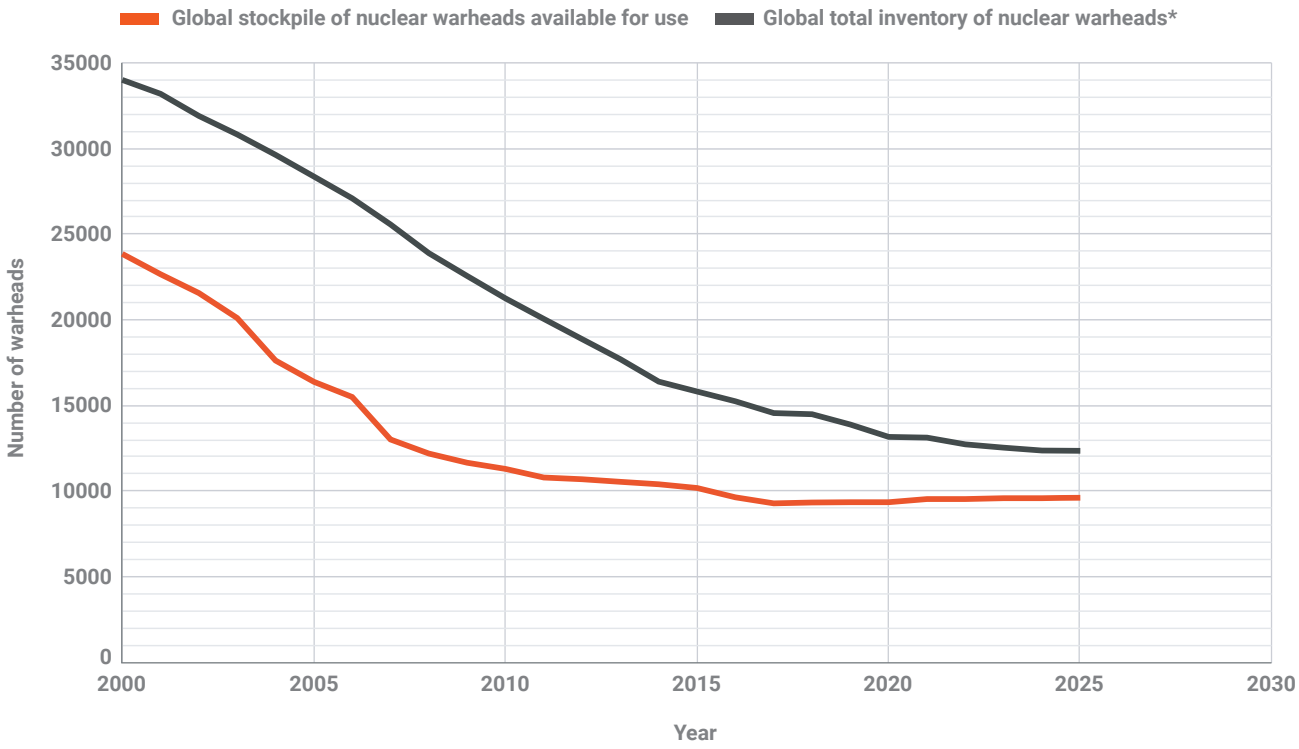
1 H. M. Kristensen and M. Korda, 'British Defense Review Ends Nuclear Reductions Era', Federation of American Scientists, 17 March 2021, at: https://bit.ly/4erCTbU

Figure 14: The world's nuclear warhead inventories at the beginning of 2025



Source: Federation of American Scientists, Status of World Nuclear Forces, https://fas.org/initiative/status-world-nuclear-forces/

Figure 15: The world's total inventory of nuclear warheads compared with the number of stockpiled warheads available for use



** The total inventory of warheads includes both the warheads available for use and the retired warheads.*

Increased nuclear secrecy

Countries are increasingly—and unnecessarily—withholding information about their nuclear arsenals from their publics, allies, and adversaries. In particular, states that had previously been more transparent about their nuclear arsenals recently decided to stop providing details about the sizes of their nuclear stockpiles and the numbers of warheads they have deployed. After two years of denying declassification requests, the Biden administration in 2024 declassified the size of the US stockpile and the number of dismantled warheads; however, this practice is unlikely to continue under the Trump administration.[2]

In 2021, also the UK government said it would no longer disclose how many warheads it deploys.[3] This trend of increased nuclear secrecy poses challenges for understanding trends in nuclear arsenals, undercutting efforts to increase transparency. As mentioned above, lack of clarity as to nuclear stockpiles, deployments, and employment policies can lead to worst-case assumptions about how states will develop or use nuclear weapons in the future, thereby exacerbating the arms race and increasing the possibility of miscalculation.

Deployment and delivery systems

Of the global total of warheads available for use in early 2025, an estimated total of 3,904 (or slightly more than 40%) were at all times deployed on delivery vehicles and at bases with delivery vehicles, while the remaining 5,700 warheads were held in reserve. As shown in Figures 16 and 17 opposite, only China, France, Russia, the United Kingdom, and the United States currently deploy nuclear warheads, meaning that the warheads are either uploaded to ballistic missiles or co-located with their respective launch platforms. These warheads are deployed on siloed and mobile missiles, at bomber bases, and on nuclear-powered ballistic missile submarines (SSBNs).

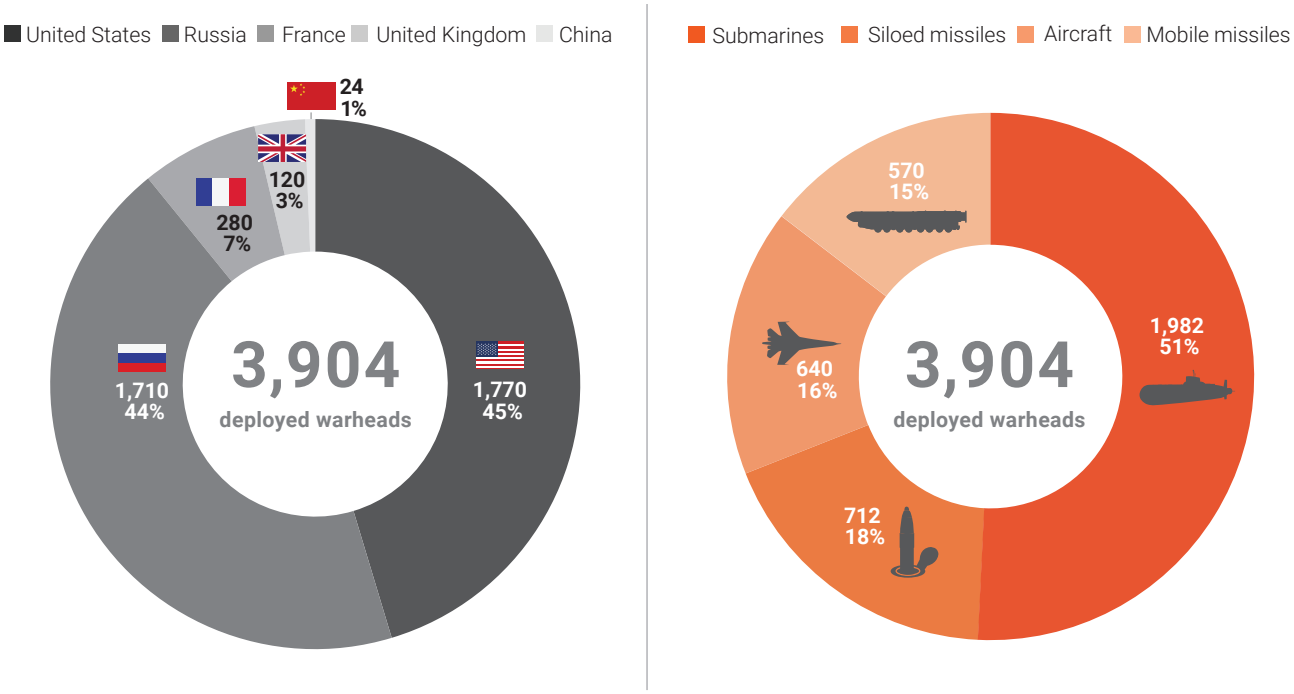
It is believed that India, Israel, North Korea, and Pakistan keep all of their nuclear warheads in central storage during peacetime.

Around 1,982 nuclear warheads—more than 50% of the world's deployed nuclear warheads—are deployed on SSBNs. At all times, a significant number of nuclear warheads are carried through the world's oceans on SSBNs on active patrol, ready to be launched at short notice. Each of five nuclear-armed states—China, France, Russia, the United Kingdom, and the United States—now deploys at sea at all times at least one SSBN, with the option of increasing the number during periods of heightened tension. For example, in response to Russia's invasion of Ukraine, France

2 H. M. Kristensen, 'United States Discloses Nuclear Warhead Numbers; Restores Nuclear Transparency', FAS Strategic Security Blog, 20 July 2024, at: https://bit.ly/4aVDmlw

3 UK Government, 'Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy', 2 July 2021, at: http://bit.ly/3mnbQYL

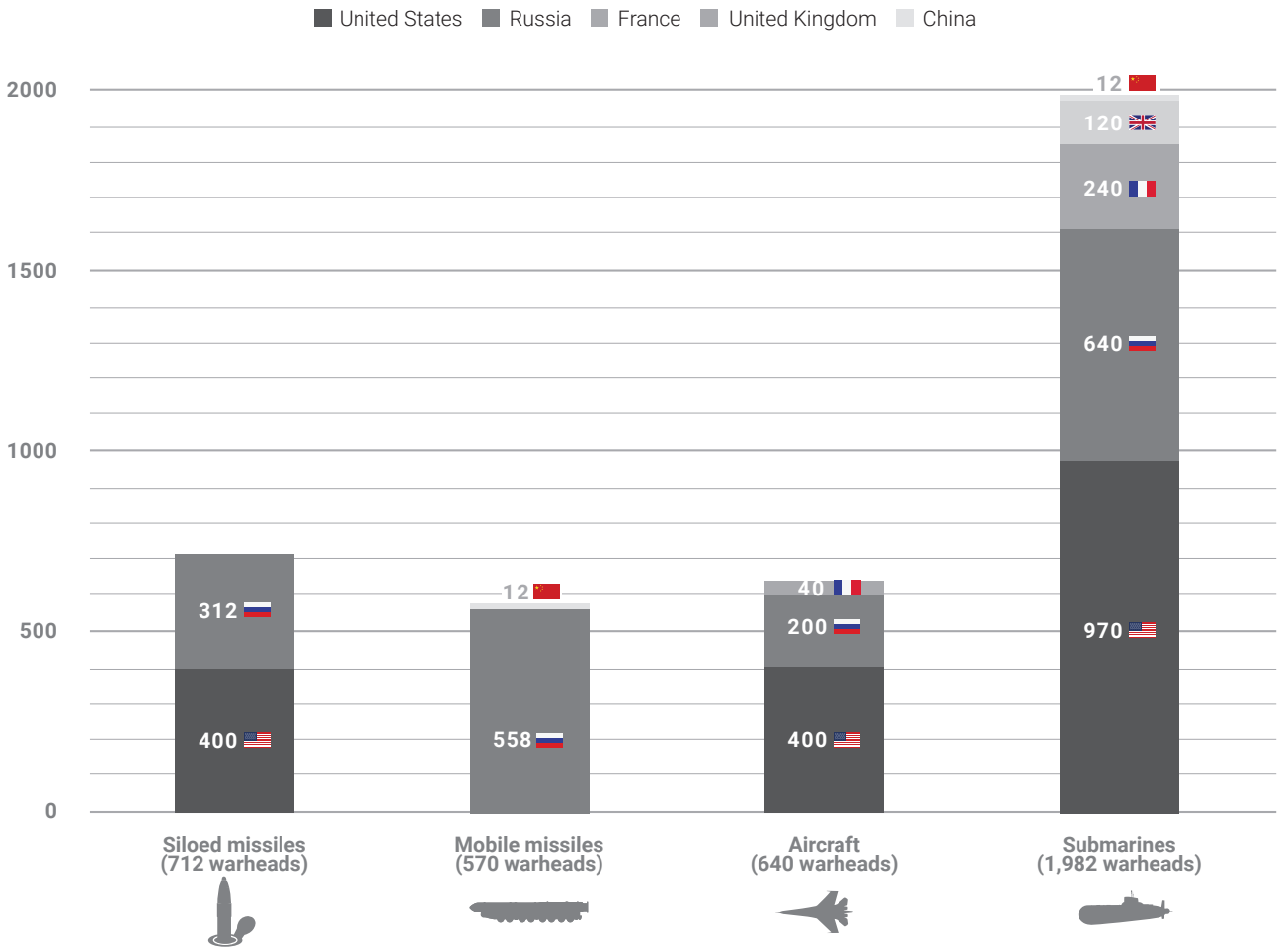
Figure 16: Number of nuclear-warheads deployed – by nuclear-armed state and by category of delivery vehicle



Deployed warheads, by nuclear-armed state

Deployed warheads, by delivery vehicle category

Figure 17: Deployment of nuclear warheads, early 2025



briefly practised deploying three SSBNs concurrently rather than just one.[4] As of January 2025, the United States was operating 14 SSBNs capable of carrying nuclear weapons while Russia was operating 12; China 6; the United Kingdom 4; France 4; and India 2. North Korea has one ballistic missile submarine (SSB) which is thought to not yet be operational. Russia also has attack submarines that can launch nuclear weapons, as does Israel.

Most SSBNs can carry a very large number of warheads because their missiles can deliver multiple independently targetable re-entry vehicles (MIRVs). This means that the total firepower onboard a single SSBN can be larger than the entire arsenal of a lesser nuclear-armed country. For instance, the average destructive power of a single US Ohio-class SSBN is estimated to be up to 19 Mt, or 1,266 Hiroshima-bomb equivalents. This is almost twice that of the entire combined nuclear arsenals of India, Pakistan, and Israel. The destructive power of a single Russian Borei-class SSBN is thought to be approximately 6.4 Mt, or 427 Hiroshima-bomb equivalents, which is roughly equivalent to the entire combined nuclear arsenals of India and Pakistan.

In addition to submarines, the nine nuclear-armed states operate a wide variety of delivery vehicles from which they can launch nuclear weapons, including siloed and mobile missiles, heavy bombers, tactical aircraft, surface ships and naval aircraft, and defensive systems. These systems all have vastly different characteristics, and thus each nation generally operates a unique combination of delivery systems in accordance with its respective strategy.

Table G opposite provides an overview of the diversity of nuclear-capable delivery vehicles in each nuclear-armed state's arsenal, and the breakdown of the number of nuclear warheads that are currently deployed on or in reserve for each category of delivery vehicle. Russia has by far the most types of nuclear-capable delivery systems.

Non-strategic nuclear weapons

Nuclear-armed states are generally moving away from megaton-level yields in favour of more accurate lower-yield warheads, although some analysts suggest that this could make nuclear weapons more 'usable', potentially lowering the threshold for nuclear use as a consequence.

North Korea, Pakistan, Russia, and the United States officially possess so-called 'tactical' or 'non-strategic' nuclear weapons that are intended to be used for shorter-range strike missions. There is, however, no universally accepted definition for what officially constitutes a tactical nuclear weapon, and a common misconception is that all such weapons have lower yields and shorter ranges. The reality is much less clear: tactical nuclear weapons can have a wide range of yields and ranges, and a shorter-range weapon might be considered 'non-strategic' in US and Russian arsenals but 'strategic' in French, Indian, and Pakistani arsenals. The United Kingdom is the only nuclear-armed state that does not have nuclear weapons that can be considered non-strategic.

Until recently, the United States was the only state believed to deploy non-strategic warheads in other countries. As discussed on page 80, however, Russia announced in 2023 that it had deployed nuclear weapons in Belarus. It has not been confirmed, however, that this has involved the stationing on Belarusian territory of nuclear warheads. The other nuclear-armed states are believed to keep their non-strategic warheads in central storage during peacetime.

Given Russia's invasion of Ukraine in 2022, Russia's sizable stockpile of non-strategic nuclear weapons is of particular concern. Russia possesses approximately 1,447 such weapons for use by naval, tactical air, and missile defence forces, as well as in the form of short and medium-range ballistic missiles. Tactical nuclear weapons are considered the most likely to be used if Russia ever decided to use nuclear weapons in the Ukraine war. Even the use of a lower-yield tactical nuclear weapon could immediately trigger a dramatic escalation of nuclear tensions and lead to a broader disaster.

It is of further concern that several nuclear-armed states are placing increased emphasis on non-strategic nuclear weapons in their nuclear doctrine. Russia has added several types of non-strategic nuclear weapons, and North Korea declared in 2021 that it would work to 'make nuclear weapons smaller and lighter for more tactical uses',[5] and it continued to develop and deploy those capabilities throughout 2024. Many analysts believe that this increased emphasis on nuclear warfighting could lower the nuclear threshold and increase the risk of nuclear use at the outset of a conflict.

4 S. Jézéquel, 'Pourquoi la France a-t-elle fait appareiller trois sous-marins nucléaires au départ de l'Ile-Longue?', *Le Télégramme*, 21 March 2022, at: http://bit.ly/41EJFVt
5 'On Report Made by Supreme Leader Kim Jong Un at Eighth Party Congress of WPK', National Committee on North Korea, 9 January 2021, at: http://bit.ly/3ZhQ4oa

TABLE G: NUCLEAR-WEAPON DELIVERY VEHICLES FIELDED BY THE NUCLEAR-ARMED STATES AT THE BEGINNING OF 2025, AND THE NUMBER OF WARHEADS (WH) CURRENTLY DEPLOYED ON OR IN RESERVE FOR THEM.[A]
The delivery vehicle categories currently deployed with nuclear warheads are highlighted.

	Siloed missiles 	Mobile missiles 	Aircraft 	Submarines 	Surface ships and naval aircraft 	Air/Coast/ Missile defence 
Russia	SS-18 ICBM SS-19 Mod 4 ICBM SS-27 Mod 1 ICBM SS-27 Mod 2 ICBM **Deployed: 312 wh** **Reserve: 194 wh**	SS-27 Mod 1 ICBM SS-27 Mod 2 ICBM 9K720 Iskander SRBM 9M728 Iskander GLCM 9M729 GLCM **Deployed: 558 wh** **Reserve: 275 wh**	Tu-160M1/M2 Tu-95MS/M Tu-22M3M Su-24M/M2 Su-34 Su-57 MiG-31K **Deployed: 200 wh** **Reserve: 719 wh**	Delta-IV SSBN Borei/-A SSBN Various SSGNs Various SSNs **Deployed: 640 wh** **Reserve: 810 wh**	A large range of surface ships and naval aircraft **Reserve: 246 wh**	A-135 ABM SH-08 Gazelle SSC-1B Sepal S-300/400 SAM P-800 ASCM **Reserve: 345 wh**
United States	Minuteman III ICBM **Deployed: 400 wh** **Reserve: 400 wh**		B-2A B-52H F-15E F-16C/D **Deployed: 400 wh** **Reserve: 580 wh**	Ohio-class SSBN **Deployed: 970 wh** **Reserve: 950 wh**		
China	DF-5A/B ICBM DF-31-class ICBM **Reserve: 220 wh**	DF-26 IRBM DF-31A/AG ICBM DF-41 ICBM **Deployed: 12 wh** **Reserve: 268 wh**	H-6N **Reserve: 20 wh**	Type 094 SSBN **Deployed: 12 wh** **Reserve: 68 wh**		
France			Rafale BF3/4 **Deployed: 40 wh**	Le Triomphant-class SSBN **Deployed: 240 wh**	Rafale MF3/4 **Reserve: 10 wh**	
United Kingdom				Vanguard-class SSBN **Deployed: 120 wh** **Reserve: 105 wh**		
India		Prithvi-II SRBM Agni-I SRBM Agni-II MRBM Agni-III IRBM Agni-IV IRBM **Reserve: 96 wh**	Mirage 2000H Jaguar IS **Reserve: 48 wh**	Arihant-class SSBN **Reserve: 36 wh**		
Pakistan		Abdali SRBM Ghaznavi SRBM Shaheen-I/A SRBM Shaheen-II MRBM Ghauri MRBM Nasr SRBM Babur/-1A GLCM **Reserve: 134 wh**	Mirage III/V **Reserve: 36 wh**			
Israel		Jericho II MRBM Jericho III IRBM **Reserve: 50 wh**	F-16I F-15 **Reserve: 30 wh**	Dolphin-I/II SSGN **Reserve: 10 wh**		
North Korea[B]		Hwasong-5/-6 SRBM Hwasong-11A/B/D SRBM KN25 SRBM Hwasong-7 MRBM Hwasong-9 MRBM Pukguksong-2 MRBM Hwasal-1/2 LACM Hwasong-12 IRBM Hwasong-15 ICBM Hwasong-17 ICBM Hwasong-18 ICBM **Reserve: 50 wh**				
Totals:	Deployed: 712 wh Reserve: 814 wh Total: 1,526 wh	Deployed: 570 wh Reserve: 873 wh Total: 1,443 wh	Deployed: 640 wh Reserve: 1,433 wh Total: 2,073 wh	Deployed: 1,982 wh Reserve: 1,979wh Total: 3,961 wh	Reserve: 256 wh Total: 256 wh	Reserve: 345 wh Total: 345 wh

A The table uses some national designations, and some US/NATO designations. It is possible that certain systems in the table are nearing retirement, or that they at the beginning of 2025 were nearing entry into the respective state's nuclear forces but not yet declared fully operational.

B It is uncertain which of North Korea's missiles are assigned nuclear weapons and which are operational. North Korea has several additional types of delivery systems, but only those assessed to be currently operational are listed in this table.

A replica of 'Gadget', the first atomic device tested, hung from a replica of the 100-foot steel tower that was used during the test at the Trinity Site at White Sands Missile Range, is displayed at the National Museum of Nuclear Science & History in Albuquerque, New Mexico. (Photo by Sam Wasson/Sipa USA/NTB)

THE PROHIBITION ON

TESTING

No state acted in contravention of the Treaty on the Prohibition of Nuclear Weapons' (TPNW) prohibition on testing of nuclear weapons in 2024. That said, this prohibition, already cemented in the 1996 Comprehensive Nuclear-Test-Ban Treaty (CTBT), started to come under sustained pressure in 2024 and the risk of a new nuclear test detonation is significant. A test site in North Korea is said to have been made ready for a new nuclear test, and China, Russia, and the United States have all been engaging in new construction at their respective testing sites and maintain a degree of readiness for possible future nuclear testing. Political forces surrounding US President-Elect Donald Trump in 2024 called for the resumption of nuclear tests by the United States.

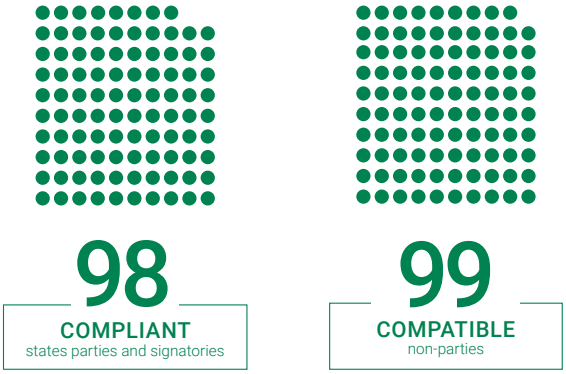


Figure 18: Compliance and compatibility in 2024 with the TPNW's prohibition on testing of nuclear weapons

The most likely state to conduct a nuclear test detonation remains North Korea, the only state to have done so since 1998. At the end of October 2024, the South Korean military told the nation's parliament that it was likely that North Korea had completed preparations for its seventh nuclear test.[1] North Korea's last nuclear test detonation was conducted in September 2017.

Pyongyang announced a moratorium on nuclear testing in April 2018, ostensibly destroying its Punggye-ri test site the following month.[2] But at the end of 2019, North Korea declared an end to its unilateral moratorium, with the change of position reaffirmed in January 2020.[3] In March 2023, the International Atomic Energy Agency (IAEA) stated that the site at Punggye-ri remains prepared to support a nuclear test, that it continued to see indications of activity, and that 'the reopening of the nuclear test site is deeply troubling'.[4] A new nuclear test detonation by North Korea would violate

ARTICLE 1(1)(A) – INTERPRETATION

Each State Party undertakes never under any circumstances to 'test … nuclear weapons or other nuclear explosive devices'.

- The prohibition on testing in Article 1(1)(a) of the TPNW bans the detonation of a nuclear weapon or other nuclear explosive device. It is therefore limited to explosive testing involving a nuclear chain reaction.
- All non-explosive forms of nuclear testing, including sub-critical tests and computer simulations, and the testing of missiles designed to carry nuclear warheads are outlawed by the prohibition on development in the TPNW.
- Maintenance of a nuclear test site in a state of readiness would amount to prohibited development under the TPNW.
- All explosive nuclear testing also contravenes the CTBT (a treaty not in force) and, arguably, customary international law.
- The CTBT does not specifically prohibit maintaining preparedness at nuclear test sites, although dismantling test sites would contribute to prevention of a nuclear weapon test explosion or any other nuclear explosion as its Article 1 requires.
- The preamble of the TPNW recognises 'the vital importance' of the CTBT and its verification regime as a core element of the nuclear disarmament and non-proliferation regime.
- The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) does not prohibit the testing of nuclear weapons by the five nuclear-weapon states designated under that treaty.

1 T.-H. Kim, 'South Korean military says North Korea appears poised to conduct nuclear and ICBM tests', *Associated Press*, 30 October 2024, at: https://bit.ly/3VaDlUi
2 The Punggye-ri Nuclear Test Site is in a mountainous region in the far north-east of the country, about 100 km from the border with China.
3 K. Davenport and J. Masterson, 'North Korea Reiterates End to Test Moratorium', Arms Control Association, 30 January 2020, at: https://bit.ly/3EWmha6
4 'IAEA Director General's Introductory Statement to the Board of Governors', IAEA, 6 March 2023, at: https://bit.ly/3Vj9FU4

UN Security Council resolutions and contravene the CTBT as well as, arguably, customary international law, in addition to being incompatible with the prohibition in testing in Article 1(1)(a) of the TPNW. As discussed on pages 57-58, a new nuclear test detonation by North Korea would also likely amount to threatening to use nuclear weapons under Article 1(1)(d) of the TPNW, given the bellicose circumstances in which such testing would be occurring.

'A terrible idea'

The United States may also engage in new testing following the return to power of Donald Trump in January 2025. As Knox notes, a 'persistent minority of hawkish voices have opposed the US nuclear testing moratorium since it was first passed by Congress in 1992'.[5] In June 2024, Trump's former national security adviser, Robert O'Brien, called for the resumption of nuclear tests 'for reliability and safety in the real world for the first time since 1992'.[6] Reactivating nuclear tests would, he wrote, 'maintain technical and numerical superiority to the combined Chinese and Russian nuclear stockpiles'.[7] The Heritage Foundation's Project 2025 report that was influential in the election platform and campaign of Donald Trump in 2024 also called for 'a willingness to conduct nuclear tests in response to adversary nuclear developments if necessary' and that 'the National Nuclear Security Administration be directed to move to immediate test readiness'.[8]

Reacting to these proposals, Ernest Moniz, who was Secretary of State for Energy under President Obama, told The New York Times: 'It's a terrible idea. New testing would make us less secure. You can't divorce it from the global repercussions.' Siegfried S. Hecker, a former director of the Los Alamos weapons laboratory in New Mexico, called new testing a risky trade-off between domestic gains and global losses. 'We stand to lose more' than America's nuclear rivals would, he said.[9]

The CTBT

The United States signed the CTBT in September 1996. As a signatory state, it would be unlawful for the United States to conduct a nuclear test detonation, at the least until it had declared that it would not be ratifying the treaty. Under the international law of treaties, each state is obliged 'to refrain from acts which would defeat the object and purpose of a treaty' when it has signed it. This rule, which is codified in the 1969 Vienna Convention on the Law of Treaties,[10] is also a rule of customary international law applicable to all states.[11]

The United States conducted its last explosive tests in 1992, but in November 2017 the US government decided to shorten its testing readiness timeline from between 24 and 36 months to between six and ten months 'for a simple test'.[12] Commercial satellite imagery over the Nevada National Security Site shows that an underground facility—the U1a complex—was expanded greatly between 2018 and 2023.[13] The National Nuclear Security Administration (NNSA), an arm of the US Department of Energy that oversees the site, says the laboratory is for conducting 'subcritical' nuclear experiments.[14] According to the Federation of American Scientists (FAS), the US Congress has the final say as to when the United States resumes weapons testing, as it controls the funding for such tests.[15]

If the United States resumes nuclear testing, other nations will perceive that as a threat and 'almost certainly' follow suit.[16]

Ready to resume

Another state that could be contemplating a nuclear test detonation is Russia. The Soviet Union/Russia undertook its last known explosive test in 1990 but in 2023 analysts reported an expansion of the nation's nuclear test site in Novaya Zemlya in the Arctic Ocean archipelago.[17] The site was where the Soviet Union conducted more than 200 nuclear tests, including the detonation of the world's most powerful nuclear explosive device ('Tsar Bomba') in 1961.[18] In November 2023, Russia withdrew its ratification of the CTBT.[19] In September 2024, Andrei Sinitsyn, the head of Russia's nuclear testing site, said that the facility was ready to resume nuclear tests 'at any moment' if Moscow gave the order.[20]

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5 J. Knox, 'We Need to Prevent a New Era of Nuclear Weapons Testing', Blog post, The Equation blog, Union of Concerned Scientists, 20 November 2024, at: https://bit.ly/4fKVQqv
6 A. Woodward, 'Allies of Donald Trump are pushing for the first nuclear tests in three decades', *The Independent*, 5 July 2024, at: https://bit.ly/49aP9LI
7 R. O'Brien, 'The Return of Peace Through Strength', Foreign Affairs, July/August 2024, published on 18 June 2024, at: https://bit.ly/3B6k6Eq
8 The Heritage Foundation, 'Mandate for Leadership: The Conservative Promise, Project 2025 Presidential Transition Project', Washington, DC, 2023, at: https://bit.ly/3ZUCYic
9 W. J. Broad, 'Trump Advisers Call for U.S. Nuclear Weapons Testing if He Is Elected', *The New York Times*, 5 July 2024, at: https://bit.ly/3ZaeQrd
10 Art. 18(a), Vienna Convention on the Law of Treaties; adopted at Vienna, 23 May 1969; entered into force, 27 January 1980.
11 US Department of Defense, *Department of Defense Law of War Manual*, June 2015 (Updated July 2023), Washington, DC, 2023, §19.2.3 and note 35.
12 Department of Energy, 'Fiscal Year 2018, Stockpile Stewardship and Management Plan', November 2017, 3–26.
13 Cheung, Lendon and Watson, 'Exclusive: Satellite images show increased activity at nuclear test sites in Russia, China and US'.
14 NNSS, 'Smaller experiments, bigger discoveries: How subcritical experiments enable smarter stockpile stewardship', 20 September 2022, at: https://bit.ly/48PrQ9B
15 FAS, 'Legislation', 2008, accessed on 27 November 2024, at: https://bit.ly/3OtcTkU Congress controls the appropriations process that determines the funding levels for the Department of Energy, including the NNSA. If Congress determines that a return to testing is not appropriate, for whatever reason, it can elect to prohibit the NNSA from spending any funds on nuclear weapon testing.
16 Knox, 'We Need to Prevent a New Era of Nuclear Weapons Testing'.
17 E. Cheung, B. Lendon and I. Watson, 'Exclusive: Satellite images show increased activity at nuclear test sites in Russia, China and US', *CNN*, 23 September 2023, at: https://bit.ly/3ucftoL
18 A. Osborn, 'Russian nuclear test chief says Moscow is ready to resume testing "at any moment"', *Reuters*, 17 September 2024, at: https://bit.ly/496A9yF
19 B. Vitkine, 'Russia withdraws from two arms treaties and tests a ballistic missile', *Le Monde*, 9 November 2023, at: https://bit.ly/4bfsHSs
20 Osborn, 'Russian nuclear test chief says Moscow is ready to resume testing "at any moment"'.

Russia, a CTBT Annex 2 state, ratified the treaty in 2000. But following its withdrawal of ratification of the treaty, Russia has stated publicly that it will not resume nuclear testing unless Washington does so first. Russia has also expressed its intention to continue operating CTBT monitoring stations on its territory. On 5 October 2023, President Vladimir Putin said: 'I am not ready to tell you right now whether we need or do not need to carry out these tests. What we can do is act just as the United States does.'[21] The policy of only conducting a new nuclear test in response to one by the United States was reiterated by Deputy Foreign Minister Sergei Ryabkov in September 2024. He stated: 'As defined and formulated by the president of the Russian Federation, we can conduct such tests, but we will not conduct them if the United States refrains from such steps.'[22]

Lop Nur

China's last explosive nuclear test was in July 1996, only a few months prior to the adoption of the CTBT by the UN General Assembly.[23] But new construction was reported in 2023 at China's Lop Nur nuclear test site.[24] *The New York Times* reported in 2024 that a rig had drilled a vertical shaft at the site down to a depth of more than 500 metres.[25]

Since the first nuclear test explosion in the United States on 16 July 1945, at least eight states have test-detonated a total of more than 2,000 nuclear explosive devices at dozens of test sites around the world. A nuclear test is defined as any detonation of a nuclear explosive device and which is characterised by the sudden release of energy instantaneously released from self-sustaining nuclear fission and/or fusion.

21 S. Bugos and M. Giveh, 'Russia Withdraws Ratification of Nuclear Test Ban Treaty', Arms Control Association, 16 November 2023, at: https://bit.ly/4be8n3P
22 Russia says "nyet" to nuclear testing – with a condition', *Reuters*, 23 September 2024, at: https://bit.ly/4g5uz1L
23 Government of China, Statement on the Moratorium of Nuclear Tests, *Xinhua*, 29 July 1996, via: https://www.cnr.cn; see Nuclear Threat Initiative (NTI), 'China Nuclear Overview', Fact Sheet, 29 April 2015 (last reviewed on 7 November 2017), at: https://bit.ly/33iBvZ8
24 Cheung, Lendon and Watson, 'Exclusive: Satellite images show increased activity at nuclear test sites in Russia, China and US'.
25 W. J. Broad, C. Buckley, and J. Corum, 'China Quietly Rebuilds Secretive Base for Nuclear Tests', *The New York Times*, Updated 9 January 2024, at: https://bit.ly/3Vcj5S6

Attendees walk over branding for Lockheed Martin at the Farnborough International Airshow, in Farnborough, Britain, 22 July 2024. Lockheed Martin produces the Trident II D5 missiles that are leased to the United Kingdom. (Photo by Toby Melville, Reuters/NTB)

THE PROHIBITION ON

TRANSFER

As was the case the previous year, in 2024 one state not party—the United States—engaged in conduct that was not compatible with the Treaty on the Prohibition of Nuclear Weapons' (TPNW) prohibition on transfer of nuclear weapons, by virtue of its export of the key components to the United Kingdom's nuclear arsenal.

Figure 19: Compliance and compatibility in 2024 with the TPNW's prohibition on transfer of nuclear weapons

The UK nuclear-weapon system is, in very large measure, exported by the United States to the United Kingdom. The United States leases Trident II (D5) submarine-launched ballistic missiles (SLBMs) to the United Kingdom from its missile inventory; the design for the United Kingdom's Holbrook nuclear warhead for its Trident missiles is based on the US W76 design; and the Mk4A re-entry vehicle for the Holbrook warhead is exported from the United States. Although not in and of itself determinative, the Trident SLBM fire control system and missile compartment—key components of the UK's nuclear-powered ballistic missile submarines (SSBNs)— are also exported from the United States to the United Kingdom.[1]

Without these transfers, the United Kingdom would be forced to design, test, and manufacture all the components for its nuclear weapons or terminate its nuclear weapons programme.

The transfers of key components by the United States also violate the corresponding prohibition on transfer by nuclear-weapon states in Article 1 of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).

New warhead

UK officials have reportedly lobbied the US Congress to expedite the development of a new warhead, the W93, on which a replacement for the Holbrook warhead would be based.[2] One commentator has suggested that over the course of 25 years of studies, engineering, and production, the W93 programme may cost up to US$14 billion, with production of the first warheads expected between 2034 and 2036. But, it has been noted, the US's need for the W93 'is not as urgent as the timeline suggests.' Rather, the programme's urgency 'seems attributable to the United Kingdom's nuclear modernization efforts'.[3] Nevertheless, in 2023, the US Congress authorised the National Nuclear Security Administration (NNSA)'s request for funding for the controversial new W93 SLBM programme of US$390 million.[4]

In 2020, a senior civil servant at the UK Ministry of Defence told the House of Commons Select Committee of Defence that there is 'a close realignment' between the US W93 warhead and the new British warhead. He further explained that 'It's not exactly the same warhead but … there is a very close connection in design terms and production terms. So we are intimately involved in that.'[5] In January 2022, a US Department of Energy fact sheet on the W93 programme stated that it was 'vital for continuing the United States' longstanding support to the United Kingdom'.[6] In May 2024, Jill Hruby, Under Secretary for Nuclear Security at the US Department of Energy, and NNSA Administrator, told the US Congress Subcommittee on Strategic Forces that: 'The W93 program is being undertaken in parallel with the U.K. Replacement Warhead program continuing our coordination through the U.S.-U.K. Mutual Defense Agreement.'[7]

1 D. Plesch and J. Ainslie, 'Trident: Strategic Dependence & Sovereignty', Working Paper, School of Oriental and African Studies, London, 2016, at: https://bit.ly/3X6Nn9Y p. 10; S. Jones, 'A wonk's guide to the Trident nuclear deterrent', *The Financial Times*, 18 July 2018, at: http://on.ft.com/30ShqDo; and N. Ritchie, A Nuclear Weapons-Free World? Britain, Trident and the Challenges Ahead, Palgrave Macmillan, Basingstoke, 2012, Chap. 6: 'A very special nuclear relationship'.
2 J. Borger, 'UK lobbies US to support controversial new nuclear warheads', *The Guardian*, 1 August 2020, at: http://bit.ly/3hRtqga
3 S. Ward, 'America's new multibillion-dollar nuclear warhead is a great deal for the British', Bulletin of the Atomic Scientists, 14 April 2022, at: https://bit.ly/3VYt3oj
4 S. Bugos, 'Congress Endorses New Nuclear Weapon', Arms Control Today, January/February 2024, at: https://bit.ly/3vVpU0q
5 House of Commons Select Committee on Defence, meeting with the UK Ministry of Defence, London, 8 December 2020, video available at: https://bit.ly/40oy9fB
6 US Department of Energy, 'W93/MK7 Acquisition Program', Fact Sheet, National Nuclear Security Administration, January 2022, at: https://bit.ly/3QKmfKl
7 Testimony Statement of Jill Hruby, Under Secretary for Nuclear Security, US Department of Energy, and Administrator of the NNSA before the Senate Armed Services Committee's Subcommittee on Strategic Forces, Washington, DC, 22 May 2024, at: https://bit.ly/4fN2tbG, 3.

This agreement, which was otherwise due to expire at the end of 2024, was made permanent in July 2024.[8] The journalist Richard Norton-Taylor said that 'in one of its first, and little-noticed foreign policy moves', the new Labour government had made Britain's nuclear weapons 'forever reliant on US military scientists'.[9]

Inextricably linked

These statements all imply that the UK's replacement nuclear warhead is inextricably linked to the status of the US W93 programme, and that the degree of technical information-sharing will amount to indirect transfer under Article 1(1)(b) of the TPNW as well as under Article 1 of the NPT. The W93 was projected to finish its Phase 2 'Feasibility Study and Design Options' stage by October 2024.[10] But in its Budget Justification for FY 2025 (1 July 2024–30 June 2025), the US Department of Energy wrote that it would: 'Complete W93 Program Phase 2A including the Weapon Design and Cost Report (WDCR) in (FY 2026) then obtain W93 Program Phase 3 authorization in (FY 2026).'[11] The budget appropriation for FY 2026 was set to be US$465 million.[12] FY 2026 runs from 1 July 2025 to 30 June 2026. The budget appropriation for FY 2025 was US$455 million.[13]

Dual-capable missiles to Belarus

As discussed on page 66, Russia has provided dual-capable Iskander missiles to Belarus.[14] It is widely accepted that the missile, rocket, or other munition, including both the container and any means of propulsion, are key components in a nuclear weapon. The missiles alone do not constitute a transfer under the TPNW, however, but rather encouragement of Belarus to assist Russia's possession of nuclear weapons in a potential foreign-deployed role. It has also been suggested, but not confirmed, that Russia has deployed the nuclear warheads for the Iskander missiles in Belarus.

At any rate, there is no suggestion that Belarus has been given custody of nuclear warheads. On the contrary, Russian spokespersons have insisted that nuclear weapons deployed in Belarus will remain under Russian jurisdiction and control, mirroring NATO practices.[15] This means that there has been no transfer of nuclear weapons or control over them as prohibited in the TPNW.

ARTICLE 1(1)(B) – INTERPRETATION

Each State Party undertakes never under any circumstances to 'transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly or indirectly.

- 'Transfer' means to transmit either possession or ownership of a nuclear weapon or other nuclear explosive device or of its key components. 'Control' means the power to use a nuclear weapon or other nuclear explosive device. Unlawful transfer does not necessarily involve payment or other form of 'consideration'.
- It is a fundamental principle of the law of treaties that a treaty must be interpreted and applied in good faith. Since transfer is prohibited 'to any recipient whatsoever' and that this is irrespective of whether it occurs 'directly or indirectly', it is also illegal to transmit possession or ownership to any other state or to any natural or 'legal' person (e.g. a company or organisation) of the key components of a nuclear weapon or other nuclear explosive device. See the interpretation on page 28 for more information on key components. The principle of good faith precludes transmission of the key components of a nuclear weapon or other nuclear explosive device where this occurs in separate instalments or via intermediaries or third parties, where it is known that the components will be used to produce a nuclear weapon or other nuclear explosive device.
- For transfer to occur, possession or ownership of all the key components of a nuclear weapon or nuclear explosive device need to be transmitted. In other cases, (e.g. when only a missile and not the nuclear warhead is transmitted), the act may amount to for instance assistance with development or production of nuclear weapons under Article 1(1)(e) of the TPNW.
- Providing another state with sufficiently detailed technical information for a nuclear warhead or other nuclear explosive device to be developed, and in the knowledge that it will be so used, also constitutes indirect transfer under Article 1(1)(b) of the TPNW. This is in addition to assistance with development under Article (1)(1)(e).
- Under Article 1 of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the five nuclear-weapon states parties have already committed never to transfer nuclear weapons 'to any recipient whatsoever'; this similarly applies whether this transfer occurs 'directly or indirectly'.
- The NPT does not include a corresponding prohibition on non-nuclear-weapon states to assist in a transfer of nuclear weapons or other nuclear explosive devices. This important lacuna is addressed by Article 1(1)(b) and (e) of the TPNW.

8 C. Mills, 'Amendments to the UK-US Mutual Defence Agreement', Research Briefing, House of Commons Library, London, 6 September 2024, at: https://bit.ly/3VfZT5Y 22–23.
9 R. Norton-Taylor, 'Starmer permanently ties UK nuclear arsenal to Washington', Declassified, 3 September 2024, at: https://bit.ly/4eSsIfB
10 Nuclear Information Service (NIS), 'Concept phase for UK Replacement Warhead begins',17 April 2023, at: https://bit.ly/42ohV8h
11 Department of Energy FY 2025 Congressional Justification, National Nuclear Security Administration, Vol. 1, March 2024, at: https://bit.ly/4eTArdk 117
12 Ibid., 134.
13 Ibid., 129.
14 See, e.g., N. Sokov. 'Russia is deploying nuclear weapons in Belarus. NATO shouldn't take the bait', Bulletin of the Atomic Scientists, 24 April 2023, at: https://bit.ly/4hdXT6V
15 L. Kelly and A. Osborn, 'Belarus starts taking delivery of Russian nuclear weapons', *Reuters*, 14 June 2023, at: https://bit.ly/3Onz0JU.

Potential transfer before use

As discussed in the section below on the prohibition under the TPNW on receiving transfer or control of nuclear weapons, another potential compatibility issue concerns the US B61 nuclear bombs that are stored in Europe but remain under the command and control of the United States. If, in a future war, full control over any of the bombs should be transferred by the United States to another state for loading and use in their dual-capable NATO-designated aircraft, this would contravene the prohibition on transfer in Article 1(1)(b) of the TPNW, and also the prohibition on transfer in Article 1 of the NPT. The same would apply if Russia transferred control of nuclear weapons to Belarus for delivery by the latter state's dual-capable aircraft.

Suggested transfer to Ukraine

In November 2024, it was reported in The New York Times that unnamed officials had suggested that the United States could send nuclear weapons to Ukraine.[16] This would be an unprecedented move and clear violation of the United States' obligations under Article 1 of the NPT. Following the report, Kremlin spokesman Dmitry Peskov said: 'These are absolutely irresponsible arguments of people who have a poor understanding of reality and who do not feel a shred of responsibility when making such statements. We also note that all of these statements are anonymous.' [17] The relatively muted response from Russia suggests that they do not consider the report in the media to be serious.

16 H. Cooper, A. E. Kramer, E. Schmitt, and J. E. Barnes, 'Trump's Vow to End the War Could Leave Ukraine With Few Options', *The New York Times*, 21 November 2024, at: https://bit.ly/3B23zRS

17 Euractiv.com with Reuters, 'Russia condemns "irresponsible" talk of nuclear weapons for Ukraine', Euractiv.com, 27 November 2024, at: https://bit.ly/4eOQtFm

File photo dated 20 January 2016 of the UK Vanguard-class submarine HMS Vigilant, one of the United Kingdom's four nuclear missile-carrying submarines, at HM Naval Base Clyde in Scotland. The submarines in the background carry conventional weapons. (Photo by Danny Lawson, PA Photos/NTB)

THE PROHIBITION ON

RECEIVING TRANSFER OR CONTROL

As was the case the previous year, in 2024 one state not party—the United Kingdom—engaged in conduct that was not compatible with the Treaty on the Prohibition of Nuclear Weapons' (TPNW) prohibition on receiving the transfer of or control over nuclear weapons. The United Kingdom leases Trident missiles and imports the other key components integral to its nuclear weapons from the United States.

Figure 20: Compliance and compatibility in 2024 with the TPNW's prohibition on receiving transfer or control of nuclear weapons

As discussed in the previous section, the transfers by the United States of the key components for the nuclear arsenal of the United Kingdom are not only prohibited by the TPNW, but are also unlawful under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). The *receipt* of the transfers by the United Kingdom as a nuclear-weapon state, however, is not regulated by the NPT. This lacuna is addressed by Article 1(1)(c) of the TPNW, which does not permit any state to receive the transfer or control of nuclear weapons.

As also discussed above, the planned replacement for the United Kingdom's Holbrooke warhead will be based on the W93 warhead, which is being developed by the United States. If the United Kingdom receives from the United States comprehensive technical information, such as in the form of a design blueprint, and uses it for the development of its new warhead, this will amount to indirect receipt of transfer under the TPNW. In the formal report on the United Kingdom's nuclear deterrent submitted to Parliament in March 2024, the Secretary of State for Defence informed parliament that the company AWE had begun work on a new warhead that has been designated the A21/Mk7 (also known as Astrea). The report stated that the Replacement Warhead Programme 'is being delivered in parallel with the US W93/Mk7 warhead' but maintained that 'each nation is developing a sovereign design'.[1]

Another potential future compatibility issue under this prohibition concerns the US B61 nuclear bombs stored in Europe. Arrangements are reportedly in place for control over the US bombs to be given by the United States to the host states in war for loading and use on their dual-capable, NATO-designated aircraft. If this were to occur such that the receiving state could use the weapons itself, this would contravene Article 1(1)(c) of the TPNW (and also the NPT).

ARTICLE 1(1)(C) – INTERPRETATION

Each State Party undertakes never under any circumstances to 'receive the transfer of or control over nuclear weapons or other nuclear explosive devices directly or indirectly.'

- To 'receive' a nuclear weapon or other nuclear explosive device is to take possession or control over it. This broad notion does not require that ownership also pass to the recipient.
- The prohibition on indirect receipt covers accepting the key components of any nuclear weapon or other nuclear explosive device as well as an assembled version. This extends to transfers made through intermediaries.
- Receiving comprehensive technical information for the design of a nuclear warhead or other nuclear explosive device, with the intent of using it to develop a nuclear weapon or other nuclear explosive device, would also constitute indirect receipt of transfer under Article 1(1)(c) of the TPNW.
- Article 1(1)(c) of the TPNW follows a similarly worded provision in Article II of the NPT, but the corresponding prohibition in that latter Treaty applies only to those states that are designated as non-nuclear-weapon states and not also to the five states designated as nuclear-weapon states.

1 Defence Nuclear Enterprise, 'Delivering the UK's Nuclear Deterrent as a National Endeavour', March 2024, at: https://bit.ly/40goxVz

A detail from the Heiwa no Boshi statue in Peace Park, Nagasaki, Japan. Heiwa no Boshi means Mother and Child of Peace. The statue in black granite was installed in 1987 to convey the message that the disasters of Hiroshima and Nagasaki (as well as the loss of life on Okinawa) must not be repeated, and to pass on an earnest wish for peace to the next generation. (Photo by Little Valley/Alamy Stock Photo/NTB)

THE PROHIBITION ON

USE

Of the nine states that possess nuclear weapons, none used them in 2024. The prohibition on use in the Treaty on the Prohibition of Nuclear Weapons (TPNW) therefore remained intact. However, 22% of all states had defence postures in 2024 that were based on preparedness for the use of nuclear weapons. Throughout the year, the risk of the use of nuclear weapons persisted as a real and immediate feature of world politics, and the danger of the escalation of conflicts involving nuclear-armed states was a significant, and growing, concern.

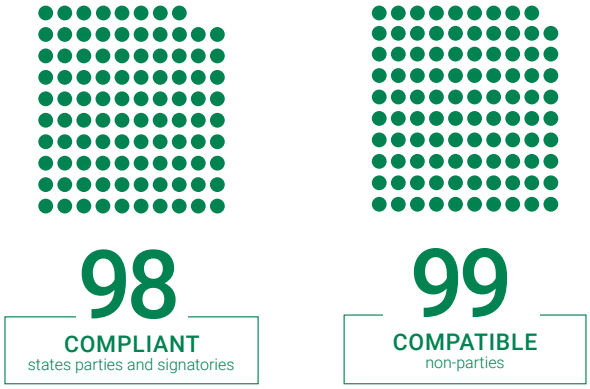

Figure 21: Compliance and compatibility in 2024 with the TPNW's prohibition on use of nuclear weapons

The year 2024 saw the nuclear-armed states and umbrella states continue a trend of reinforcing the value of nuclear weapons. The 'taboo' against the use of nuclear weapons was therefore under pressure, with previously exceptional discussion of the possible use of nuclear weapons becoming normal. Flight tests with nuclear-capable missiles, nuclear-strike exercises, and other demonstrations of nuclear capability and readiness to use increased in number and were often widely publicised.

The majority of the world has consistently rejected nuclear weapons as unacceptable and unnecessary weapons. A total of 154 states—four-fifths of the world's total of 197—maintained defence postures in 2024 that at the time were based exclusively on non-nuclear means. In stark contrast to their choices, 43 states, or 22%, had nuclear-weapons-based defence postures that involve preparedness and a willingness to potentially use nuclear weapons. As shown in Figure 22 and Table H overleaf, this was the nine nuclear-armed states and a total of 34 so-called nuclear umbrella states – meaning states with arrangements of extended nuclear deterrence with one or more nuclear-armed states. This is an increase of three on the situation when the TPNW was negotiated and adopted in 2017, due to Finland, North Macedonia, and Sweden changing defence posture to embrace nuclear deterrence and becoming umbrella states. In addition to this, many long-time umbrella states now lean more heavily towards the security logic of nuclear deterrence rather than nuclear disarmament in response to Russia's invasion of Ukraine in 2022.

ARTICLE 1(1)(D) – INTERPRETATION

Each State Party undertakes never under any circumstances to: 'Use … nuclear weapons or other nuclear explosive devices.'

- Preventing any use of any nuclear weapon or other nuclear explosive device is a fundamental aim of the TPNW – unquestionably central to the Treaty's object and purpose.
- To use a nuclear weapon or other nuclear explosive device is to launch, release, deliver, or detonate it with hostile intent or for so-called 'peaceful' use, such as in civil engineering. Intent can be discerned from the circumstances and does not have to be publicly espoused.
- Possession or deployment of nuclear weapons for the purpose of 'deterrence' does not amount to their use under the TPNW but is covered by the prohibition on possession in Article 1(1)(a).
- The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) does address the use of nuclear weapons but only in so far as it allows 'peaceful' detonation of nuclear explosive devices by nuclear-weapon states. The Comprehensive Nuclear-Test-Ban Treaty (CTBT), which prohibits all such 'peaceful' nuclear explosions, has not entered into force.
- Nuclear weapons have not been used since August 1945 when the United States dropped a nuclear weapon first on Hiroshima and then, three days later, on Nagasaki. Other nuclear explosive devices have not been used since some 150 such devices were detonated for 'peaceful' use (for civil engineering purposes) between the second half of the 1950s and the end of the 1980s by the erstwhile Soviet Union and the United States.

Figure 22: The world´s states disaggregated by national defence posture, as of 31.12.2024

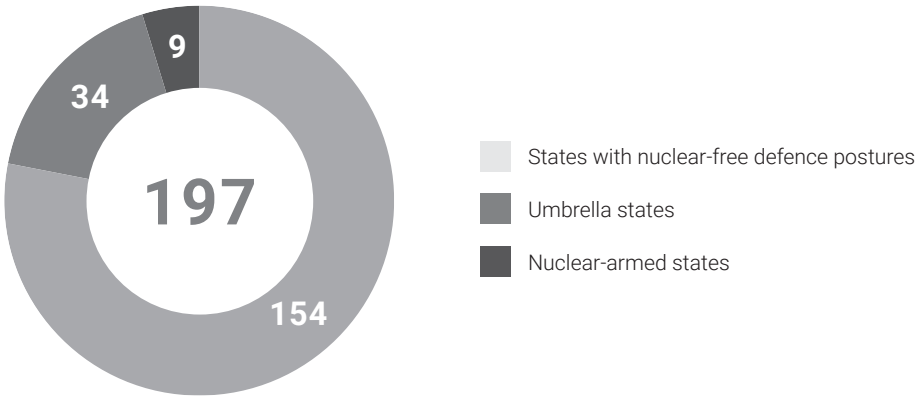

Table H: Arrangements of extended nuclear deterrence, as of 31.12.2024

	Nuclear-armed state(s)	Client(s)
Multilateral arrangements		
NATO	France, United Kingdom, United States	Albania, Belgium, Bulgaria, Canada, Croatia, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Türkiye (29 states)
Bilateral arrangements		
	Russia	Belarus
	Russia	Armenia
	United States	Australia
	United States	Japan
	United States	South Korea

On a knife's edge

Concern about the risk of nuclear use increased in 2024. For example, UN Secretary-General António Guterres warned in July 2024 that 'Humanity is on a knife's edge. The risk of a nuclear weapon being used has reached heights not seen since the Cold War. States are engaged in the qualitative arms race. Technologies like artificial intelligence are multiplying the danger. Nuclear blackmail has reemerged, with some recklessly threatening nuclear catastrophe.'[1]

This has been interpreted by some as symptomatic of an emerging new nuclear era characterised by complexity, uncertainty, and a greater risk of nuclear violence. For example, in December 2024, UK Chief of the Defence Staff, Admiral Sir Antony Radakin, in an annual lecture to the Royal United Services Institute (RUSI), stated that 'the world has changed. Global power is shifting and a third nuclear age is upon us. The era of state competition primarily through geo-economics has shifted to a resurgence of geo-politics. And it will last decades.' Moreover, he affirmed that: 'The security outlook is more contested, more ambiguous and more dangerous than we have known in our careers. Nowhere is this more apparent than in the nuclear domain…. [W]e are at the dawn of a third nuclear age which is altogether more complex. It is defined by multiple and concurrent dilemmas, proliferating nuclear and disruptive technologies, and the almost total absence of the security architectures that went before.'[2]

Concern about the growing risk of nuclear use came to the fore in December 2024, when the Nobel Peace Prize was awarded to the Japanese Confederation of A- and H-Bomb Sufferers Organization, Nihon Hidankyo. In his speech in Oslo on 10 December presenting the award, Chair of the Norwegian Nobel Committee, Jørgen Watne Frydnes, said 'It is naive to believe our civilisation can survive a world order in which global security depends on nuclear weapons. The world is not meant to be a prison in which we await collective annihilation. So let us listen to the testimony of the Hibakusha.'[3] The testimonies of the Hibakusha have been key to the gradual development of an international norm against the use of nuclear weapons, which is often referred to as 'the nuclear taboo', a term coined by the political scientist Nina Tannenwald. In 2017, with the adoption of the TPNW, the nuclear taboo was codified. The TPNW is now therefore the institutional home of the nuclear taboo, and Nihon Hidankyo have consistently called for universalisation of the Treaty.

Fraught with assumptions

The TPNW is based on a growing body of scientific evidence regarding the catastrophic humanitarian and environmental consequences of nuclear weapons and their inherent risks. In the First Committee of the UN General

1 A. Guterres, 'UN Chief Says Humanity on a Nuclear "Knife's Edge"', Arms Control Today, July/August 2024, at: https://bit.ly/4aexgfE
2 T. Radakin, 'Chief of the Defence Staff RUSI Lecture 2024', Royal United Services Institute, 4 December 2024, at: https://bit.ly/4h5Amow
3 The Nobel Prize, 'Award ceremony speech', 10 December 2024, at: https://bit.ly/40fYwG7

Assembly in October 2024, the Austrian delegation said that 'The evidence regarding the consequences and risks of nuclear weapons raises profound questions about the sustainability and legitimacy about an approach to international security that is underpinned by the threat of mass destruction. It also leads to urgent and legitimate security concerns that are widely shared in the international community regarding the continuous practice of nuclear deterrence that is highly precarious and fraught with assumptions and that cause existential risks to the entire planet.'[4]

It is worth recalling that a credible willingness to wage nuclear war is baked into nuclear deterrence doctrine because there must be some risk of actual nuclear violence if a nuclear deterrent threat is going to have its intended effect. The purpose of nuclear deterrence is to try and manage a conflict and its escalation by coercing an adversary to act in a particular way by doing or not doing specific things. The difficulty lies in determining how 'real' the readiness to use nuclear weapons is – i.e., whether there is a serious intent to follow through and actually use nuclear weapons if the conflict is perceived as getting out of control to the point of radically undermining the core interests of the state concerned. Is the adversary's intention to reinforce deterrence and what it sees as the acceptable parameters of a conflict, or are its actions and statements a sign of desperation or belligerence and indicative of serious planning to use nuclear weapons if the dynamics of a conflict do not change in its favour? This is very hard to determine because it means getting into the head of the leader of a nuclear-armed state who might not know themselves what they might do under different conditions. Nevertheless, nuclear-armed states can try to manage or resolve a conflict in their favour by testing the seriousness of their opponent's nuclear threats whilst demonstrating through words and actions the seriousness of their own preparedness to use nuclear weapons. This can lead nuclear-armed states down a dangerous path of brinkmanship in which crisis-induced misperception, irrationality, and chance increase the risk of nuclear use.

The view that nuclear deterrence provides security rests on an assumption that nuclear weapons-related risks can be known and that they can be controlled. However, evidence shows us that these risks are not knowable and not controllable, but are subject to chance and luck (good and bad).[5] Once we accept that luck plays a role in the outcome of nuclear crises, nuclear deterrence as a legitimate and necessary paradigm becomes deeply questionable. What remains is that nuclear weapons are a source of constant insecurity in themselves, and that this reality affects all of us.

A 50% chance

This was exemplified in Russia's ongoing war against Ukraine as new information came to light about fears of the use of nuclear weapons by Russia. US journalist Bob Woodward reported in his 2024 book *War* that US intelligence had details of 'highly sensitive, credible conversations inside the Kremlin' that Russian President Vladimir Putin was seriously considering using nuclear weapons to avoid major battlefield losses in September 2022. US intelligence agencies estimated the likelihood that Putin would use tactical nuclear weapons if Ukrainian forces surrounded 30,000 Russian troops in the southern city of Kherson at 50%, up from a previous estimate of 5%. Woodward reports that US intelligence indicated that Putin had also loosened operational controls to make it easier to order the use of tactical nuclear weapons.[6]

Initiatives to address the risk of nuclear use

Under the auspices of the TPNW, the Austrian government established an inter-sessional consultative process in 2024 to examine TPNW states parties' understandings of threat and risk to their security from nuclear weapons and to challenge the nuclear deterrence security paradigm.[7] A mandate for the process was agreed at the Second Meeting of States Parties to the TPNW (2MSP) in 2023 and Austria was appointed as its coordinator.[8]

On 24 December 2024, the UN General Assembly voted to establish an independent Scientific Panel on the Effects of Nuclear War comprising 21 people to be appointed by the UN Secretary-General to study the effects of nuclear detonations.[9] This is because the last serious studies conducted in the 1980s have been superseded by a wealth of new knowledge about the climatic and wider impacts of nuclear war.[10] The vast majority of states voted in favour of the resolution, but some nuclear-armed states lobbied and then voted against it – notably France, Russia, and the United Kingdom. The panel will examine 'the physical effects and societal consequences of a nuclear war on a local, regional and planetary scale, including, inter alia, the climatic, environmental and radiological effects, and their impacts on public health, global socioeconomic systems, agriculture and ecosystems, in the days, weeks and decades following a nuclear war' with the support of the UN system and its relevant agencies.[11] It is hoped that the group of experts to study the effects of nuclear war will lead to a more informed and inclusive global debate on nuclear weapons.

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4 'First Committee – 79th Session Thematic Debate – Nuclear Weapons Right of Reply by the Republic of Austria delivered by George-Wilhelm Gallhofer Minister Plenipotentiary/Deputy-Director for Disarmament, Arms Control and Non-Proliferation, Federal Ministry for European and International Affairs', New York, 22 October 2024, at: https://bit.ly/4asnh6M

5 P. Pelopidas, *Repenser Les Choix Nucleaires* ("Rethinking Nuclear Weapons Choices"), Sciences-Po Press, Paris, 2022.

6 B. Woodward, *War*, Simon & Schuster, New York, 2024, pp. 108–09,; and D. Sanger, 'Biden's Armageddon Moment: When Nuclear Detonation Seemed Possible in Ukraine', The New York Times, 9 March 2024, at: https://bit.ly/3CTsjgb

7 'Decisions to be taken by the second Meeting of States Parties to the Treaty on the Prohibition of Nuclear Weapons', TPNW/MSP/2023/CRP.3/Rev.1, 30 November 2023, United Nations, New York, at: https://bit.ly/3BShwCu

8 S. Kuramitsu, 'TPNW States Challenge Nuclear Deterrence Doctrine', Arms Control Today, January/February 2024, at: https://bit.ly/3DNvwOh

9 UN General Assembly Resolution 79/238: 'Nuclear war effects and scientific research', adopted on 24 December 2024 by 136 votes to 3, with 29 abstentions.

10 Z. Mian, 'We Need a UN Study of the Effects of Nuclear War', *Scientific American*, 28 October 2024, at: https://bit.ly/405OxDf

11 UN General Assembly Resolution 79/238, operative paras. 3 and 4.

In this photo released by the Russian Defense Ministry Press Service on 21 May 2024, Russian troops load a nuclear-capable Iskander missile as part of drills to train the military for using tactical nuclear weapons at an undisclosed location in Russia. This was the first time Russia publicly announced drills involving tactical nuclear weapons. (Photo by the Russian Defense Ministry Press Service via AP/NTB)

THE PROHIBITION ON

THREATENING TO USE

The Nuclear Weapons Ban Monitor found that two states acted in contravention of the Treaty on the Prohibition of Nuclear Weapons' (TPNW) prohibition on threatening to use nuclear weapons in 2024: North Korea and Russia. North Korea overtly threatened to use nuclear weapons against South Korea while Russia implicitly threatened to use nuclear weapons against Ukraine.

Figure 23: Compliance and compatibility in 2024 with the TPNW's prohibition on threatening to use nuclear weapons

At the start of 2024, North Korean leader Kim Jong Un said his country would no longer pursue reconciliation with the South and instead described South Korea as the North's 'principal enemy' and threatened to 'thoroughly annihilate' the United States and South Korea if provoked. This is a specific threat to use nuclear weapons going beyond the notion of nuclear deterrence. Indeed, Robert A. Manning, a distinguished fellow with the Strategic Foresight Hub at the Stimson Center and experienced commentator on North Korea, wrote in October that 'the Korean Peninsula seems more dangerous and volatile than at any time since 1950'.

Following the victory of Donald Trump in the US presidential election, the North Korean leader renewed his call for a 'limitless' expansion of his nuclear programme to counter US-led threats. Any new nuclear test by North Korea would

ARTICLE 1(1)(D) – INTERPRETATION

Each State Party undertakes never under any circumstances to 'threaten to use nuclear weapons or other nuclear explosive devices'.

- Article (1)(1)(d) of the TPNW prohibits threatening to use a nuclear weapon or other nuclear explosive device at all times, and regardless of whether such use would itself be a violation of international law or in legitimate self-defence against foreign aggression. It is therefore broader in scope than the prohibition on threat of force in Article 2(4) of the UN Charter.
- To violate the TPNW, a threat of use must be credible in the circumstances. This means that the threat must emanate from a person or an authority in a position to either direct or authorise the use of a nuclear explosive device. Typically, therefore, such a threat would be made by a senior (and pertinent) government official or leading member of the ruling party in a nuclear-armed state.
- The narrow wording in Article 1(1)(d), which uses the active verb 'threaten to use', requires that any signalled intention by a state to use nuclear weapons be specific as to the target of threatened use. Statements that reiterate the general circumstances for use in a nuclear-armed state's nuclear deterrence policies do not amount to threatening to use under the TPNW.
- Prohibited threats may, however, be implicit as well as explicit. A stated threat does not, therefore, have to refer to use of nuclear weapons, although it would be more likely to violate the norm in the TPNW should it do so.
- In certain circumstances of tension, a show of force by means of missile testing, an explosive test of a nuclear weapon, or a nuclear strike exercise or other demonstration of nuclear capability, could amount to a non-verbal threat to use nuclear weapons under the TPNW (along with other violations of the Treaty).
- Policies of nuclear 'deterrence' rest on the willingness to use nuclear weapons. Accordingly, reflecting the severity of the danger, some experts take the view that a practice of nuclear 'deterrence' in and of itself constitutes an unlawful threat of use of nuclear weapons. It is the view of the Nuclear Weapons Ban Monitor, however, that the broader concept of nuclear deterrence, where the threat to use is general and not specific in nature, is not sufficient in itself to constitute threatening to use under the TPNW. Nuclear deterrence practices are, however, illegal under the prohibition on possession and stockpiling.
- The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) does not prohibit threatening to use nuclear weapons.

not only violate the prohibition on testing in Article 1(1)(a) of the TPNW but, given the bellicose circumstances in which such testing would be occurring, this would also be likely to amount to threatening to use nuclear weapons under Article 1(1)(d) of the Treaty. As set forth in the interpretation of this provision above, and consonant with international law, conduct other than verbal threats may constitute a threat of the use of nuclear weapons.

Russia

In an effort to reinforce the credibility of Russia's nuclear deterrence, Russian President Vladimir Putin authorised a change in Russian nuclear doctrine (called Russia's Basic Principles of State Policy on Nuclear Deterrence) on 19 November 2024. When combined with the use against Ukraine two days later of a new hypersonic, intermediate-range, nuclear-capable missile, this amounted to an implicit threat to use nuclear weapons against Ukraine. The timing of the launch of the new policy was also of significance, coming just days after the Biden administration allowed Ukraine to fire missiles supplied by the United States into Russia for the first time.

The updated nuclear doctrine, which was published on the Kremlin website, diverges in two important ways from the earlier iteration in 2020. First, it raises the possibility that nuclear weapons could be used against a nuclear-armed nation that does not directly launch an attack on Russia but which supports such an attack by a non-nuclear country. As *The New York Times* reports, 'That is a clear reference to Ukraine and its nuclear-armed backers, led by the United States. Russia's previous nuclear doctrine focused on responding to attacks by nuclear-armed countries and alliances.'[1] Second, the new policy lowers the threshold at which Russia could consider the use of nuclear weapons in response to an attack using conventional weapons. The previous doctrine said such an attack must threaten 'the very existence of the state', while the new policy only requires a 'critical threat' to Russia's sovereignty.

On 21 November 2024, Russia then fired into Ukraine a new intermediate-range, nuclear-capable missile that is believed to be close to production at scale. The Oreshnik has multiple (believed to be between six and eight) warheads that are independently targetable – a capability inextricably linked with nuclear missiles.[2] The hypersonic missile, which is claimed to travel at some 8,000 miles per hour,[3] would have been unlawful under the now-defunct 1987 Intermediate Nuclear Forces (INF) Treaty.

The Oreshnik missile appears to have been fired in a lofted trajectory in order to reduce range. A former Kremlin advisor, Sergei Markov, told Reuters the use of the weapon was 'symbolic', sending a message from Putin to the West: 'Back off!'[4] It hit the central city of Dnipro, and seemingly targeted an aerospace manufacturing plant.[5] Russia gave the United States advance warning of the missile strike on Dnipro 'through nuclear risk reduction channels' some thirty minutes before the attack, according to the US Department of Defense's Deputy Spokesperson, Sabrina Singh.[6] Russian sources said the missile's range was 5,000 kilometres, meaning it would provide the capability to strike most of Europe and the west coast of the United States.[7]

Tactical nuclear weapons exercise

Earlier in 2024, on 6 May 2024, the Russian Ministry of Defence announced an exercise to test preparation and use of tactical nuclear weapons, as a response to 'certain provocative statements and threats made by some Western officials,' referring to UK and French suggestions that the West should be more directly involved in the war in Ukraine. The exercise was held later in the month in a Russian district next to Ukraine.

As Pavel Podvig notes, nuclear strike exercises are common among nuclear-armed states and are meant be part of the deterrence messaging, but few have ever been as explicitly linked to specific political or military developments as the one announced by Russia. 'The Kremlin was clearly sending a message intended to convey its readiness to escalate,' says Podvig, adding that the Kremlin appears to be following the signalling path charted by a number of hawkish Russian experts, and it cannot be ruled out that it is prepared to take more steps up the escalation ladder.[8]

Quieting the nuclear rattle

Podvig believes it would be wrong to ignore Russia's actions completely, if only to prevent it from moving to more provocative actions. 'To prevent this from happening, the international community must double down on its message that nuclear threats are inadmissible. … Western states should tone down their own message of reliance on nuclear deterrence and work together with a broad coalition of states, from their allies to China and India and the states parties to the Treaty on the Prohibition of Nuclear Weapons. Opposition to nuclear use is a powerful unifying message that can bring together states that may have diverging views on the war in Ukraine. Such a coalition can render nuclear threats politically untenable, opening more options for supporting Ukraine's efforts to defend itself'.[9]

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1 A. Troianovski, 'Putin Lowers Russia's Threshold for Using Nuclear Arms', *The New York Times*, 19 November 2024, at: https://bit.ly/4fJytxD
2 S. Roblin, 'Russia Says It Fired an Unprecedented New Type of Hypersonic Missile for the First Time Ever', `*Popular Mechanics*`, 22 November 2024, at: https://bit.ly/4fl0ENl
3 Hypersonic speed is generally defined as speeds of MACH 5 (6,173 kilometres per hour) and above.
4 G. Doyle, T. Balmforth, and M. Zafra, 'Enter "Oreshnik"', *Reuters*, 28 November 2024, at: https://bit.ly/3B6dN3I
5 AFP/Reuters, 'Putin says Russia will keep testing new missile in combat', *RTE*, 22 November 2024, at: https://bit.ly/3Ouoj7O.
6 V. K. Thakur, 'Russian "Hypersonic" Oreshnik Missile Attack On Ukraine A Clear Signal To NATO! Retaliation Sans Escalation', *Eurasian Times*, 22 November 2024, at: https://bit.ly/3Or3p9B
7 BFBS Forces News, 'Oreshnik: What we know about Putin's newest missile being fired at Ukraine', 22 November 2024, at: https://bit.ly/3Ormd8L
8 P. Podvig, 'Quieting the nuclear rattle: Responding to Russia's tactical nuclear weapons exercises', Commentary, European Leadership Network, 29 May 2024, at: https://bit.ly/4gEhJbn
9 Ibid.

Daryl G. Kimball of the Arms Control Association argued in 2024 that 'Given that the risk of nuclear war is greater than at any point since the Cold War, the United States, along with other responsible states, must lead the way to reinforce the taboo against nuclear weapons use and threats of nuclear weapons use. … Biden and his successor have a duty to do more to reinforce the global norm against nuclear weapons use. Rather than trying to distinguish between what it calls Russia's irresponsible nuclear threat rhetoric and its own "defensive" nuclear deterrence signaling, the United States should join non-nuclear-weapon states who condemn nuclear use and threats of nuclear use of any kind as dangerous, disproportionate, illegal, and as the Group of 20 leaders said in 2022 and 2023, "inadmissible."'[10]

The legal threshold

There have been a myriad of other threats by Russian politicians and media. But while these are clearly tolerated by the authorities—and perhaps even encouraged—they do not meet the legal threshold for a prohibited instance of threatening to use because the proponents do not have the authority to order or authorise their use. One journalist recorded 17 such threats in the first half of 2024 alone.[11]

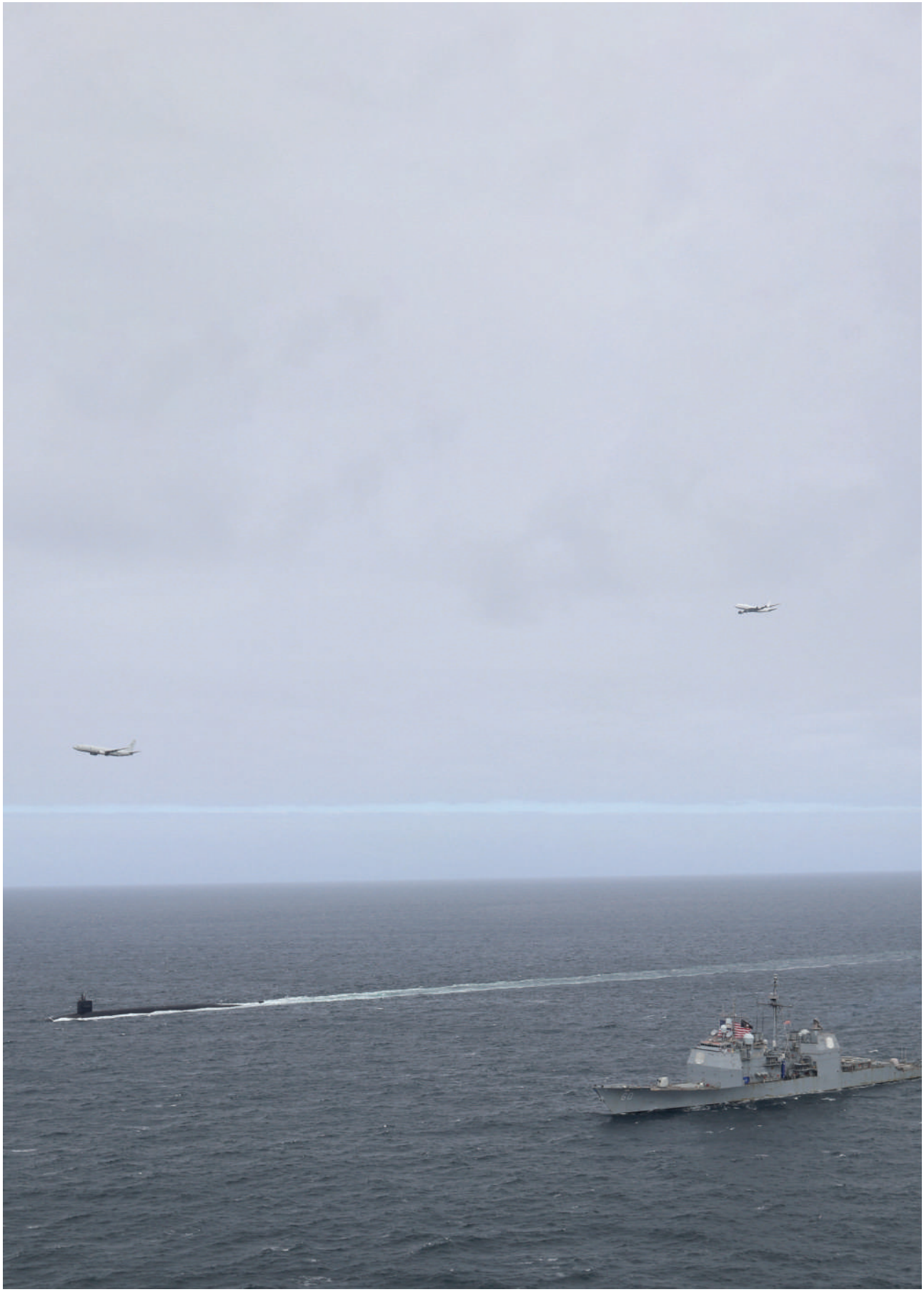
But as Shrager has observed in The Bulletin of the Atomic Scientists, 'For some, a nuclear threat constitutes any verbal statement of a state's nuclear strength, whereas others call this noise.'[12] In contrast, she cites George Perkovich, the vice president for studies at the Carnegie Endowment for International Peace, who defines a nuclear threat as an explicit, consequential statement from a nuclear power to an adversary that unless the adversary fulfils certain criteria, it faces a nuclear response. Furthermore, he says, 'We've never actually seen a nuclear threat. I think it's impossible to find a case where a leader has plausibly said "I'm going to do this if you don't stop, and it's imminent."'[13] His definition of the notion, however, is from the realm of political science and security studies, and it is narrower than the definition to be accorded to the term under international law.

Israel

In Israel, a number of Israeli politicians have called for use of nuclear weapons in Gaza. But these calls, too, do not amount to a prohibited threatening to use nuclear weapons because the politicians in question do not have the authority to order or authorise the use of nuclear weapons. In January 2024, Heritage Minister Amichai Eliyahu again stated that a nuclear attack on Gaza was an option.[14] In a similar call in 2023, he had claimed that there were no civilians in Gaza. Minister Eliyahu was reprimanded by Netanyahu, but he was not suspended.[15]

In February 2024, Tally Gotliv, a member of the Knesset, posted a call for the use of 'doomsday weapons' to 'restore the country's dignity, strength, and security'.[16] The statement insisted that Israel must crush and flatten all of Gaza, not only one neighbourhood. Ms Gotliv is a member of Prime Minister Netanyahu's Likud Party.[17]

10 D. G. Kimball, 'Confronting the Threats Posed by Threats of Nuclear Use', Arms Control Association, November 2024, at: https://bit.ly/40hqKS8
11 Y. Kopiika, 'A Timeline of Russia's Nuclear Threats Against the West', *United 24 Media*, 27 June 2024, at: https://bit.ly/3ZevbeH
12 C. Shrager, 'A growing nuclear debate: The risk of calling everything a nuclear threat', The Bulletin of the Atomic Scientists, 28 November 2024, at: https://bit.ly/3V9oQ32
13 Cited in ibid.
14 'Israel minister renews call for striking Gaza with "nuclear bomb"', *Middle East Monitor*, 24 January 2024, at: https://bit.ly/4g6skev
15 H. Teha, 'Commentary: Nuclear weapons, Israel and Gaza', Blog post, ICAN, 4 November 2024, at: https://bit.ly/4i8c4eH
16 Y. Melman, 'Israeli Calls to "Nuke Gaza" Are Undermining the Nuclear Ambiguity Doctrine', Opinion, *Haaretz*, 28 February 2024, at: https://bit.ly/3Z9QcXH
17 Teha, 'Commentary: Nuclear weapons, Israel and Gaza'.



The US Navy Ohio-class ballistic missile submarine USS Tennessee (SSBN 734) navigates alongside The Ticonderoga-class guided-missile cruiser USS Normandy in the Norwegian Sea on 23 June 2024 with a P-8A Poseidon patrol aircraft and E-6B Mercury flying overhead. The E-6B Mercury aircraft are also known as 'doomsday planes' as they function as airborne strategic command posts through which nuclear strike orders would flow. The doomsday plane in the photo was hosted at Rygge military airport in Norway, and Norwegian government and Armed Forces representatives went onboard the SSBN during the operation, which was described as a 'dramatic nuclear signal'. (Courtesy photo by US Naval Forces Europe-Africa/US Sixth Fleet. The appearance of US Department of Defense (DoD) visual information does not imply or constitute DoD endorsement.)

THE PROHIBITION ON

ASSISTANCE, ENCOURAGEMENT, OR INDUCEMENT

In 2024, one state party (Kazakhstan) contravened the prohibition on assistance, encouragement, or inducement of activities that are unlawful under the Treaty on the Prohibition of Nuclear Weapons (TPNW). The conduct of a further 39 states not parties was also incompatible with that prohibition. This included four nuclear-armed states (France, Russia, the United Kingdom, and the United States), the world's 34 nuclear umbrella states, and one state with a nuclear-free defence posture (the Marshall Islands). The Nuclear Weapons Ban Monitor also observed a trend towards umbrella states aiding and abetting nuclear armament in more ways than they did before the full-scale Russian invasion of Ukraine that began in 2022.

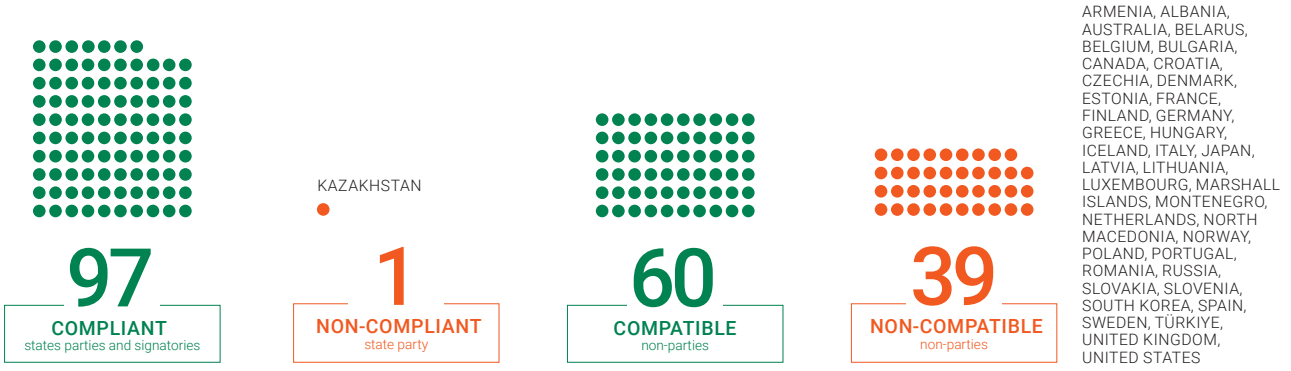


Figure 24: Compliance and compatibility in 2024 with the TPNW's prohibition on assisting, encouraging, or inducing acts prohibited by the Treaty

The conduct of the total of 40 states that in various ways in 2024 assisted, encouraged, or induced activities prohibited by the TPNW, is discussed by group below. It should be noted, however, that the secrecy measures associated with many military practices mean that the information is likely to be incomplete.

ASSISTANCE AND ENCOURAGEMENT BY NUCLEAR UMBRELLA STATES

For the purposes of this report, nuclear umbrella states are non-nuclear-armed states that have arrangements of extended nuclear deterrence with one or more nuclear-armed allies. In so doing, they play a major role in legitimising nuclear weapons as necessary and acceptable instruments of statecraft. The 34 umbrella states are the 29 non-nuclear-armed states in NATO; US allies Australia, Japan, and South Korea; and Russian allies Armenia and Belarus. As the Nuclear Weapons Ban Monitor's legal assessments of the policies and practices of umbrella states reveal, they bear a considerable degree of responsibility for the fact that trillions of dollars are being poured into the development and continued possession of nuclear weapons.

Table I on page 63 provides a summary of the conduct that each respective umbrella state would have to change should it wish to ensure compatibility with this provision of the TPNW. As the Table shows, some umbrella states cover a broader spectrum of practices that are incompatible with Article 1(1)(e) than others. For the first time, Belarus' actions in 2024 conflicted with all seven of the categories of incompatible conduct set out by the Nuclear Weapons Ban Monitor. As in previous years, in 2024 two other states—Germany and Italy—continued to engage in all of the seven categories of incompatible conduct; the Netherlands in six of the seven conduct categories; and Belgium and Türkiye in five conduct categories.

The Nuclear Weapons Ban Monitor's tracking of umbrella state conduct over the past few years also indicates a deepening and widening of incompatible conduct. Since late February 2022, the start of Russia's invasion of Ukraine, several umbrella states have been expanding the number of ways in which they assist or encourage activities that are prohibited under the TPNW. This is happening as many umbrella states are endeavouring to increase the visibility and salience of nuclear deterrence in their defence postures and as some nuclear-armed states are seeking to involve more of their allies directly in their nuclear missions.

Commenting on this trend, Hans M. Kristensen of the Federation of American Scientists has described this as a 'problematic dynamic between action and reaction that can undermine the norms for nuclear non-proliferation and

disarmament' and which can 'create a nuclear autopilot mentality that compounds the nuclear weapons problem'.[1] The quick expansion of the number of ways in which Belarus assists and encourages Russian development, production, and possession of nuclear weapons is but one example of this.

Norway, a long-standing umbrella state with a nuclear weapons policy that traditionally has been characterised by restraint, has also changed its conduct. In 2024, Norway was for the first time found by the Nuclear Weapons Ban Monitor to not only encourage possession of nuclear weapons by way of endorsing NATO's nuclear-weapons doctrine and by participating in the alliance's Nuclear Planning Group (NPG), but also by supporting a demonstration of nuclear capability at sea. Norway was further found to have directly assisted nuclear weapons possession by taking part in a nuclear strike exercise and providing logistical support to nuclear forces. Finland, too, participated in a nuclear strike exercise, in its second year as a NATO member.

South Korea had, in 2023, been found to have assisted possession of nuclear weapons for the first time by providing logistical support to nuclear forces (a US SSBN in a rare port call). To the Nuclear Weapons Ban Monitor's knowledge, this did not occur again in 2024, although South Korea did deepen its participation in nuclear planning.

These instances and further information about the various ways in which the umbrella states encouraged or assisted the development, production, or possession of nuclear weapons in 2024 is examined under subheadings a) to g) below.

ARTICLE 1(1)(E)—INTERPRETATION

Each State Party undertakes never under any circumstances to: 'Assist, encourage or induce, in any way, anyone to engage in any activity prohibited to a State Party under this Treaty.'

- Under this provision, a state party is precluded from assisting any other state, alliance, or international organisation, company, non-state actor, or individual to develop, test, produce, manufacture, otherwise acquire, possess, stockpile, transfer, deploy, receive, threaten to use, or use nuclear weapons or other nuclear explosive devices.
- States parties to the TPNW are allowed to participate in security alliances and military cooperation arrangements with nuclear-armed states—and may continue to carry out all planning, operations, exercises, and other military activities with them—so long as this does not involve nuclear weapons. Participation in nuclear-weapon-related military activities, however, would need to be discontinued.
- Other disarmament treaties contain a similarly worded prohibition, and there is an established understanding in international law of the concepts of assistance, encouragement, and inducement.
- Conduct by omission as well as by overt act is covered by the prohibition. This is so, irrespective of the inclusion of the words 'in any way'.
- The effects of violating this prohibition are the same regardless of which alternative has been violated. If an act is clearly assistance, it is not necessary to determine whether the act also constitutes encouragement, and vice versa.
- In some cases, it may not be possible to conclude that a specific practice or capability in a given state presently amounts to assistance or encouragement of a prohibited act under the TPNW, while it is clear that it may well do so in the future. For umbrella states considering which changes they would need to implement in order to ensure compatibility with the TPNW, the central issue is whether maintaining a particular practice or capability would run counter to the object and purpose of the TPNW – which is to ensure that nuclear weapons are never again used under any circumstances.

ASSISTANCE

- In order for conduct to constitute assistance, there must be a causal link between the conduct and a prohibited activity. In addition, the conduct must contribute significantly to this activity, although it does not need to be essential to its occurrence. Insignificant contributions would not constitute prohibited assistance. Inherent in the requirement that the contribution is significant is that the prohibited activity which is assisted must be ongoing or temporally proximate. This means that while the prohibited activity need not have happened or be ongoing, it cannot only be a theoretical possibility.
- The state must have acted with the knowledge that the conduct would, in the ordinary course of events, assist a prohibited activity. This effectively excludes temporally remote or incidental contributions.
- The forms of assistance that are unlawful can be, among others, financial (such as through economic assistance for nuclear-weapon production); technological (for example, by the export of equipment/components for such production); operational (for instance, by conventional military support for nuclear bombing); technical (through the provision of expert information); or human (such as by seconding nuclear scientists to assist in another state's nuclear-weapon programme).

ENCOURAGEMENT

- Encouraging in the context of the TPNW means persuading or seeking to persuade any other state or any legal or natural person to carry out a prohibited activity or continue an ongoing violation of any of the Article 1 prohibitions.
- The prohibited activity being encouraged does not need to materialise as it is the act of encouragement that is prohibited and not the result.
- Encouragement could take the form of verbal, written, material, or institutional support, whether from a government as such (for instance, through the adoption of a particular policy or document) or from pertinent senior government or military officials. Where such support has been given, the encouragement is understood to be ongoing until the point at which it is clearly withdrawn or effectively superseded by other events.

INDUCEMENT

- Inducing a prohibited activity means offering someone something in exchange for the performance of that activity. Thus, inducing will always involve encouragement.

1 T. Paust, 'Natos atomkrigøvelse: -Problematisk at Norge deltar', *Nettavisen*, 18 October 2024, at: https://bit.ly/4h5EZyS

TABLE I: UMBRELLA STATE CONDUCT IN 2024 THAT WAS NOT COMPATIBLE WITH ARTICLE 1(1)(E) OF THE TPNW							
	Endorsement of doctrines and policies supporting nuclear possession	Participation in nuclear planning	Provision of capabilities in support of a nuclear posture	Participation in nuclear strike exercises and demonstrations of nuclear capability	Logistical and technical support to nuclear forces	Development, production, and maintenance of key components for nuclear weapons	Ownership in and other financial assistance to the nuclear-arms industry
UMBRELLA STATE							
Armenia	Non-compatible						
Albania	Non-compatible	Non-compatible					
Australia	Non-compatible	Non-compatible					
Belarus	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible
Belgium	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible		
Bulgaria	Non-compatible	Non-compatible					
Canada	Non-compatible	Non-compatible					
Croatia	Non-compatible	Non-compatible					
Czechia	Non-compatible	Non-compatible	Non-compatible	Non-compatible			
Denmark	Non-compatible	Non-compatible	Non-compatible	Non-compatible			
Estonia	Non-compatible	Non-compatible					
Finland	Non-compatible	Non-compatible		Non-compatible			
Germany	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible
Greece	Non-compatible	Non-compatible	Non-compatible	Non-compatible			
Hungary	Non-compatible	Non-compatible	Non-compatible				
Iceland	Non-compatible	Non-compatible					
Italy	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible
Japan	Non-compatible	Non-compatible					
Latvia	Non-compatible	Non-compatible					
Lithuania	Non-compatible	Non-compatible					
Luxembourg	Non-compatible	Non-compatible					
Montenegro	Non-compatible	Non-compatible					
Netherlands	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible	
North Macedonia	Non-compatible	Non-compatible					
Norway	Non-compatible	Non-compatible		Non-compatible	Non-compatible		
Poland	Non-compatible	Non-compatible	Non-compatible	Non-compatible			
Portugal	Non-compatible	Non-compatible					
Romania	Non-compatible	Non-compatible		Non-compatible			
Slovakia	Non-compatible	Non-compatible					
Slovenia	Non-compatible	Non-compatible					
South Korea	Non-compatible	Non-compatible					
Spain	Non-compatible	Non-compatible				Non-compatible	Non-compatible
Sweden	Non-compatible	Non-compatible					
Türkiye	Non-compatible	Non-compatible	Non-compatible	Non-compatible	Non-compatible		
Totals	**34**	**33**	**11**	**13**	**7**	**5**	**4**

a) Endorsement of doctrines and policies supporting nuclear weapon possession

In 2024, all 34 umbrella states contravened Article 1(1)(e) of the TPNW by supporting specific nuclear-weapons related alliance doctrines and policies and/or through statements that advocate nuclear deterrence. They thus encouraged continued development and possession of nuclear weapons.[2]

NATO's foundational document, the North Atlantic Treaty, does not mention nuclear weapons. However, every NATO member has supported possession and potential use of nuclear weapons through their endorsement of other alliance documents, particularly the Strategic Concept, which was last updated in 2022.[3] None of the alliance's members has so far rejected the possession or use, or even the first use, of nuclear weapons on its behalf. In July 2024, NATO adopted a summit declaration in Washington, proclaiming that nuclear deterrence 'is the cornerstone of Alliance security'.[4]

Three non-NATO allies of the United States (Australia, Japan, and South Korea) also continued to encourage development and possession of nuclear weapons through explicit statements and/or official documents. In July 2024, Japan's foreign minister, Kamikawa Yoko, maintained that US extended deterrence, 'backed by the full range of capabilities, including nuclear capabilities, is at the core of Japan-US alliance.'[5] This was followed in July 2024 with high-level US-Japan talks on nuclear deterrence and extended deterrence between foreign and defence ministers.[6]

In September 2024, the United States and South Korea jointly reiterated 'that the ironclad US extended deterrence commitment to the ROK [South Korea] is backed by the full range of US capabilities, including nuclear'.[7] The same month, South Korea's Minister of Defence, Kim Yong-hyun, stood by earlier comments that South Korea 'had no survival or future' without nuclear weapons to protect it.[8]

With respect to Australia, the most recent example of a government document which appears to directly encourage the United States to retain nuclear weapons is the 2024 National Defence Strategy, which maintains that 'Australia's best protection against the increasing risk of nuclear escalation is US extended nuclear deterrence and the pursuit of new avenues of arms control.'[9]

In addition to NATO, the Russian-led Collective Security Treaty Organization (CSTO) has been understood by several commentators, including former CSTO secretaries general, as a 'nuclear alliance'.[10] In 2024, the then Russian Minister of Defence, Sergei Shoigu, confirmed that Russia's nuclear doctrine provides for a nuclear umbrella—or at any rate the opportunity for one—over the members of the CSTO. That said, the CSTO has never adopted an official document stipulating a nuclear dimension to the alliance, and three members have actively distanced themselves from nuclear deterrence policy. Through the 2006 Treaty of Semipalatinsk—the treaty establishing Central Asia as a nuclear-weapon-free zone (NWFZ)—Kazakhstan, Kyrgyzstan, and Tajikistan have committed never to 'assist or encourage' the development, manufacture, or possession of nuclear weapons.[11] Kazakhstan is also a state party to the TPNW.

ALLIANCE MEMBERSHIP AND THE TPNW

- Non-nuclear-armed states may adhere to the TPNW and remain within an alliance with one or more nuclear-armed states as long as they explicitly distance themselves from specific statements or formulations in alliance documents that amount to encouragement of use or possession of nuclear arms.
- It could be argued, for example, that a NATO member may, without having to explicitly 'override' previous endorsement of extended nuclear deterrence, become compliant with the TPNW through the acts of signing and ratifying the Treaty. Having adhered to the TPNW, however, such a state would be obliged to refrain from endorsing future NATO language supporting the retention and potential use of nuclear weapons. This could be done either by adjusting the current language or by the state clearly rejecting possession or use of nuclear weapons on its behalf, for instance through 'footnotes', an interpretive or declaratory statement, or other means of signalling disagreement with any endorsement of the potential use or possession of nuclear weapons.
- Such footnotes or statements could be simple, phrased for instance as follows: 'State X does not support the possession or use of nuclear weapons or other nuclear explosive devices on its behalf and will not assist the development, acquisition, possession or use of such weapons or devices in any way.'
- NATO members are not obliged to endorse every line of alliance language. Indeed, there is a tradition of member states 'footnoting' or otherwise distancing themselves from specific statements in alliance documents.

2 In the view of the Nuclear Weapons Ban Monitor, merely advocating nuclear deterrence does not amount to encouragement of use of nuclear weapons. Such encouragement would require, for instance, support for a request for use of nuclear weapons in a specific context or agreeing to rules of engagement allowing the use of nuclear weapons in a particular multinational operation.
3 NATO, 'NATO 2022 Strategic Concept', 29 June 2022.
4 NATO, 'Washington summit declaration', 10 July 2024, at: https://bit.ly/3DPPnfF
5 United States Department of State, 'Secretary Antony J. Blinken and Secretary of Defense Lloyd J. Austin III, Japanese Foreign Minister Kamikawa Yoko, and Japanese Defense Minister Kihara Minoru Before the Extended Deterrence Ministerial Meeting', 28 July 2024, at: https://bit.ly/4fJrIem
6 J. Geddie, 'US, Japan to Hold High-Level Security Talks on Nuclear Deterrence', *Reuters*, July 2024, at: https://bit.ly/4afGAQn
7 US Department of State, 'Joint Statement of the 2024 United States-Republic of Korea foreign and defense ministerial meeting (2+2)', 1 November 2024, at: https://bit.ly/3PkvLTr
8 W. Gallo and L. Juhyun, 'Under Yoon, calls for South Korean nukes "normalized"', *Voice of America*, 9 September 2024, at: https://bit.ly/4gZgCDa
9 Australian Government, Defence, 'National Defence Strategy', 2024, at: https://bit.ly/4bXOwpC
10 International Law and Policy Institute, 'Under my Umbrella', 2016, p. 8.
11 Art. 1(1)(c), Treaty on a Nuclear-Weapon-Free Zone in Central Asia (adopted 2006, in force 2009).

Belarus, however, which is allied to Russia through the CSTO and the Union State, has on multiple occasions expressed support for nuclear deterrence, including through requests to host Russian nuclear weapons on Belarusian soil.[12] '[I]n an attack on Russia or Belarus, we use nuclear weapons', Belarus' President claimed in September 2024. 'The red line is the state border. If you step on it, there will be an immediate response. We are preparing for that'.[13]

Armenia, the last CSTO member, has to the Nuclear Weapons Ban Monitor's knowledge not explicitly endorsed the possession and potential use of nuclear weapons on its behalf. It has consistently abstained on the vote on the annual UN General Assembly resolution on the TPNW. Armenia would, though, need to distance itself from nuclear deterrence more actively in order to be considered fully compatible with Article 1(1)(e) of the TPNW, as fellow CSTO members Kazakhstan, Kyrgyzstan, and Tajikistan have already done through their adherence to the Treaty of Semipalatinsk, and in Kazakhstan's case also to the TPNW. While Armenia has ceased participating in CSTO activities—a result of the lack of support rendered to it by Russia during the second Nagorno-Karabakh War—it formally remains a member of the alliance.

b) Participation in nuclear planning

The Nuclear Weapons Ban Monitor finds that 33 umbrella states (all umbrella states apart from Armenia) participated in nuclear planning in 2024. Participation in nuclear strike planning entails an endorsement of the potential use of nuclear weapons in the future and thus an encouragement of the possession and development of nuclear weapons in the present. Participation in planning of temporally proximate use or threats to use nuclear weapons would amount to assistance with use or with the threatening of use.

With the exception of France, all NATO allies are members of NATO's Nuclear Planning Group (NPG), the alliance's senior body on nuclear strategy. While several non-nuclear allies maintain that participation in the NPG allows them to shape the nuclear-armed allies' policies, there is little evidence that participation translates into meaningful influence. A number of scholars have described the NPG as a 'largely symbolic forum' that exists primarily to 'rubber stamp' the policies of the alliance's most powerful members.[14] In this view, NATO umbrella states' participation in the NPG has no or little other function than encouraging and legitimating the NATO nuclear-armed states' possession and development of nuclear weapons.

In East Asia, 2024 saw continued emphasis on buttressing the nuclear alliances between the US and Japan and between the US and South Korea. Japan and South Korea are engaged in 'extended deterrence dialogues' with the United States, covering conventional as well as nuclear deterrence.[15] Japan and the United States met for an extended deterrence dialogue in the United States in June 2024. The United States 'reiterated its commitment to enhance the regional deterrent effect of US nuclear assets'.[16]

South Korea reportedly 'reactivated' its extended deterrence dialogue in 2022 after a few years without actual meetings. Through the Washington Declaration released in April 2023, the United States and South Korea committed to engage in 'deeper, cooperative decision-making on nuclear deterrence'. They also announced the establishment of a bilateral Nuclear Consultative Group (NCG) to 'strengthen extended deterrence' and 'discuss nuclear and strategic planning'.[17] The NCG had its third meeting in June 2024 to bolster nuclear deterrence in terms of nuclear consultation and communication processes in crises, nuclear and strategic planning, conventional and nuclear integration (CNI), exercises and risk reduction practices.[18] In September, South Korea and the United States also conducted their first NCG 'simulation' – a tabletop simulation intended to strengthen the alliance's 'cooperative decision-making about nuclear deterrence and planning for potential nuclear contingencies on the Korean peninsula.'[19]

If Japan and South Korea were to adhere to the TPNW in the future, they would have to provide assurances that their respective 'extended deterrence dialogues' with the United States would not involve nuclear planning.

Australia is not involved in formal consultations on nuclear planning with the United States. As discussed on page 68, however, Australia has in the past taken part in the senior leadership team for the United States' nuclear command and control exercise Global Thunder.[20] Deep involvement in the preparation and execution of such exercises is likely to amount to nuclear planning. Forms of nuclear planning may also be ongoing in other forums.

Russia and Belarus do not appear to maintain any formal or dedicated consultation arrangement for nuclear planning. As discussed on pages 79-81, Russia and Belarus have taken significant steps together to advance a nuclear-sharing mission and Belarus has participated in Russian nuclear exercises. This cooperation inescapably necessitates a degree of nuclear planning.

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12 'Belarus conducts checks on tactical nuclear weapons with Russia', *VOA News*, 7 May 2024, at: https://bit.ly/4a4mfO4
13 K. Hodunova, '"Attack on Belarus is world war II," Lukashenko claims', *Kyiv Independent*, 27 September 2024, at: https://bit.ly/41YsiSb
14 M. A. Smith, *NATO in the First Decade After the Cold War*, Springer, Dordrecht, 2000, p. 29; Paul Buteux, The Politics of Nuclear Consultation in NATO, 1965–1980, Cambridge University Press, Cambridge, 1983, p.143.
15 See, e.g., A. Kawasaki, 'The Nuclear Ban Treaty – the Path Forward for North Korea, South Korea, Japan and the Region', Global Partnership for the Prevention of Armed Conflict, September 2019, at: http://bit.ly/2JLcmfT
16 US Department of State, 'U.S.-Japan Extended Deterrence Dialogue', 17 June 2024, at: https://bit.ly/3ZScJZq
17 X. Aiying, 'Korea, US adopt joint declaration, form nuclear consultative group', Korean Culture and Information Service, May 2023, at: https://bit.ly/3ue4ag0
18 US Department of Defense, 'Joint Press Statement on the 3rd Nuclear Consultative Group (NCG) Meeting', 10 June 2024, at: https://bit.ly/3DK4WFY
19 US Department of Defense, 'Joint Statement on the U.S-ROK Nuclear Consultative Group Simulation', 6 September 2024, at: https://bit.ly/4gNxXin
20 S. Losey, 'Global Thunder: Bombers practice for nuclear war', *Air Force Times*, 22 October 2020, at: https://bit.ly/3VmYCJt

c) Provision of capabilities in support of a nuclear posture

In 2024, a total of 11 known umbrella states provided capabilities in support of a nuclear posture – Belarus, Belgium, Czechia, Denmark, Germany, Greece, Hungary, Italy, the Netherlands, Poland, and Türkiye.

Of the above, seven umbrella states maintained and provided dual-capable means of delivery specifically certified to carry a nuclear-armed ally's nuclear weapons, providing a significant contribution to the foreign deployment and potential transfer of nuclear weapons to non-nuclear allies by the United States and Russia, respectively. The maintenance and provision of nuclear-capable means of delivery thus amounted to assistance with the possession of nuclear weapons.

Belgium, Germany, Italy, and the Netherlands, as well as Türkiye and Greece (the latter two in a contingency role), contribute so-called dual-capable aircraft (DCA) to NATO's nuclear mission and thus assist US possession of nuclear weapons.[21] In NATO, the arrangement whereby certain umbrella states provide DCA is often referred to as 'nuclear sharing' (nuclear sharing is also often used in a wider sense) and the DCA-contributing states are sometimes referred to as 'user nations'.[22] The aircraft in question have been specifically configured to carry nuclear weapons and have been assigned specific weapons and roles in the event that the weapons were authorised for use. The aircraft have a clear nuclear role and constitute an integral and permanent part of NATO's nuclear forces.[23]

In 2024, the United States upgraded to dual capability a number of F-35A aircraft previously acquired by the Netherlands and certified them for nuclear delivery. In May 2024, the Netherlands became the first European NATO member state to declare that its F-35s were performing a nuclear role.[24] The Netherlands is acquiring 52 F-35As to cover both nuclear and conventional strike roles. Only the squadron based at Volkel Air Base (313 Squadron) will perform the nuclear role. The aircraft as such do not conflict with the TPNW, but the modifications that specifically enable them to deliver nuclear weapons do. By implementing the upgrades to dual capability, the Netherlands further assisted US possession of nuclear weapons in their foreign-deployed role.

Belgium formally received its first F-35A in 2023.[25] Germany will only receive its first eight F-35A aircraft in 2026, which will be deployed at Büchel Air Base from 2027.[26] Italy has ordered a total of 75 F-35As , some of which will be based at Ghedi Air Base.[27]

An article by two think-tank analysts published in October 2024 argued that NATO 'should certify more Allied F-35As for nuclear delivery—outside the current DCA states—along with more NATO fourth generation fighters (including JAS 39 Gripens and Eurofighters) and train more fighter pilots across the Alliance to deliver nuclear bombs.'[28] Any further NATO members that allow the upgrading to dual-capability of their aircraft in such an arrangement would be assisting the possession of nuclear weapons.

Belarus, too, now assists Russian possession of nuclear weapons in a potential foreign-deployed role, through its readiness to modify and maintain dual-capable aircraft. Russia's president Vladimir Putin announced in March 2023 that Russia had modified Belarus' Su-25 Frogfoot aircraft to carry nuclear weapons.[29] While it is uncertain if the nuclear weapons that can be delivered with these aircraft have been deployed in Belarus, the Belarusian provision of the now dual-capable aircraft in support of the Russian nuclear posture amounts to assistance with possession of nuclear weapons.

It was also announced in 2023 that Russia had transferred dual-capable Iskander missiles to Belarus.[30] While dual-capable missiles do not automatically conflict with the TPNW and while it is uncertain if Russia has deployed the requisite nuclear warheads for the Iskander missiles in Belarus, the transfer of the missiles was communicated as a nuclear measure by Russia and Belarus alike.[31] The Nuclear Weapons Ban Monitor's assessment is thus that Belarus has received and now maintains and provides the Iskander missiles in support of Russia's nuclear posture.

The provision by umbrella states of purely conventional capabilities in support of nuclear operations could potentially also be considered to amount to assistance with possession of nuclear weapons. In NATO, so-called Conventional Support to Nuclear Operations (CSNO) can include a broad array of both air, land, and sea-based capabilities, but most prominently features conventional aircraft for escort, refuelling, intelligence, surveillance, and reconnaissance (ISR), and suppression or destruction of enemy air defences.[32] In many of these cases, however, the question of whether

21 H. M. Kristensen, M. Korda, E. Johns, and M. Knight 'Nuclear weapons sharing, 2023', The Bulletin of the Atomic Scientists, Vol. 79, No. 6 (2023), 393–406, at: https://bit.ly/3VJjH25
22 Ibid. In addition to being user nations, Belgium, Germany, Italy, the Netherlands, and Türkiye are also host nations.
23 Ibid.
24 G. Jennings, 'Netherlands first to declare F-35s performing nuclear role', *Janes*, 31 May 2024, at: https://bit.ly/4b8Pcc1
25 G. Jennings, 'Belgium receives first F-35', *Janes*, 11 December 2023, at: https://bit.ly/3PuHYoP
26 Reuters, 'Germany looking into buying eight additional F-35 jets, source says', *The Economic Times* (India), 7 June 2024, at: https://bit.ly/4fOWB0T
27 'Netherlands and Italy Increase F-35 Order', Aerospace Weekly Summary, Defense Update, 19 September 2024, at: https://bit.ly/3Pv4C0s
28 W. Alberque and A. Kacprzyk, 'More Pillars Needed: Ten Options for Europe to Improve NATO's Nuclear Deterrence', Online article, Stimson, 2 October 2024, at: https://bit.ly/409AaxN
29 'Интервью Владимира Путина Павлу Зарубину', Smotrim, 25 March 2023, at: https://bit.ly/3x6p9ms
30 See, e.g., N. Sokov. 'Russia is deploying nuclear weapons in Belarus. NATO shouldn't take the bait', The Bulletin of the Atomic Scientists, 24 April 2023, at: https://bit.ly/4hdXT6V
31 See, e.g., 'Lukashenko says Belarus received Iskander missile systems from Russia', *Ukrainska Pravda*, 20 January 2024, at: https://bit.ly/40b3941
32 W. Alberque and A. Kacprzyk, More Pillars Needed: Ten Options for Europe to Improve NATO's Nuclear Deterrence, Stimson, 2 October 2024, at: https://bit.ly/3WaqMZi.

a practice or capability is incompatible with the TPNW would depend on the significance and context of the contribution in question. According to the Federation of American Scientists, at least six NATO members—Czechia, Denmark, Hungary, Poland, and two unknown states—take part in CSNO training missions, alongside the nations that also provide DCA (Belgium, Germany, Greece, Netherlands, Italy, and Türkiye).

Certain capabilities maintained by umbrella states may not currently amount to assistance or encouragement of activities prohibited under the TPNW but could easily do so in the future. This can be the situation, for instance, for intelligence and surveillance capabilities. If a state party to the TPNW were to engage in intelligence gathering and share it with a nuclear-armed state to knowingly identify targets for nuclear threats or use, this would amount to assisting use or threatening to use nuclear weapons. A case in point is Pine Gap, an intelligence facility built and funded by the United States outside Alice Springs in Australia and operated by the US National Reconnaissance Office. More than 800 Australian and US personnel staff the facility, including members of units from various branches of the US military. One of the components of the facility is a Relay Ground Station in Pine Gap's western compound, which provides early warning of an incoming attack and also detects whether a nuclear missile launch site/launcher is empty (following firing).[33]

Another example is Denmark's hosting of radar and space communication facilities at the US Air Force base at Thule in Greenland, which has more than 185 US Department of Defense national and civilian satellites performing intelligence, weather, navigation, early-warning, and communications operations.[34] The United States' 12th Space Warning Squadron provides continuing missile warning and space surveillance, in particular for intercontinental ballistic missiles (ICBMs) or submarine-launched nuclear missiles (SLBMs), using a massive AN/FPS-132 radar. The Air Force's Space Based Infrared System (SBIRS) satellites can detect the heat signature of a launch. As data comes in from SBIRS, the 12th Space Warning Squadron will send a report to the Missile Warning Center at Cheyenne Mountain Air Force Station in Colorado Springs, Colorado, whose personnel will determine whether the object in question is a ballistic missile.[35]

If Australia or Denmark were to adhere to the TPNW and the Pine Gap or Thule facility were nevertheless used to identify imminent targets for US nuclear weapons, this would violate the prohibition on assisting use or the threatening of use. (This would not be the case if the data were used to identify targets for conventional strikes or to alert a vulnerable target population.) Since such future use or threat to use nuclear weapons remains a theoretical possibility, the operations of the facility do not presently constitute assistance to use or threaten to use nuclear weapons. That said, maintaining a capability and preparedness to identify targets for nuclear strikes runs counter to the object and purpose of the TPNW. To ensure compatibility with the TPNW, Australia and Denmark should provide assurances that the capabilities in question will not be used for nuclear targeting.

d) Participation in nuclear strike exercises and demonstrations of nuclear capability

Open sources suggest that at least 13 umbrella states took part in nuclear strike exercises and other demonstrations of nuclear capability in 2024. This is four more than in 2023. This increase is in part due to the fact that more states participated in such acts but also because of better access to information about participation. Another factor is the increase in level of activity since the full-scale invasion of Ukraine in 2022, with more overt nuclear signalling.

Nuclear weapons-related exercises with umbrella states are conducted to ensure forces are well trained and prepared, but frequently also to build collective resolve to maintain a nuclear posture and to demonstrate nuclear capability, or a so-called show of force. Participation in such activities clearly implies an acceptance not only of the potential use of nuclear weapons in the future but also the continued possession of nuclear weapons by allied nuclear-armed states in the present. By extension, participation in nuclear strike exercises and demonstrations of nuclear capability represent an encouragement of possession of nuclear weapons under Article 1(1)(e) of the TPNW.

In June 2024, in what was described by Hans M. Kristensen as 'the most dramatic nuclear signal' he had seen by the United States in northern Europe since the Cold War,[36] a US nuclear-armed ballistic missile submarine (SSBN) surfaced in the Norwegian Sea for the very first time to be photographed with an E-6B Mercury jet (a so-called 'doomsday plane') flying overhead. The US Navy's fleet of E-6B Mercury jets are 'critical airborne strategic command posts through which nuclear strike orders would flow'.[37] They are equipped with five-mile-long antennas to communicate directly with Ohio-class SSBNs, allowing the submarines to remain submerged.[38] The Mercury departed to the operation in the Norwegian Sea from Rygge Air Station in Norway, where it had landed the day before in yet another unprecedented event and been met by a group of Norwegian officials, including a deputy minister of foreign affairs. The Chief of the Norwegian Naval Fleet and a representative from the Norwegian Ministry of Defence were also present on the SSBN during the show of force in the Norwegian Sea, and the Norwegian Armed Forces published photos on social media from their visit, including one showing the display of a Norwegian flag on top of the SSBN.[39] While Norway does not

33 R. Tanter, `Hope Becomes Law', *Journal for Peace and Nuclear Disarmament*, Vol. 4, No. 1 (2021).
34 J. Clash, 'While You Sleep, Thule Listens, Watches, Waits', *Forbes*, 27 January 2019 (Updated 2 February 2019), at: https://bit.ly/423HeOY
35 V. Insinna, 'Watch the skies: How a US base in Greenland tracks ballistic missiles', Defense News, 5 August 2019, at: https://bit.ly/40oeLSF
36 T. Paust, 'USA viser muskler utenfor Norge: -Mest dramatiske atomsignalet jeg har sett', *Nettavisen*, 26 June 2024, at: https://bit.ly/4gZiYSw
37 J. Trevitchick, 'U.S. Ballistic Missile Sumbarine, "Doomsday Plane" Take Part in Rare Show of Force Off Norway', *The Warzone*, 25 June 2024, at: https://bit.ly/4gxp9wV
38 Ibid.
39 Norwegian Armed Forces @Forsvaret_no, Message on 'X', 9 July 2024, at: https://bit.ly/40sdsCr

appear to have participated in this operation with its own military capabilities, the official Norwegian representation on the SSBN and the hosting of the Mercury clearly communicated Norway's support for the demonstration of nuclear capability and thus amounted to encouragement of possession of nuclear weapons.

In May and June 2024, Russia carried out a major military exercise focused on practicing the use of tactical nuclear weapons. Belarusian forces were closely integrated in parts of the drill. According to the Russian Ministry of Defence, the exercise involved working out joint training of Russian and Belarusian units 'for the combat use of non-strategic nuclear weapons'.[40] The exercise was 'widely interpreted as a warning to the West against interference as Moscow's war in Ukraine grinds on.'[41]

From 14 to 24 October 2024, NATO members carried out the annual 'Steadfast Noon' exercise. Steadfast Noon is a training activity set up to allow NATO members to practice the use of air-delivered nuclear weapons—including the US nuclear weapons deployed in Europe—and conventional support of nuclear strike missions. In 2024, Steadfast Noon was carried out primarily in airspace over Belgium, Denmark, the Netherlands, the United Kingdom, and the North Sea. According to NATO, 13 members were involved in the exercise with aircraft.[42] The list of participants is not public. An article in the aviation magazine *Key Aero* suggested that Belgian, Czech, Danish, German, Finnish, Greek, Italian, Dutch, Polish, Romanian, Turkish, and UK planes participated.[43] Norwegian authorities also confirmed that Norwegian staff officers had taken part in the exercise, reversing long-standing Norwegian policy not to do so.[44] The number of umbrella states participating in Steadfast Noon thus appears to be increasing. At a briefing in Sweden in June 2024, NATO's director of nuclear policy, Jim Stokes, encouraged broader participation in Steadfast Noon and said this 'is a way to ensure some of the unity on these issues; that it is a shared responsibility across the alliance.'[45]

From 18 to 24 October, overlapping with Steadfast Noon, the United States carried out the 'Global Thunder' exercise to 'validate' the United States' nuclear command, control, and operational procedures. According to a report published on Malmstrom Air Force Base's website, the exercise involved 'key allied and NATO personnel and partners' in 'senior leadership teams and work across a broad spectrum of areas offering policy support and operational insight.'[46] US authorities did not disclose which specific allies had been involved in the 2024 iteration of Global Thunder, beyond the United Kingdom. That said, in the past, 'permanently assigned foreign liaison officers to USSTRATCOM' from Australia, Canada, Denmark, and South Korea have been involved, 'offering legal, public affairs, and policy support; as well as targeting and information operations insight'.[47]

The year 2024 also saw an increasing number of joint exercises involving US strategic bombers and allied conventional fighter planes. The dual capability of strategic bombers renders unequivocal legal assessment of allied conventional participation in joint exercises with such assets difficult. Provided that the manoeuvres in question are not specifically 'nuclear', i.e. that the deployed strategic bombers are not practising for the use of nuclear weapons but are instead involved in conventional-weapon roles, participation by umbrella states is not in conflict with the prohibition on assistance or encouragement in Article 1(1)(e) of the TPNW. In most cases, however, information about the true nature of such exercises (and the roles of the various umbrella states involved) is not available. That said, strategic bombers are often deployed with a view to producing a nuclear signalling effect, that is, to deliver a 'show of force' to warn adversaries. At the above-mentioned briefing in Sweden in June 2024, Stokes stated that 'the political will or resolve to use nuclear weapons if ever necessary' is communicated through, inter alia, 'exercises and other demonstrations of capability'. In his presentation, US-NATO joint exercises with the US Bomber Task Force were listed as 'effective communication' of this will to use nuclear weapons.[48]

On the basis, however, that it is not possible to determine whether specific joint exercises with strategic bombers are demonstrations of nuclear or conventional capability, the Nuclear Weapons Ban Monitor has not identified any joint exercises with strategic bombers in 2024 that were in direct conflict with the prohibition on assistance or encouragement in Article 1(1)(e) of the TPNW. Many of them nevertheless cast nuclear shadows on the participating states. This includes Finland's participation with fighter jets in a training mission with a US nuclear-capable B-52 over Finnish territory on 5 November 2024.[49] It also includes the participation in September 2024 of Denmark, Germany, the Netherlands, Poland, and Spain in an exercise over Poland with more than two dozen fighters, tankers, and other planes together with two nuclear-capable US B-52s.[50] French strategic air forces have also increased their joint training with allies in recent years. In the fall of 2024, nuclear-capable Rafale aircraft trained with German fighter-planes over the two nations. Nuclear-capable Rafale aircraft were also deployed to Lithuania.[51]

40 G. Faulconbridge, 'Russia begins second stage of tactical nuclear weapon drills with Belarus', *Reuters*, 11 June 2024, at: https://bit.ly/49VCX22
41 S. Starcevic, 'Belarus and Russia to conduct joint nuclear drills', Politico, 10 June 2024, at: https://bit.ly/4fAPs4b
42 NATO, 'NATO exercise Steadfast Noon: Allied aircraft showcase nuclear deterrence', 21 October 2024, at: https://bit.ly/42cq81B
43 D. Carrara, 'Exclusive: Nuclear Exercise Steadfast Noon Participants Revealed', *Key Aero*, 16 August 2024, at: https://bit.ly/421epmi
44 Forsvarets forum, 'Norge sender offiserer til atomøvelse', 17 October 2024, at: https://bit.ly/4gPLINc
45 Video recording from the seminar 'Sweden, NATO and nuclear deterrence' organised by Folk och Försvar, 19 June 2024, at: https://bit.ly/4fTxfPk
46 Malmstrom Air Force Base, 'U.S. Strategic Command to commence exercise Global Thunder 2', 18 October 2024, at: https://bit.ly/40gOYfm
47 US Strategic Command Public Affairs, 'U.S. Strategic Command Conducts Exercise Global Thunder, News release, 29 October 2018, at: https://bit.ly/3OBHNrN
48 Video recording from the seminar 'Sweden, NATO and nuclear deterrence' organised by Folk och Försvar, 19 June 2024, at: https://bit.ly/4fTxfPk
49 Ilmavoimat @FinnishAirForce post on 'X', 5 November 2024, at: https://bit.ly/3DHpU8b
50 U. L. Harpley, 'B-52 Bombers Fly to and from Poland for Exercise with NATO Allies', *Air & Space Forces Magazine*, 12 September 2024, at: https://bit.ly/3C4Bzh0
51 E. Marcuz, post on X, 1 Dec. 2024, https://bit.ly/4j2EXth

e) Logistical and technical support to nuclear forces

Seven umbrella states were found by the Nuclear Weapons Ban Monitor to provide logistical and/or technical support to nuclear forces in 2024.[52] Belarus likely provided logistical support to Russia's announced construction of a special storage facility for tactical nuclear weapons on the territory of Belarus. As discussed on pages 79-81, the Asipovichy depot is the most likely candidate for nuclear storage given new security features observed at the site via satellite imagery in 2024. Belgium, Germany, Italy, the Netherlands, and Türkiye continued in 2024 to provide logistical and security services at the bases where US nuclear weapons are deployed to their territory. This constitutes assistance with possession and stockpiling of nuclear weapons under Article 1(1)(e) the TPNW – as is the case also for Belarus under its agreement with Russia. Of course, these six states are also acting in conflict with Article 1(1)(g), which explicitly prohibits the hosting of another state's nuclear weapons.

As discussed above, Norway hosted a Mercury 'doomsday plane' at Rygge Air Station in June 2024 and thus provided logistical support to a nuclear-specific capability and assisted possession of nuclear weapons.

In July 2023, an Ohio class US SSBN made a port call in South Korea. This reportedly followed conversations between the US and South Korean governments about how the supposed US nuclear umbrella over South Korea might be rendered more visible. In port in Busan, the SSBN presumably received logistical support from its South Korean hosts.[53] Port visits by SSBNs are rare, as such submarines typically seek to remain undetected and untraceable while on patrol. It is particularly rare that they visit non-nuclear-armed states. The Nuclear Weapons Ban Monitor is not aware of any such port calls having been made in South Korea or other US-allied umbrella states in 2024. However, a Russian Yasen-class nuclear attack submarine made a port call in Cuba in June. While the Yasen-class is capable of delivering nuclear-tipped cruise missiles, it was made explicit that the submarine that visited Cuba would not be carrying any nuclear weapons.[54] In contrast to SSBNs, which are dedicated nuclear-weapons delivery platforms, attack submarines frequently serve in conventional roles.

The provision of logistical and technical support to planes or submarines specifically designed to carry nuclear weapons would likely constitute assistance with possession of the weapons within the meaning of Article 1(1)(e) of the TPNW, provided that the support provided a 'significant' contribution. In the case of logistical and technical support for dual-use delivery vehicles, such as bombers or fighter-bombers, there will normally be no presumption of nuclear involvement. It will therefore be generally unproblematic for states parties to the TPNW that are allies or partners of nuclear-armed states to continue to host or provide logistical and technical support to those states' dual-use delivery vehicles. If the purpose of a mission or presence with a nuclear-armed state's dual-use delivery vehicle is clearly nuclear, the provision of logistical and technical support is likely to contravene the prohibition on assistance to and encouragement of prohibited activities. As discussed above, however, it will typically be difficult to determine if the purpose is nuclear or conventional.

f) Development, production, and maintenance of key components for nuclear weapons

The conduct in 2024 of five umbrella states—Belarus, Germany, Italy, the Netherlands, and Spain—was not compatible with the TPNW's prohibition on assistance, because they allow companies within their jurisdiction to be involved in development, production and maintenance of key components for nuclear weapons.

Belarus continued to assist Russia with development and production of nuclear weapons, through the Belarusian company Volat, which designed and continues to produce the MAZ 7917 transporter-erector-launcher for the Russian Topol-M ICBM. The launch capability in the MAZ 7917 constitutes a key component for the Topol-M ICBM.[55]

Germany, **the Netherlands**, and **Spain** continued to assist France with development, production, and possession of nuclear weapons, as a result of Airbus Defence and Space's activities in the joint venture companies MBDA and ArianeGroup. MBDA produces France's current nuclear-tipped ASMPA air-launched cruise missiles (ALCMS) and takes part in the production of the next generation of longer-range ASN4G nuclear-tipped ALCMSs.[56] ArianeGroup is the lead contractor for the ongoing maintenance and the modernization of France's M51 nuclear-armed submarine-launched ballistic missiles.[57] The international responsibility of Germany is engaged because Airbus Defence and Space is headquartered in Germany. The international responsibility of the Netherlands is engaged because Airbus Defence and Space's parent company, Airbus, is headquartered in the Netherlands. Airbus has itself announced that it considers that the work done by its subsidiaries is indivisible from the group.[58] The international responsibility of Spain is engaged because Airbus' International Office is located in Spain.

Italy continued to assist France with the development and production of nuclear weapons, because it allows the Italian company Leonardo (formerly Finmeccanica) to be involved in the above-mentioned joint venture MBDA.[59]

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52 H. M. Kristensen and M. Korda, 'Depot In Belarus Shows New Upgrades Possibly For Russian Nuclear Warhead Storage', Strategic Security Blog, Federation of American Scientists, 14 March 2024, at: https://bit.ly/4emv0Vo
53 H. Mongilio, 'USS Kentucky make port call in South Korea, first SSBN visit in 40 years', USNI News, 18 July 2023, at: https://bit.ly/47OkaD6
54 Russia nuclear-powered submarine to visit Cuba amid rising tensions with US', *The Guardian*, 7 June 2024, at: https://bit.ly/3Prt8Q3
55 Volat, 'Chassis for the Topol', accessed 12 February 2024, at: https://bit.ly/3Sxw1jn
56 Pax and ICAN, Risky returns: Nuclear weapon producers and their financiers, Report, Utrecht and Geneva, 2022
57 Ibid.
58 J. Harrison, General Counsel, 'Letter from John Harrison, General Counsel, Airbus to Susi Snyder, Don't Bank on the Bomb Project Manager Regarding the Adoption of the UN Treaty on the Prohibition of Nuclear Weapons', 17 September 2018.
59 Pax and ICAN, Risky returns: Nuclear weapon producers and their financiers.

CORPORATE AND STATE RESPONSIBILITY

- A company that develops, produces, or maintains key components (such as a ballistic missile) for a nuclear weapon or other nuclear explosive device, or which maintains nuclear weapons, would thereby engage the international responsibility of the state in which it is operating. Such a state party would be responsible for prohibited assistance under the TPNW (assistance to development, production, or possession, depending on the acts the company was performing).
- Depending on the circumstances, a parent company can also be legally responsible for the acts of its subsidiaries. The general position in domestic law is that a parent company is not liable where its subsidiary acts unlawfully. However, jurisprudence has established a number of exceptions to this general principle, allowing the 'veil of separate legal status ... to be pierced'. Under international law, contravention of the provisions of a disarmament treaty or of customary disarmament law by a corporation would suffice to render the state or states responsible on whose territory that corporation committed the relevant act or acts.
- In addition, any company that is engaged in a joint venture that develops or produces key components for a nuclear weapon or other nuclear explosive device could thereby be engaging in prohibited assistance even if it does not itself contribute materially to the nuclear-weapon development or production. This is so wherever a company establishes a new body corporate, and is holding shares in that company. Under international law, the states on the territory of which the participating and shareholding companies are incorporated and/or have their headquarters or involved divisions or production facilities would be responsible for the acts of the joint venture where those do not comply with an international treaty or customary law on disarmament.

** C. Murray et al., The Law and Practice of International Trade, 12th Edn, Sweet & Maxwell, 2012, §28-009.*

THE TPNW AND FINANCING

- All investment in the nuclear-arms enterprise runs counter to the object and purpose of the TPNW – which is to ensure that nuclear weapons are never again used under any circumstances.
- The TPNW does not explicitly prohibit the financing of nuclear-weapon programmes. The ordinary purchase of shares in a company involved in the development, production, or maintenance of nuclear arsenals is therefore not per se an illegal act under the TPNW. The prohibition on assistance in Article (1)(e), however, renders unlawful any significant or controlling shareholding in a company involved in the development, production, or maintenance of nuclear weapons.
- It is not possible to define what a significant ownership share is in terms of a fixed percentage of shares or votes, as this varies from market to market and company to company. To determine if a specific shareholder has significant influence on the management of a company, is it necessary to assess the ownership profile of the relevant company and the relevant national rules on corporate decision-making.
- The prohibition on assistance also renders unlawful direct funding of any of the prohibited activities listed in other subparagraphs of Article 1(1). If, for instance, funding in the form of an earmarked loan or credit line is provided to a company for the development, production or maintenance of nuclear weapons, this is unlawful assistance with the development, production, and possession of nuclear weapons.
- The prohibition on assistance encompasses not only state funding, but also private banks and other financial institutions as well as individuals.
- Also the Convention on Cluster Munitions (CCM) does not contain an explicit prohibition on financing, but that Treaty's prohibition on assistance is widely considered to prohibit financing.
- Cuba issued a declaration upon joining the TPNW, stating that 'The financing of any activity prohibited to a State Party under this Treaty is also a prohibited activity according to the provisions of Article 1(e).' (See: https://bit.ly/3eB7UMm.)

g) Ownership in and other financial assistance to the nuclear-arms industry

The conduct in 2024 of four umbrella states—Belarus, Italy, Germany, and Spain—was not compatible with the TPNW's prohibition on assistance because of their state ownerships in companies involved in the development, production, and maintenance of French nuclear weapons.

Belarus owns 100% of the company Volat, which, as discussed above, provides launch capability for Russia's Topol-M ICBMs.

The **German** and **Spanish** states both maintain significant ownership shares in Airbus,[60] which, through Airbus Defence and Space, has significant ownership shares in the joint venture companies MBDA and ArianeGroup.[61] As discussed in the section above, MBDA and Ariane Group develop, produce, and maintain key components for France's nuclear weapons.

Italy has a significant ownership share in Leonardo, which in turn has a significant ownership share in the above-mentioned joint venture MBDA.[62]

60 As of 31 December 2023, the largest shareholders in Airbus were the French state at 10.86% of the shares, the German state at 10.84%, and the Spanish state at 4.09%, respectively. The Articles of Association of Airbus prohibit any shareholder from holding an interest of more than 15% of the share capital or voting rights of the Company, acting alone or in concert with others. See: Airbus Annual Report 2023, at: https://bit.ly/3VUPzkJ

61 Airbus Defence and Space has 37.5% of the shares in MBDA and 50% of the shares in ArianeGroup. See MBDA, 'About us', at: https://bit.ly/3jrKjEE; and ArianeGroup, 'Governance', at https://bit.ly/3RAkYoI

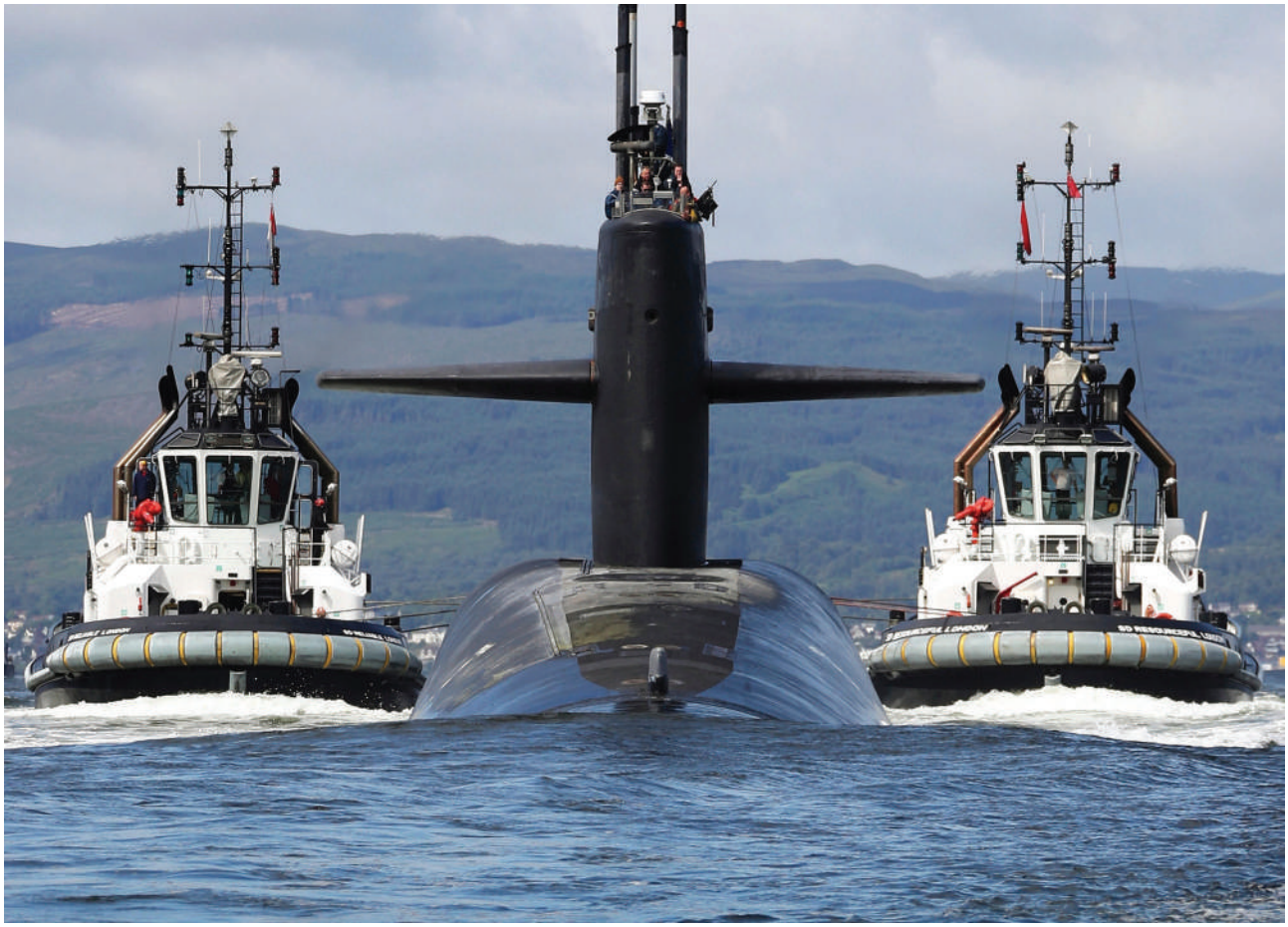
62 Italy owns 30.7% of the shares in Leonardo. See Leonardo, 'Shareholders base', at https://bit.ly/3Y4qja7 Leonardo, in turn, owns 25% of the shares in MBDA. See MBDA, 'About us', at: https://bit.ly/3jrKjEE

A 2024 report by Pax and ICAN found that, between January 2021 and August 2023, 287 financial institutions—including banks, pension funds, insurance companies, and asset managers—had financing or investment relations with one or more of the 24 nuclear weapon producing companies identified by the report. This was down from 306 institutions in previously published results.[63]

More research is needed on direct state ownership in companies involved in the nuclear-arms enterprise. Such ownership appears to exist only for nuclear-armed states and certain umbrella states. Also in terms of private financial institutions' shareholding and in other financial assistance to the nuclear-arms industry, it is in the nuclear-armed states and umbrella states that we see the most activity.

The Nuclear Weapons Ban Monitor calls upon all states parties to the TPNW to act to prevent and suppress any ownership of and financial assistance to the nuclear-arms industry and to adopt clear national guidance embedded in domestic law for financial sector actors, whether public or private. Financial institutions benefit from guidance provided by governments on the ways to interpret norms and international law.

ASSISTANCE AND ENCOURAGEMENT BY NUCLEAR-ARMED STATES



The US Navy Ohio-class ballistic missile submarine USS Alaska arrives for a port visit to Royal Navy Base Clyde on 2 July 2019 in Faslane, Scotland. In providing regular logistical support for US nuclear-armed submarines, the United Kingdom assists US possession of nuclear weapons. (Photo by Planetpix/Alamy Stock Photo/NTB)

The United Kingdom and France are engaged in close cooperation on maintenance of nuclear stockpiles, which amounts to prohibited (mutual) assistance with possession and stockpiling under the TPNW.[64] The two states' cooperation on stockpiling is supported by the 2010 Teutates Treaty to develop technologies for safe and effective maintenance of both states' nuclear stockpiles.[65]

US-French cooperation is conducted under a 1961 Mutual Defense Agreement, which permits limited cooperation on the operation of nuclear-weapon systems and amounts to (mutual) assistance with possession and stockpiling. Later amendments have enabled enhanced cooperation, notably on issues of safety, security, and reliability.[66]

63 Pax and ICAN, 'Untenable investments: Nuclear weapon producers and their financiers', 2024, at: https://bit.ly/4jeERiz
64 See, e.g., P. Ricketts, 'National Security Relations with France after Brexit', Briefing Paper, RUSI, January 2018, at: https://bit.ly/3gUNn7e
65 See, e.g., Nuclear Information Service, 'UK–France nuclear co-operation: The "Teutates" project. Presentation at Non-Proliferation Treaty PrepCom meeting, 23 April 2013', at: https://bit.ly/3oSxxxw
66 See, e.g., C. Mohr, 'U.S. Secretly Helped France Develop Nuclear Weapons, an Expert Writes', *The New York Times*, 28 May 1989, at: http://nyti.ms/2IcTBlc

As discussed on pages 47-49, the United States transfers to the United Kingdom the key components for the latter's nuclear arsenal. The two states continue to engage in close cooperation on the United Kingdom's nuclear-weapons capability, including on the maintenance of Trident II SLBMs. The nature of the cooperation also amounts to US assistance with the United Kingdom's possession and development of nuclear weapons.

France, the United Kingdom, the United States, and Russia all engage on a continuous basis in assistance to and encouragement of a range of prohibited activities by allies, including the hosting of nuclear weapons, participation in nuclear exercises, the maintenance and provision of dual-capable delivery vehicles, and the provision of technical and logistical support for nuclear forces.

ASSISTANCE AND ENCOURAGEMENT BY STATES WITH NUCLEAR-FREE DEFENCE POSTURES

An unarmed Minuteman III intercontinental ballistic missile launches from Vandenberg Space Force Base in the United States on 5 November 2024, with the Ronald Reagan Range in the Marshall Islands as its destination point. (Photo by US Space Force, Airman 1st Class Olga Houtsma)

The year 2024 saw two states with nuclear-free defence postures—Kazakhstan and the Marshall Islands—permit the testing of missiles designed to carry nuclear warheads on their respective territories. Allowing such testing is not consistent with the TPNW's prohibition on assistance with development and possession of nuclear weapons.

The Marshall Islands hosts a test site that regularly serves as the destination point for US test launches of nuclear-capable long-range missiles. The site in question is the Ronald Reagan range at Kwajalein Atoll. The land on which the site is located is leased to the United States through a long-term agreement. It is not the testing site in and of itself that conflicts with the TPNW, but the United States' use of it to maintain and develop nuclear-weapon missile technology.

In 2024, the United States launched unarmed ICBMs towards Kwajalein Atoll in June and November.[67] Should the Marshall Islands decide to adhere to the TPNW, such testing would need to stop. Marshallese adherence to the TPNW could thus lead to friction with the United States, perhaps helping to explain the Marshall Islands' hesitancy about joining the Treaty. With its long history as a testing ground for US nuclear weapons, the Marshall Islands has been a strong supporter of nuclear disarmament and the campaign to end nuclear testing.

Kazakhstan, which is a state party to the TPNW, hosts a test site intermittently used as a destination point for Russian ICBMs. The Sary-Shagan missile range was established by the Soviet government in 1956. The land on which the site is located is leased by Kazakhstan to Russia through a long-term agreement. In April 2024, Russia launched an unarmed Topol ICBM designed to carry nuclear warheads from Kapustin Yar in Russia that hit a mock target at Sary-Shagan. The launch followed a similar test in April 2023.[68]

Kazakhstan, a nation that once inherited more than a thousand Soviet nuclear weapons and voluntarily relinquished them, is a long-time advocate of a world free of nuclear weapons. Together with its Central Asian neighbour-states, Kazakhstan established the Central-Asian NWFZ Treaty. The situation at Sary-Shagan is no doubt a difficult situation for Kazakhstan, but it is also an opportunity to demonstrate the significance of the TPNW.

The Government of Kazakhstan has maintained that the ICBM tests do not constitute a breach with the TPNW. 'Taking into account that no nuclear weapons or nuclear explosive devices (or their indivisible parts) are being in any way placed, tested, or utilized on the territory of Kazakhstan (including at certain military facilities rented to third parties in accordance with existing international agreements), Kazakhstan remains in full compliance with its obligations under the TPNW', the Kazakh embassy in Brussels wrote on 12 April 2023.[69]

The Nuclear Weapons Ban Monitor does not share this interpretation. ICBMs are dedicated nuclear-weapon delivery systems, and thus allowing their testing constitutes assistance with the development and possession of functional nuclear weapons. In international arms and disarmament law, the term 'development' is interpreted broadly, encompassing 'a number of steps' aimed at 'creating a functioning weapon ready for production, stockpiling, and use, as distinct from permitted research.'[70] ICBM tests are held to ensure that weapons are 'ready for use' and can thus be seen as an act of development. The question then becomes whether Kazakhstan allowing Russia to use Sary-Shagan as one of several destination points for ICBM tests constitutes a 'significant' contribution to Russia's development of nuclear arms. This may be debated by some. At any rate, as a state committed to the goals of the TPNW and the Central Asian NWFZ Treaty, [71] Kazakhstan should communicate its priorities to Russia and request that it abstain from using the Sary-Shagan site to test nuclear means of delivery.

In October 2024, North Korea carried out a test of an ICBM. The test led the United States to table a resolution at the UN Security Council condemning North Korea's actions. However, five of the fifteen Security Council members—China, Russia, TPNW signatories Algeria and Mozambique, and TPNW state party Guyana—did not support it.[72] While refusing to join in the condemnation of North Korean (or any other) ICBM testing could be argued to run counter to the object and purpose of the TPNW, declining to support a resolution does not in the Nuclear Weapons Ban Monitor's view constitute a violation of the TPNW. Any active encouragement of the test, however, would unquestionably fall foul of Article 1(1)(e) of the Treaty.

67 U.L. Harpley, 'Air Force launches ICBM test for the first time in seven months', *Air & Space Forces*, 4 June 2024, at: https://bit.ly/4jbYwPS; 'US test-launches unarmed nuclear missile over Marshall Islands', Pacific Island Times, 7 November 2024, at: https://bit.ly/3BQTSpZ
68 P. Podvig, 'Topol-ME launch from Kapustin Yar to Sary-Shagan', Russian Strategic Nuclear Forces, 12 April 2024, at: https://bit.ly/428QQrQ
69 See G. I. R. Hernández, 'Russian ICBM test raises questions for Kazakhstan', Arms Control Today, May 2023, at: https://bit.ly/3SDIAuN
70 W. Krutzsch, 'Article I: General Obligations', in W. Krutzsch, E. Myjer, and R. Trapp (eds), *The Chemical Weapons Convention: A Commentary*, Oxford University Press, Oxford, 2014.
71 The Central Asian NWFZ Treaty similarly obligates its member states not to 'assist' the development or manufacture of nuclear weapons.
72 E. M. Lederer, 'North Korean test of ICBM is condemned by two-thirds of UN Security Council', *AP*, 1 Nov. 2024, at: https://bit.ly/4j2BbQW

France is one of the nuclear-armed states that received various forms of assistance in 2024 to develop, produce, and maintain its nuclear arsenal, including from Germany, the Netherlands, and Spain. They allow companies within their jurisdiction to be involved in development, production, and maintenance of key components for French nuclear weapons, including through ArianeGroup, which is responsible for the entire lifecycle, from design to dismantling, of France's M51 submarine-launched ballistic missile (SLBM), the M51. The photo was taken on 18 November 2023 in Bicarrosse, France, when ArianeGroup and the French Defense Procurement Agency (DGA) successfully completed the first flight test and key milestone in the development of the third iteration of the M51, the 12 metre long M51.3. (Photo courtesy of ArianeGroup)

THE PROHIBITION ON

SEEKING OR RECEIVING ASSISTANCE

In 2024, eleven states engaged in conduct that was not compatible with the Treaty on the Prohibition of Nuclear Weapons' (TPNW) prohibition on seeking or receiving assistance for acts that are unlawful under the Treaty. France, Russia, the United States, and the United Kingdom all continued to receive various forms of assistance with their ongoing development, production and possession of nuclear weapons. The United Kingdom also received assistance for the deployment of foreign nuclear weapons on its territory, as did Belarus, Belgium, Germany, Italy, the Netherlands, and Türkiye. Finally, Poland sought but did not receive assistance for such deployment.

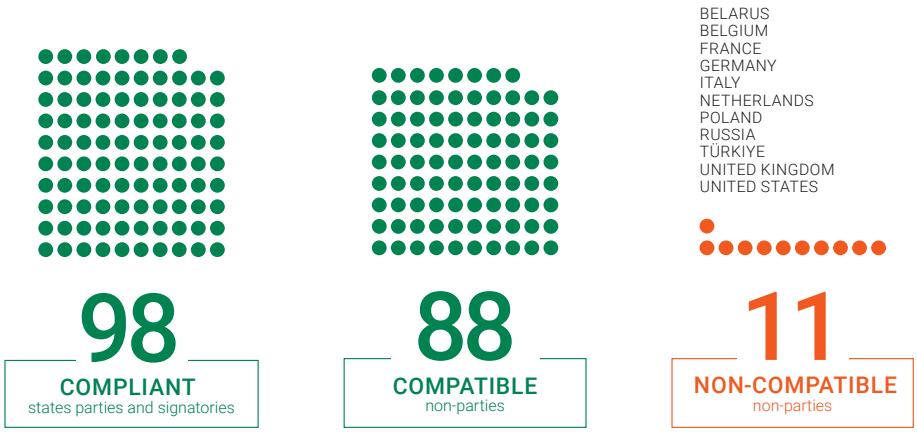


Figure 25: Compliance and compatibility in 2024 with the TPNW's prohibition on seeking or receiving assistance to engage in activities prohibited under the Treaty

As it did in 2023, Poland again sought to have US nuclear weapons stationed on its territory in 2024. In April, Poland's President, Andrzej Duda, declared that the nation was ready to host nuclear weapons on its territory. He confirmed that nuclear sharing had been the subject of talks between Poland and the US 'for some time'. He said, 'I've already talked about it several times. I must admit that when asked about it, I declared our readiness'.[1]

Poland's Prime Minister Mateusz Morawiecki said in 2023 that the request to NATO to participate in the nuclear sharing programme was in response to Russian deployment of tactical nuclear weapons in Belarus.[2] Poland's vocal pursuit of nuclear sharing has political resonance domestically, with an October 2022 poll suggesting more than half the population would support the deployment of the US B61 nuclear-armed gravity bomb in their country.[3]

As discussed on pages 79-81, however, there is currently nothing to indicate that the United States is considering deploying nuclear weapons in Poland or other states. New deployment would conflict with the NATO Secretary General's December 2021 statement that 'we have no plans of stationing any nuclear weapons in any other countries

ARTICLE 1(1)(F) – INTERPRETATION

Each State Party undertakes never under any circumstances to: 'seek or receive any assistance, in any way, from anyone to engage in any activity prohibited to a State Party under this Treaty.'

- In contrast to Article 1(1)(e) of the TPNW, which prohibits states from assisting prohibited acts by others, Article 1(1)(f) prohibits states from seeking or receiving assistance to violate the Treaty themselves. It does not matter whether or not the assistance is actually received.
- This precludes any state party from asking any other state or any natural or legal person (i.e., a company) to help it develop, possess, stockpile, test, produce, use, transfer, or receive nuclear weapons or other nuclear explosive devices, including where it is sought that foreign nuclear weapons will be stationed or deployed to their territory.
- A similar prohibition, imposed only on non-nuclear-weapon states, is contained in Article II of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), though it applies only to manufacture: the undertaking is 'not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices'.

1 A. Krzysztoszek and C. Szumski, 'Poland "ready" to host nuclear weapons, Polish president says', *Euractiv*, 22 April 2024, at: https://bit.ly/4g8kpO0
2 J. Łukaszewski, 'Morawiecki chce broni atomowej w Polsce' ('Morawiecki wants nuclear weapons in Poland'), *Wyborcza*, 30 June 2023, at: https://bit.ly/3Vm6Q5P.
3 IISS, 'Poland's bid to participate in NATO nuclear sharing', September 2023, at: https://bit.ly/3Rub7St

than we already have', as well as the head of NATO's Nuclear Policy Directorate, who said in September 2023 that she did not anticipate changes to the nuclear sharing arrangements, 'certainly not in the short term'.[4] It would also go against the NATO-Russia Founding Act, which states that NATO has 'no intention, no plan, and no reason to establish nuclear weapon storage sites on the territory of [NATO members who joined the Alliance after 1997], whether through the construction of new nuclear storage facilities or the adaptation of old nuclear storage facilities'.[5]

Receipt of US support

The five current NATO host states for US nuclear weapons—Belgium, Germany, Italy, the Netherlands, and Türkiye—each continued to receive US support for the ongoing deployment of its tactical nuclear missiles on their respective territory in 2024. This included new variants of the B61 nuclear bombs that the United States has upgraded.

The United Kingdom received support from the United States for the upgrades that are being made at the United Kingdom Royal Air Force (RAF) Lakenheath to enable the return of US nuclear weapons. It was reported in 2023 and into 2024 that the United States would be stationing nuclear weapons on UK territory (in the eastern English county of Suffolk) for the first time in more than 15 years.[6] It was not known, however, whether the stationing has yet occurred. At the time, a UK Ministry of Defence spokesperson said: 'It remains a longstanding UK and NATO policy to neither confirm nor deny the presence of nuclear weapons at a given location.'[7]

Receipt of Russian support

Belarus continued to receive Russian support for deployment of Russian tactical nuclear missiles on its territory in 2024. On 16 January, at a meeting of the country's Security Council, Aleksander Volfovich, the Council secretary, is quoted as declaring that 'statements by our neighbours, in particular Poland … forced us to strengthen' Belarus' military doctrine and that 'the deployment of Russian nuclear weapons in Belarus is intended to deter aggression from Poland, a NATO member'.[8] On 7 May 2024, President Alexander Lukashenko announced an immediate check of the combat readiness of nuclear assets deployed in Belarus. According to its Ministry of Defence, a division of the dual-capable Iskander operational-tactical ballistic missile system and a squadron of dual-capable Su-25 aircraft were put on alert. It was reported that 'the whole range of actions, from planning and preparation to strikes with tactical nuclear weapons' would be tested. President Lukashenko said that 'non-strategic nuclear weapons in Belarus are weapons of deterrence and defence.'[9]

For more information on these arrangements, see pages 79-81.

South Korea

As discussed on page 65, South Korea deepened its cooperation with the United States on nuclear deterrence activities in 2024, but appears to not have sought assistance from the United States to deploy US nuclear weapons during the year as it did the year before. In 2023, South Korea's government pushed for discussions with the United States about 'joint planning and execution" of nuclear assets and for deployment of US nuclear weapons to counter the North Korean nuclear threat.[10] Adding leverage to its request, South Korea suggested that it could develop its own nuclear weapons.[11] Responding to this call, in April 2023, the United States and South Korea signed an agreement whereby the United States would periodically deploy nuclear-armed submarines to South Korea and involve Seoul more intimately in its nuclear planning.[12] In 2024, the concern in Seoul was that the incoming Trump administration will bypass South Korea and negotiate a nuclear deal directly with North Korea, perhaps allowing the North to obtain short-range nuclear weapons. As discussed on pages 32-33, this has led to greater discussion as to whether South Korea should seek to procure its own nuclear weapons.[13]

Assistance with development, production, and possession

France, Russia, the United Kingdom, and the United States all continued to receive various forms of assistance in 2024 with their respective development, production, and possession of nuclear weapons. France, the United Kingdom, and the United States provided each other with such assistance, and France, Russia, and the United States received assistance from a number of non-nuclear armed states. The applicable cases are described under the section above on the prohibition of assistance with prohibited activities (although with the focus on the parallel provision of assistance).

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4 NATO, 'Keynote Interview with NATO Secretary General Jens Stoltenberg at Reuters Next Event', 1 December 2021, at: https://bit.ly/3VKzaPH; E. Kervinen, 'Nato's Head of Nuclear Weapons Policy: The Risk of Using Nuclear Weapons Has Increased, but Russia's Weapons are Still Largely in a Peacetime Position', *Helsingin Sanomat*, 30 September 2023, at: https://bit.ly/4cmGSF6

5 NATO, 'Founding Act on Mutual Relations, Cooperation and Security Between NATO and the Russian Federation Signed in Paris, France', Press release, 27 May 1997, at: https://bit.ly/4el6xzN

6 PA Media, 'US planning to station nuclear weapons in UK amid threat from Russia – report', *The Guardian*, 27 January 2024, at: https://bit.ly/48ZqbhO

7 Ibid.

8 'Belarus Updating Nuclear Military Doctrine', Arms Control Today, March 2024, at: https://bit.ly/41b6RwL

9 O. Karach, 'Nuclear weapons in Belarus: What we Know', Blog post, ICAN, 22 November 2024, at: https://bit.ly/3Z7Fhhu

10 NK News, 'Yoon says Seoul could rapidly acquire nukes if North Korean threats increase', 12 January 2023, at: https://bit.ly/3KLmLEz

11 Hankyoreh, S. Korean president raises eyebrows with seeming approval of Japan's security strategy', 12 January 2023, at: https://bit.ly/3z5WwWY

12 BBC News, 'US and South Korea agree key nuclear weapons deal', 27 April 2023, at: https://bit.ly/3OJ8xqv

13 J. Ryall, 'Trump's comeback fuels nuclear debate in South Korea', *Deutsche Welle*, 14 November 2024, at: https://bit.ly/4i5QasH; and T. Dalton and G. Perkovich, 'South Korea Goes Nuclear. Then What?', *Foreign Policy*, 22 September 2024, at: https://bit.ly/4i68aTR

Allegations

In December 2024, Mark Rutte, NATO's Secretary General, told a press conference that: 'In return for troops and weapons, North Korea received support from Russia for its missile and nuclear programmes.'[14] When asked by reporters what had prompted his statement, Rutte declined to provide details of any 'intelligence information', adding: 'But more generally, let me say we should not be naive.'[15]

Earlier in the year, two senior analysts rebutted the claim by US official Vipin Narang that China's production of weapon-grade plutonium and thus its nuclear weapons programme was 'literally' fuelled by Russia, which has a contract to supply highly enriched uranium (HEU) for China's fast-breeder reactors.[16] Sulgiye Park and Robert Rust observed that 'fast breeder reactors, while theoretically capable of producing excess quantities of plutonium that could be diverted to weapons, are not optimized for the purpose due to their technical complexity and the existence of more efficient alternatives for producing weapons-grade material. Narang's claim, which implies that Russia and China intend to work together to build up China's nuclear arsenal, ignores the historical and technical context of their cooperation.'[17]

14 NATO, 'Press conference by NATO Secretary General Mark Rutte following the second day of the meetings of NATO Ministers of Foreign Affairs in Brussels', Press release, 4 December 2024, at: https://bit.ly/3ZDssgd

15 C. Davies and H. Foy, 'Nato's Rutte says Russia supporting North Korean nuclear programme', *The Financial Times*, 4 December 2024, at: https://bit.ly/3VsoCEh.

16 Center for Strategic and International Studies, 'Nuclear Threats and the Role of Allies: A Conversation with Acting Assistant Secretary Vipin Narang', Transcript, 1 August 2024, at: https://bit.ly/3ZXZS83

17 S. Park and R. Rust, 'Is Russia Helping China Expand Its Nuclear Weapons Program?', Blog post, The Equation, Union of Concerned Scientists, 19 September 2024, at: https://bit.ly/3BS0aW9

Firefighters assigned to the 39th Civil Engineer Squadron conduct a simulated unconscious pilot rescue operation during a bilateral crash, damaged, or disabled aircraft recovery exercise on 8 January 2024, at Incirlik Air Base in Türkiye. It is believed that between 20 and 30 US nuclear bombs of the type B61 are located at this air base. (Photo by Operation 2024, Alamy Stock Photo/NTB)

THE PROHIBITION ON

ALLOWING STATIONING, INSTALLATION, OR DEPLOYMENT

In 2024, seven states engaged in conduct that was not compatible with the Treaty on the Prohibition of Nuclear Weapons' (TPNW) prohibition on allowing stationing, installation, or deployment of nuclear weapons. While the presence of Russian nuclear warheads on Belarusian territory has still not been confirmed, it is clear that both states have taken significant steps to advance a nuclear-sharing mission. In the United Kingdom, upgrades are being made at the United Kingdom's air base Royal Air Force (RAF) Lakenheath to enable the return of US nuclear weapons to UK territory. Belgium, Germany, Italy, the Netherlands, and Türkiye continued to host a total of approximately 100 US B61 gravity nuclear bombs for NATO's nuclear sharing mission.

Figure 26: Compliance and compatibility in 2024 with the TPNW's prohibition on allowing stationing, installation, or deployment of nuclear weapons

As shown in Figure 27 on page 81, forward-deployed US nuclear weapons are currently believed to be located at six air bases in Europe: Kleine Brogel in Belgium, Büchel in Germany, Aviano and Ghedi in Italy, Volkel in the Netherlands, and Incirlik in Türkiye. The nuclear-sharing relationships between the United States and its NATO allies were concluded prior to the adoption of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) in 1968; however, the legality of these arrangements under the NPT remain a source of international controversy and their deterrence value is often disputed.[1] The respective hosting arrangements are thought to be governed by classified bilateral agreements, known as 'Service-Level Agreements', between the United States and the respective host state. Nuclear weapons are also occasionally transported between locations for deployment, retirement, maintenance, or modification.

ARTICLE 1(1)(g) – INTERPRETATION

Each State Party undertakes never under any circumstances to: 'Allow any stationing, installation or deployment of any nuclear weapons or other nuclear explosive devices in its territory or at any place under its jurisdiction or control.'

- This provision outlaws a particular form of assistance or encouragement of prohibited action: allowing any stationing, installation, or deployment of any nuclear weapons or other nuclear explosive devices in a state party's territory or at any other place under its jurisdiction or control.
- The TPNW's prohibition against such hosting of nuclear weapons applies at all times, including during escalating tension or armed conflict.
- The concept of jurisdiction refers primarily to a state's sovereign territory, while control extends to areas that the state party occupies or otherwise controls extraterritorially. This is irrespective of the legality of this control under international law.
- Deployment is the broadest of the three types of prohibited conduct. A violation would not require any prolonged duration, agreement, or infrastructure. Thus, although transit of nuclear weapons is not explicitly prohibited by the TPNW, if movement into the sovereign territory of a state party is not swiftly followed by exit, this might amount to assistance with possession of nuclear weapons as well as a violation of 1(1)(g).
- The duration of stay necessary to constitute deployment would depend on the surrounding circumstances—a shorter stay would suffice at a moment of high tension—but in normal circumstances would probably require at least 72 hours to contravene the prohibition in Article 1(1)(g).
- The NPT does not formally prohibit the stationing of nuclear weapons on the territory of non-nuclear-weapon states by any of the five designated nuclear-weapon states as long as it retains control over their use at all times. Many states consider nuclear sharing to pose a significant challenge to broader nuclear non-proliferation efforts.

1 W. Alberque, ´The NPT and the Origin of NATO's Nuclear Sharing Arrangements`, IFRI, Paris, 2017, at: https://bit.ly/3X4ep1u

The B61 bombs hosted under NATO nuclear sharing arrangements in Europe are assumed to have explosive yields ranging from an equivalent of 300 tons to 50 kilotons (kt) of TNT for the B61-12, which recently replaced the older B61-3s and -4s in the US stockpile.[2,3]

The bombs are stored in underground vaults at national airbases in the five European host nations and remain under US custody. In a scenario of use, the United States would authorise the release of these bombs, and European pilots would be tasked with delivering the US nuclear bombs to their targets using NATO dual-capable aircraft. The bases where the nuclear weapons are stored are currently being modernised, with upgraded storage vaults; new command, control, and communications systems; and improved security perimeters and arrangements.[4]

United Kingdom

Between 2022 and 2024, Pentagon budgetary documents indicated that US nuclear weapons would also soon return to UK soil for the first time in 15 years. In particular, these documents indicated the return of a 'potential surety mission'[5] and 'upcoming nuclear mission' at Lakenheath Air Base in Suffolk.[6] Despite these developments, it is unlikely that nuclear weapons will be permanently hosted at Lakenheath in peacetime. Indeed, this would conflict with the NATO Secretary General's December 2021 statement that 'we have no plans of stationing any nuclear weapons in any other countries than we already have', as well as the head of NATO's Nuclear Policy Directorate, who said in September 2023 that she did not anticipate changes to the nuclear sharing arrangements, 'certainly not in the short term'.[7] However, these actions could allow the base to host US nuclear weapons in the future, potentially in the midst of nuclear crises or in the event that they are removed from Türkiye due to ongoing security concerns.

Belarus

In late 2023, Russia and Belarus claimed that the forward deployment of Russian tactical nuclear weapons to Belarus had been completed.[8] It appears that this concerns weapons assigned for delivery by Belarusian Su-25 aircraft and dual-capable, road-mobile, short-range Iskander systems. In December 2024, Belarusian President Alexander Lukashenko claimed that Belarus was in possession of 'dozens' of Russian nuclear weapons, and Russian President Vladimir Putin indicated that Russia's new Oreshnik multiple independently targetable re-entry vehicle (MIRV)-capable IRBM could be deployed to Belarus in the second half of 2025.[9]

Despite these statements, several unknowns still surround the status and logistical challenges of this deployment, and open sources have not provided conclusive visual evidence to suggest where Russian nuclear warheads and related personnel are deployed in Belarus, if indeed they are in the country at all. The Asipovichy depot is the most likely candidate for nuclear storage given new security features observed at the site via satellite imagery in 2024.[10]There is no suggestion, however, that Belarus has been given *custody* of nuclear warheads. On the contrary, Russian spokespersons have insisted that warheads deployed in Belarus will remain under Russian jurisdiction and control, mirroring NATO practices.[11]

National debates to watch

There was increasing debate in 2024 in a number of states on potential hosting of US nuclear weapons. At the time of writing, there was no indication that the United States was planning to redeploy its nuclear weapons to further states.

Answering a question on whether nuclear weapons should be deployed on Nordic territory, **Finland**'s Minister for Nordic Cooperation Anders Adlercreutz stated in September 2024 that 'In questions like this, uncertainty is a virtue. It is wise for Finland to under no circumstances exclude anything. It should not be possible to think that certain weapons are possible in certain parts of Europe and certain in other parts. … One keeps the options open.'[12] Finland's President and Prime Minister have also stated that they are open to changing a Finnish law from 1987 that prohibits nuclear weapons, and Finland's new defence agreement with the United States, which grants the latter the right to station soldiers and weapons in Finland, does not contain any limitations regarding nuclear weapons.

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2 H. M. Kristensen and M. McKinzie, 'Video Shows Earth-Penetrating Capability of B61-12 Nuclear Bomb', Strategic Security Blog, Federation of American Scientists, 14 January 2016, at: https://bit.ly/40rhrwQ
3 'Fiscal Year 2024 Stockpile Stewardship and Management Plan', National Nuclear Security Administration, 27 November 2023, at: https://bit.ly/3VqO0tk
4 H. M. Kristensen, 'NATO Tactical Nuclear Weapons Exercise and Base Upgrades', Strategic Security Blog, Federation of American Scientists, 14 October 2024, at: https://bit.ly/3DSigYL
5 'Surety' is a term commonly used within the Department of Defense and Department of Energy to refer to the capability to keep nuclear weapons safe, secure, and under positive control. Office of the Under Secretary of Defense for Acquisition and Sustainment, 'Nuclear Matters Handbook', at: https://bit.ly/3RpEdSU
6 M. Korda and H. M. Kristensen, 'Increasing Evidence That The US Air Force's Nuclear Mission May Be Returning To UK Soil', Strategic Security Blog, Federation of American Scientists, 28 August 2023, at: https://bit.ly/3VSuJm1; T. Diver, 'US to station nuclear weapons in UK to counter threat from Russia', *The Daily Telegraph*, 26 January 2024, at: https://bit.ly/3RQVxkb
7 NATO, 'Keynote Interview with NATO Secretary General Jens Stoltenberg at Reuters Next Event', 1 December 2021, at: https://bit.ly/3VKzaPH; E. Kervinen, 'Nato's Head of Nuclear Weapons Policy: The Risk of Using Nuclear Weapons Has Increased, but Russia's Weapons are Still Largely in a Peacetime Position', *Helsingin Sanomat*, 30 September 2023, at: https://bit.ly/4cmGSF6
8 'Belarus Leader Says Russian Nuclear Weapons Shipments are Completed, Raising Concern in the Region', *Associated Press*, 25 December 2023, at: https://bit.ly/4c04NdH
9 'Belarus has dozens of Russian nuclear weapons and is ready for its newest missile, its leader says', *Associated Press*, 10 December 2024, at: https://bit.ly/4jfM7uC
10 H. M. Kristensen and M. Korda, 'Depot In Belarus Shows New Upgrades Possibly For Russian Nuclear Warhead Storage', Strategic Security Blog, Federation of American Scientists, 14 March 2024, at: https://bit.ly/4emv0Vo
11 'Belarus has dozens of Russian nuclear weapons and is ready for its newest missile, its leader says', *Associated Press*, 10 December 2024.
12 Debatten, Spesialsending: Nordens svar på Putins krig, *NRK*, 12 September 2024, at: http://bit.ly/3VUGrMy

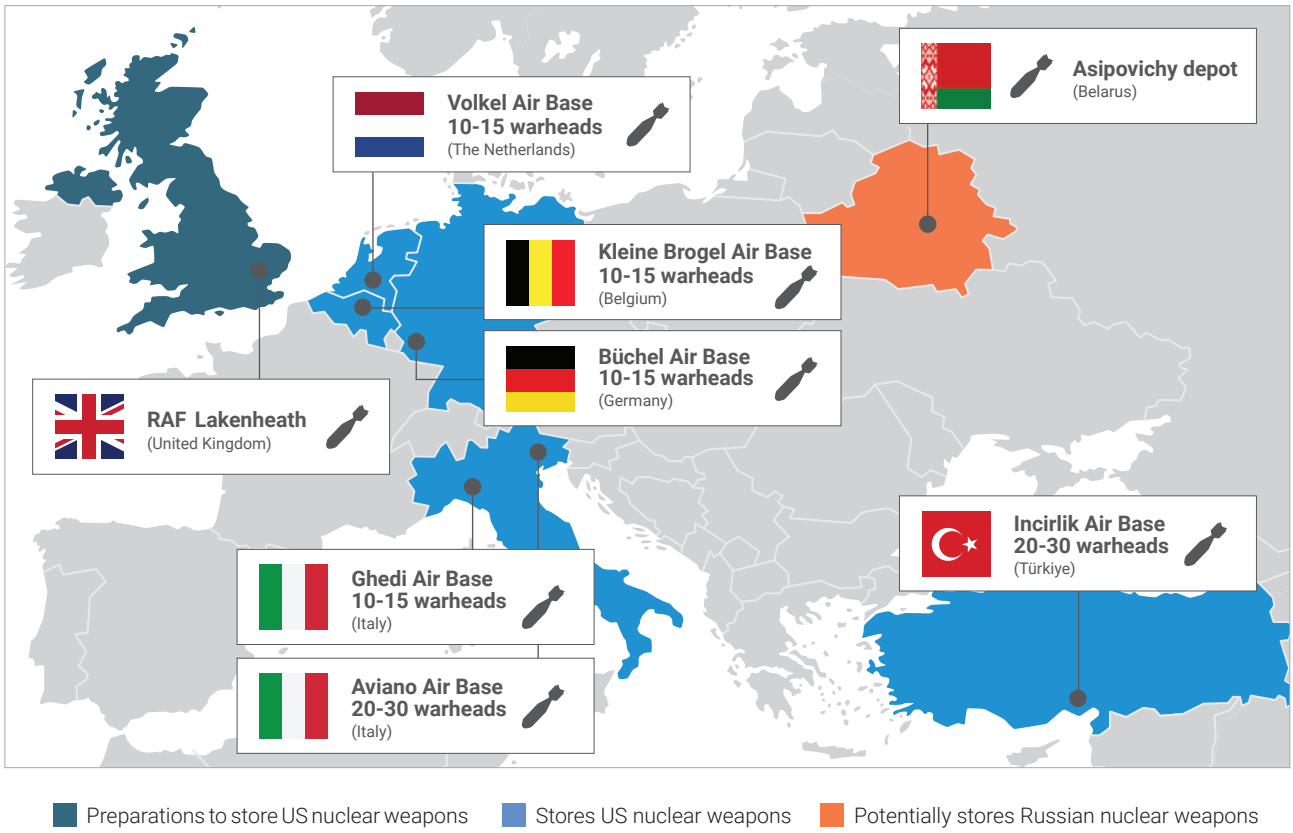
In **Japan**, Prime Minister Shigeru Ishiba who was elected in October 2024 has called for a debate on nuclear sharing and a review of Japan's traditional three non-nuclear principles policy not to possess, manufacture, or host nuclear weapons.[13] In particular, Ishiba has promoted the idea of an 'Asian NATO' that would see Japan hosting US nuclear weapons.[14]

In 2023, the Prime Minister of **Poland** announced his country's intention to pursue more direct participation in NATO's nuclear sharing initiatives, and in 2024, the Polish President ratcheted up the rhetoric by announcing that Poland was 'ready' to accept a deployment of NATO nuclear weapons on its territory.[15] As discussed on page 75, Poland's pursuit of US nuclear weapons deployments amounts to prohibited seeking of assistance under the TPNW. Similar to the storage of nuclear weapons on UK soil, however, these actions would be in conflict with recent NATO statements, as well as with the NATO-Russia Founding Act, which states that NATO has 'no intention, no plan, and no reason to establish nuclear weapon storage sites on the territory of [NATO members who joined the Alliance after 1997], whether through the construction of new nuclear storage facilities or the adaptation of old nuclear storage facilities'.[16]

In recent years, there has been a strong resurgence of public support in **South Korea** for redeployment of US nuclear weapons or even a domestic nuclear-weapons programme.[17] In April 2023, the United States and South Korea signed The Washington Declaration, which established a potentially unparalleled degree of US-South Korea bilateral consultation concerning US nuclear policy. The declaration also announced that the United States would 'further enhance the regular visibility of strategic assets to the Korean Peninsula'.[18]

As is the case for Finland, **Sweden**'s new defence agreement with the United States does not mention nuclear weapons. On the basis of a political, verbal agreement in connection with Sweden's decision in 2022 to apply for NATO membership, Sweden's current position is that 'there is no reason to have nuclear weapons on Swedish soil in peace time'.[19] The current government has clearly signalled that they consider this agreement less important than did the Social Democrats. In 2024, the Swedish Prime Minister indicated that he would be open to deployment of nuclear weapons in Sweden during wartime.[20]

Figure 27: Locations of known and potential foreign-deployed nuclear weapons in Europe, 2024.
(Source: Nuclear Information Project, Federation of American Scientists)



13 S. Kuramitsu, 'Japan's New Leader Stirs Debate on Nuclear Sharing', Arms Control Today, November 2024, at: https://bit.ly/3WhOZNC
14 S. Ishiba, 'Japan's New Security Era: The Future of Japan's Foreign Policy', The Hudson Institute, 25 September 2024, at: https://bit.ly/4afy1oQ
15 'Poland's leader says his country is ready to host NATO members' nuclear weapons to counter Russia', *Associated Press*, 22 April 2024, at: https://bit.ly/4gMDHt1
16 NATO, 'Founding Act on Mutual Relations, Cooperation and Security Between NATO and the Russian Federation Signed in Paris, France', Press release, 27 May 1997, at: https://bit.ly/4el6xzN
17 R. L. Parry, 'Should South Korea have nuclear weapons? Its people now say yes', *The Times*, 23 December 2024, at: https://bit.ly/3Pz4oFs
18 The White House, 'Washington Declaration', 26 April 2023, at: https://bit.ly/3z5ztLZ
19 Svenska Freds, 'Gabriella har ordet', at: https://bit.ly/3BWEwQx
20 H. L. Allik, 'Sweden approves controversial US defense deal', *Deutsche Welle*, 19 June 2024, at: https://bit.ly/4jcCzjF

A young boy photographed during the torch procession held in Oslo on 10 December 2024 in honour of Nihon Hidankyo, the Japanese organisation that was awarded the Nobel Peace Prize 'for its efforts to achieve a world free of nuclear weapons and for demonstrating through witness testimony that nuclear weapons must never be used again'. (Photo by ICAN)

3

COMPLIANCE AND COMPATIBILITY IN 2024 WITH THE POSITIVE OBLIGATIONS OF THE TPNW

In addition to its comprehensive prohibitions, the Treaty on the Prohibition of Nuclear Weapons (TPNW) obligates its states parties to take a set of positive measures to implement the Treaty. In the sections that follow, these positive obligations are set out and explained and the level of compliance by states parties is assessed. Where relevant, the Nuclear Weapons Ban Monitor also reviews global observance by other states of the norms the TPNW's positive obligations seek to promote or establish in order to prevent and remediate harm inflicted by nuclear weapons.

Positive obligations are key elements of all disarmament treaties. The parallel positive obligations in the Anti-Personnel Mine Ban Convention (APMBC) and the Convention on Cluster Munitions (CCM) have significantly enhanced their humanitarian impact. While much work remains to be done, the obligations in those treaties have led to a dramatic reduction in the stockpiles of banned weapons, clearance of wide swathes of contaminated land, vital support for victims, and an increase in international assistance from states parties as well as states not party. The positive obligations of the TPNW will similarly advance the Treaty's broader humanitarian and developmental goals.

Most of the positive obligations in the TPNW do not set out specific deadlines or criteria for the states parties to meet, but are rather long-term goals to work towards in good faith. Implementation is therefore in its early stages. Certain of the TPNW's positive obligations apply only to nuclear-armed states or states with foreign nuclear weapons on their territory, none of which has yet adhered to the Treaty.

MINISTER FOR FOREIGN AFFAIRS, TRADE AND EXPORT DEVELOPMENT
GRENADA

DECLARATION PURSUANT TO ARTICLE 2, PARAGRAPH 1, OF THE TREATY ON THE PROHIBITION OF NUCLEAR WEAPONS

The Government of Grenada, pursuant to Article 2, paragraph 1, of the Treaty on the Prohibition of Nuclear Weapons, declares that:

a) it has never owned, possessed or controlled nuclear weapons or nuclear explosive devices and has never had a nuclear-weapon programme prior to the entry into force of this Treaty for Grenada.
b) notwithstanding Article 1 (a), it does not own, possess or control any nuclear weapons or other nuclear explosive devices.
c) notwithstanding Article 1 (g) there are no nuclear weapons or other nuclear explosive devices in its territory or in any place under its jurisdiction or control that are owned, possessed or controlled by another State.

Declaration made on 25th November 2024 at St. George's.

Hon. Joseph Andall
Minister for Foreign Affairs,
Trade and Export Development

A copy of the declaration submitted by Grenada under Article 2 of the TPNW to the UN Secretary-General.

THE OBLIGATION TO

SUBMIT A DECLARATION

The UN Secretary-General received three Article 2 declarations during the course of 2024: from Grenada, Sao Tome and Principe, and Sri Lanka. At the end of 2024, no submission was outstanding. The three newest states parties—Indonesia, Sierra Leone, and Solomon Islands—all had deadlines in January 2025 to submit the declaration required by the Treaty on the Prohibition of Nuclear Weapons (TPNW) , and they all met these deadlines.

Sao Tome and Principe submitted its declaration on 27 March 2024, in advance of its deadline on 14 May 2024. Sri Lanka's declaration was received by the UN Secretary-General the day after the country's deadline on 17 January 2025. Grenada's declaration had been due in October 2022 and was submitted on 25 November 2024. The declarations of the three states confirmed that they have never owned, possessed, or controlled nuclear weapons or other nuclear explosive devices, and that foreign nuclear weapons or other nuclear explosive devices are not located in its territory or in any other place under their jurisdiction or control.

Indonesia, Sierra Leone, and the Solomon Islands all ratified the TPNW on 24 September 2024 and the Treaty entered into force for them on 23 December 2024. Accordingly, their 30-day deadline to submit their declarations to the UN Secretary-General was set to 22 January 2025.

The UN Office for Disarmament Affairs (UNODA) receives the declarations on behalf of the UN Secretary General and transmits them to the other states parties. It also posts the declarations on its website, at:
https://disarmament.unoda.org/wmd/nuclear/tpnw/article-2-of-the-tpnw

The state profiles of the Nuclear Weapons Ban Monitor also record the dates the declarations are received by the UN, or indicate that a state party has not yet submitted its requisite declaration.

The TPNW does not prescribe a standard form or format for the declarations, but the UNODA website for the Treaty contains model declarations in English, French, and Spanish prepared by the International Committee of the Red Cross.

ARTICLE 2 – INTERPRETATION

- Article 2 of the TPNW imposes a duty on each state to submit a declaration to the UN Secretary-General within 30 days of becoming party to the Treaty. The declaration must clarify whether the state party has ever owned, possessed, or controlled nuclear weapons or other nuclear explosive devices. If it has, it must further declare whether it has already eliminated its nuclear-weapon programme, including by destroying or irreversibly converting all nuclear-weapons-related facilities, or whether it still owns, possesses, or controls any nuclear weapons or other nuclear explosive devices.
- Finally, the declaration must state whether foreign nuclear weapons or devices are located (stockpiled, stationed, deployed, or installed) either in the state party's territory or in any other place under its jurisdiction or control.
- The overwhelming majority of potential states parties are not nuclear-armed. Once the requisite Article 2 declaration has been submitted by a non-nuclear-armed state party, the only other reporting duties under the TPNW will be those to which it may commit under an action plan adopted by a meeting of states parties.
- For potential states parties that formerly possessed or which currently possess nuclear weapons and for states that have foreign nuclear weapons on their territory or in any other place under their jurisdiction or control, Article 4 of the TPNW imposes a duty to submit a report to each meeting of states parties and each review conference on progress towards the implementation of its obligations under that article. This obligation persists until the obligations under Article 4 are fulfilled.

A student looks at Iran's domestically built centrifuges in an exhibition of the country's nuclear achievements, in Tehran, Iran. Safeguards agreements with the International Atomic Energy Agency (IAEA) are important both to prevent further states from developing nuclear weapons and to maintain a nuclear-weapons-free world once nuclear disarmament has been achieved. In 2024, the IAEA continued to conduct verification and monitoring in Iran in relation to the Joint Comprehensive Plan of Action as well as its commitments under its Comprehensive Safeguards Agreement. According to the IAEA, issues related to the presence of anthropogenic uranium particles at undeclared locations in Iran remained outstanding at the end of the year, despite the agency's best efforts to engage Iran to resolve them. (Photo by Vahid Salemi, AP/NTB)

THE OBLIGATION TO

HAVE SAFEGUARDS AGREEMENTS AND ADDITIONAL PROTOCOLS WITH THE IAEA

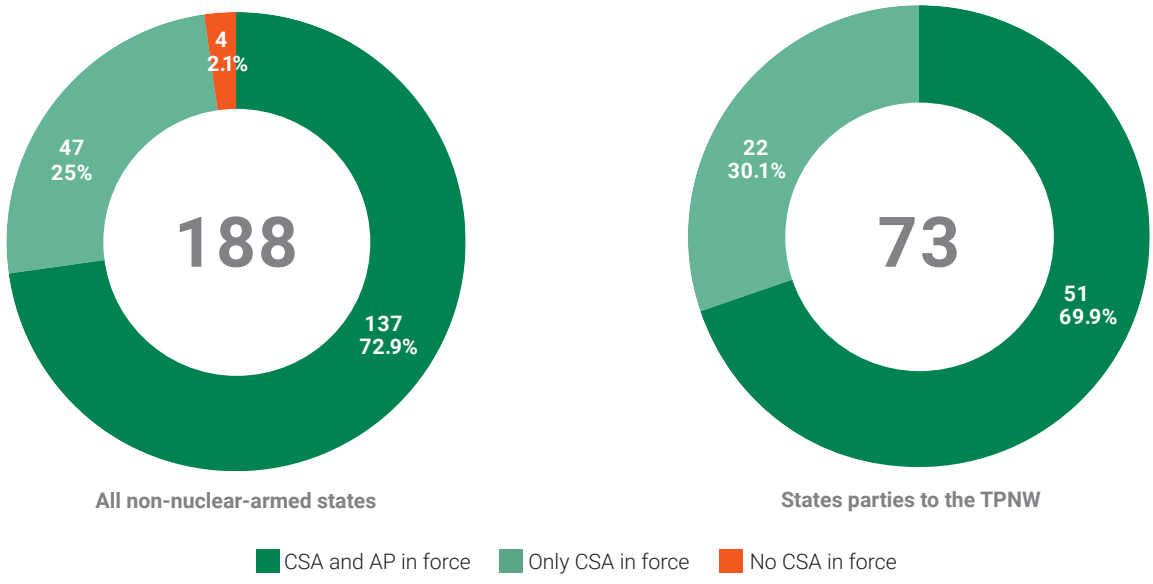
In 2024, Timor-Leste brought into force both a Comprehensive Safeguards Agreement (CSA) and an Additional Protocol (AP) with the International Atomic Energy Agency (IAEA) on the same day. At the close of 2024, 137 states—73% of the global total of 188 non-nuclear-armed states—had brought into force both a CSA and an AP, thus committing to the current 'gold standard' of safeguards. The number of states that had a CSA in force but not yet an AP, remained at 47 (25% of the total). Finally, the number of states that do not yet have a CSA in force (and therefore also not an AP) had been reduced to just four: Equatorial Guinea, Guinea, Somalia, and South Sudan.

Figure 28 below and Table J overleaf summarise the status at the end of 2024 of safeguards agreements among non-nuclear-armed states as a whole and among states parties to the Treaty on the Prohibition of Nuclear Weapons (TPNW).[1] To support further progress in universalisation of CSAs and APs, the Nuclear Weapons Ban Monitor's state profiles on www.banmonitor.org contain information on all states' respective safeguards agreements or lack thereof, as well as recommended actions. States that have not brought into force both a CSA and an AP should do so as a matter of urgency. Furthermore, states that maintain an operative original Small Quantities Protocol (SQP) should upgrade to a modified SQP, or in those cases that no longer meet the criteria for scaled down safeguards, rescind it.

Apart from South Sudan, all of the states that are still outliers either on the AP or on both the CSA and the AP are states parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). They therefore have a pre-existing obligation under that Treaty to conclude and bring into force a CSA[2] that they have not yet fulfilled, or they have not yet acted upon the 2000 and 2010 NPT Review Conferences' recommendation to conclude and bring into force an AP as soon as possible.[3]

It was an important development in the universalisation of the IAEA's safeguards when Timor-Leste brought into force both its CSA and AP on 25 September 2024. With that, all states in Asia had at least a CSA in force, as is also the case for the Americas, Europe, and Oceania.[4] Timor-Leste had acceded to the NPT in 2003. In 2022, it ratified both

Figure 28: Status of safeguards agreements in non-nuclear-armed states, as of 31.12.2024



1 Also with respect to safeguards agreements, the Nuclear Weapons Ban Monitor's methodology is to track the status of each of the 197 states that under the 'all states' formula can become parties to most global treaties, including the NPT and the TPNW. In some cases, the total figures in the Nuclear Weapons Ban Monitor may differ from those of the IAEA because they include South Sudan (which is not a party to the NPT) and the Cook Islands and Niue (which have not adhered to the NPT in their own right, but remain bound by its provisions through New Zealand's ratification of the Treaty).

2 See Art. III, NPT. All of the five regional nuclear-weapon-free-zone (NWFZ) treaties also obligate their states parties to conclude CSAs with the IAEA. The Central Asian NWFZ Treaty goes one step further than any other existing treaty and also requires that its states parties also adopt an AP with the IAEA.

3 '2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons Final Document', Action 28, at: https://bit.ly/34mNQwb

4 The remaining four states without a CSA in force are all on the African continent.

the TPNW and the Comprehensive Nuclear-Test-Ban Treaty (CTBT), stating later that it did so 'as an expression of its commitment to the goal of a nuclear-weapon-free world'.[5] In becoming a state party to the TPNW without having a CSA in force already, however, the Treaty's Article 3(2) 18-month deadline to bring one into force was applied to Timor-Leste. Encouraged by this deadline, Timor-Leste proceeded to bring into force both a CSA and an AP at the same time.

The TPNW has now become an additional forum where diplomats, civil society, and the IAEA can advocate for universal application of both a CSA and an AP. As illustrated by the latest example by Timor-Leste, the TPNW's safeguards provisions have already contributed to new momentum in safeguards actions. The International Campaign to Abolish Nuclear Weapons (ICAN), which is in dialogue with states that are preparing to sign, ratify, or accede to the TPNW, reports that several such states simultaneously or in advance have initiated processes to fill any gaps with respect to safeguards agreements. Since the adoption of the TPNW in 2017 and through to the end of 2024, a total of nine APs and six CSAs had been brought into force with the IAEA by states that are either signatories or states parties to the TPNW: Benin, Guinea-Bissau, Cabo Verde, Sao Tome and Principe, and Timor-Leste have brought into force both a CSA and an AP; Bolivia, Honduras, Thailand, and Zimbabwe have each brought into force an AP, and Palestine has brought into force a CSA.

Under the TPNW, it is mandatory for all non-nuclear-armed states parties to have a CSA. As mentioned above, if a non-nuclear-armed state has not brought into force a CSA upon adhering to the TPNW, the Treaty's Article 3(2) stipulates that it must do so within a deadline of 18 months. Since the entry into force of the TPNW, this important deadline has thus far been applied to four states parties: Cabo Verde, Guinea-Bissau, Palestine, and Timor-Leste. All four have brought into force their CSAs. Thus, Article 3(2) of the TPNW has directly contributed to reducing the number of outliers on the CSA from nine at the end of 2021 to only four at the end of 2024. (In addition, Sao Tome and Principe brought into force a CSA ten months in advance of ratifying the TPNW in 2024.) If any of the remaining four outliers (Equatorial Guinea, Guinea, Somalia, and South Sudan) also becomes a state party to the TPNW, it too will have to comply with the 18-month deadline to bring a CSA into force. South Sudan is not yet a state party to the NPT so does not have an obligation to bring into force a CSA under that instrument.

Steps taken

While it is regrettable that not all of the world's 188 non-nuclear-armed states have yet brought into force both a CSA and an AP, it is positive that one quarter of the 47 states that have only brought a CSA into force have also already taken steps towards an AP: 11 states have signed an AP and need only to bring it into force, while one more (Sri Lanka) has agreed upon a text for an AP which has also been approved by the IAEA Board. Similarly, of the four states that have not yet brought a CSA in force, one (Guinea) has already signed both a CSA and an AP and need only to bring them into force, and one (Equatorial Guinea) has an approved CSA. The only two non-nuclear-armed states in the world that have not taken any steps towards a CSA are Somalia and South Sudan. See Table J opposite for details.

Nuclear facilities

The Nuclear Weapons Ban Monitor emphasizes that it is in states with nuclear facilities[6] that it is most critical to have a strengthened safeguards system through both a CSA and an AP.[7] Information about whether or not a state has nuclear facilities is indicated in the Nuclear Weapons Ban Monitor's state profiles on www.banmonitor.org. A total of 73 non-nuclear-armed states currently have nuclear facilities,[8] and of these, ten have not yet brought into force an AP with the IAEA. Two of these ten states are parties to the TPNW: Malaysia and Venezuela, and two (Algeria and Brazil) are signatories. The other six are Argentina, Belarus, Egypt, Iran, Saudi Arabia, and Syria. The ten states are indicated in bold in Table J opposite. Algeria, Belarus, Iran, and Malaysia have already signed an AP and need only to bring it into force. Argentina, Brazil, Egypt, Saudi Arabia, Syria, and Venezuela have not yet taken any steps towards an AP and should do so urgently.

Small Quantities Protocols

At the close of 2024, 100 of the 188 non-nuclear-armed states had an operative SQP, which suspends some of the provisions of their CSA. Of these, 84 were modified SQPs while the other 16 states had not yet upgraded their SQP to the new standard and still retained original SQPs. During the year, one TPNW state party (Bolivia) rescinded its SQP and three states parties (Fiji, Mongolia, and Sierra Leone) and one other state (Oman) upgraded their respective SQP to a modified SQP. On 31 December, also Saudi Arabia rescinded its SQP, transitioning to full implementation of its CSA.[9] Saudi Arabia's SQP has long been a cause for concern because of the country's nuclear ambitions.

Safeguards agreements in nuclear-armed states

The NPT's five nuclear-weapon-states (China, France, Russia, the United Kingdom, and the United States) have concluded so-called 'voluntary offer' safeguards agreements, based on the CSA model, which involve safeguards only on certain nuclear material and facilities in their nuclear fuel cycle. They have also concluded limited APs to

5 Statement by Timor-Leste marking the International Day for the Total Elimination of Nuclear Weapons on 26 September 2023, at: https://bit.ly/4jqTRtu
6 The IAEA Nuclear Safety and Security Glossary defines a 'nuclear facility' as a facility (including associated buildings and equipment) in which nuclear material is produced, processed, used, handled, stored or disposed of. See, 'IAEA Nuclear Safety and Security Glossary', 2022 (Interim) Edition, at: https://bit.ly/3Dvysfw
7 J. Carlson, 'The Treaty on the Prohibition of Nuclear Weapons and the Safeguards Standard', Nuclear Threat Initiative, 2 December 2021, at: https://bit.ly/3RsdxzJ
8 See Tables A40 (a) and (b) of 'IAEA Annual Report 2023. Annex Information', at: https://bit.ly/40EsODE The data are from 2023. The Nuclear Weapons Ban Monitor also includes Saudi Arabia as a state with nuclear facilities, as it has a research reactor close to operation
9 IAEA, 'Status List. Amendment to Small Quantities Protocols,' as of 31 December 2024, at: https://bit.ly/40sws2o

their voluntary offer agreements. Three nuclear-armed states not party to the NPT (India, Israel, and Pakistan) have concluded item-specific safeguards agreements, which prohibit the use of specified items under safeguards for military purposes or the manufacture of nuclear explosive devices. India has concluded a limited AP to its item-specific agreement. North Korea had originally brought into force a CSA, but the IAEA's in-country verification activities ceased in April 2009. As discussed above in the interpretation of the TPNW's safeguards requirements, upon adherence to the Treaty nuclear-armed states will have to, as a minimum, upgrade their existing safeguards agreements to a full CSA over all nuclear material and upgrade to, or conclude and bring into force, a full AP.

TABLE J: STATUS OF SAFEGUARDS AGREEMENTS IN NON-NUCLEAR-ARMED STATES, AS OF 31.12.2024
Source: IAEA, 'Status List: Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols', as of 31 December 2024, at: https://bit.ly/3298sXA.

137 states with a CSA and an AP in force	
Afghanistan, Albania, Andorra, Angola, Antigua and Barbuda, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belgium, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Canada, Central African Republic, Chad, Chile, Colombia, Comoros, Congo, Costa Rica, Côte d'Ivoire, Croatia, Cuba, Cyprus, Czechia, Denmark, Djibouti, Dominican Republic, DR Congo, Ecuador, El Salvador, Eritrea, Estonia, Eswatini, Ethiopia, Fiji, Finland, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Guatemala, Guinea-Bissau, Haiti, Holy See, Honduras, Hungary, Iceland, Indonesia, Iraq, Ireland, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lesotho, Liberia, Libya, Liechtenstein, Lithuania, Luxembourg, Madagascar, Malawi, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Moldova, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, North Macedonia, Norway, Palau, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Rwanda, Saint Kitts and Nevis, Sao Tome and Principe, Senegal, Serbia, Seychelles, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Türkiye, Turkmenistan, Uganda, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Vanuatu, Viet Nam, Zimbabwe.	
47 states with only a CSA in force	
CSA in force, AP signed (11 states)	**Algeria, Belarus, Iran**, Kiribati, Lao PDR, **Malaysia,** Myanmar, Nauru, Sierra Leone, Tunisia, Zambia.
CSA in force, AP approved (1 state)	Sri Lanka.
CSA in force, no steps towards AP (35 states)	**Argentina,** Bahamas, Barbados, Belize, Bhutan, **Brazil,** Brunei, Cook Islands,* Dominica, **Egypt,** Grenada, Guyana, Lebanon, Maldives, Micronesia, Nepal, Niue,* Oman, Palestine, Papua New Guinea, Qatar, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, **Saudi Arabia,** Solomon Islands, Sudan, Suriname, **Syria,** Tonga, Trinidad and Tobago, Tuvalu, **Venezuela,** Yemen.
	5 states with no CSA in force
CSA signed, AP signed (1 state)	Guinea.
CSA approved, no steps towards AP (1 state)	Equatorial Guinea.
No steps towards CSA (2 states)	Somalia, South Sudan.

** New Zealand's CSA and Original SQP also apply to Cook Islands and Niue.*
*States that are states parties to the TPNW are underlined. States shown in **bold** have nuclear facilities but have not brought into force an AP with the IAEA.*

ARTICLES 3(1), 3(2), 4(1), AND 4(3) – INTERPRETATION

- It is mandatory for all non-nuclear-armed states parties to the TPNW to maintain in force or to conclude and bring into force (and thereafter maintain) a Comprehensive Safeguards Agreement (CSA) with the IAEA. The TPNW specifies that the CSA must be based on the most recent CSA model in IAEA doc. INFCIRC 153 (Corrected). If a non-nuclear-armed state has not brought into force a CSA upon adhering to the TPNW, Article 3(2) stipulates that it must do so within a deadline of 18 months from the date of entry into force of the TPNW for the state in question.
- An Additional Protocol (AP) in force with the IAEA, or an instrument of equivalent or higher standard also in force with the IAEA, is similarly required for all non-nuclear-armed states parties that had one in force upon the entry into force of the TPNW on 22 January 2021.
- These are only minimum requirements, and the TPNW implicitly encourages states parties to adhere to the highest standard of safeguards. At present, this is the above-mentioned CSA and an AP.
- If a nuclear-armed state eliminates its nuclear-weapons programme and then adheres to the TPNW it will be obliged to conclude a safeguards agreement that provides 'credible assurance of the non-diversion of declared nuclear material from peaceful nuclear activities and of the absence of undeclared nuclear material or activities in that State Party as a whole'. (Article 4(1)). This formulation equates to, at least, a CSA and a full AP. This means that the state in question will have to upgrade its existing safeguards agreement to a CSA and the requisite AP. Negotiations on these safeguards must start within 180 days, with the resultant treaty entering into force within 18 months of the TPNW's entry into force for the state in question. These states must maintain, as a minimum, these safeguards, but may adopt more far-reaching safeguards in the future.
- If a nuclear-armed state adheres to the TPNW before eliminating its nuclear-weapons programme it will also be obliged to conclude a safeguards agreement that provides 'credible assurance of the non-diversion of declared nuclear material from peaceful nuclear activities and of the absence of undeclared nuclear material or activities in the State as a whole'. (Article 4(3)). Again, this formulation equates to, at least, a CSA and an AP. Negotiations on these safeguards are mandated to start no later than the completion of nuclear elimination, with the resultant treaty entering into force within 18 months. These states must maintain, as a minimum, these safeguards but may adopt further safeguards in the future. The Treaty does not specify safeguards that should be applied between entry into force and the completion of nuclear elimination for these states, but these may be agreed in the legally-binding, time-bound plan for the verified and irreversible elimination of these states' nuclear-weapons programmes that is required, and which includes the elimination or irreversible conversion of all nuclear-weapons-related facilities.

French Ambassador to the United Nations in New York Nicolas de Riviere attends a rare meeting of the UN Security Council on nuclear disarmament and non-proliferation on 18 March 2024. France and all of the other eight nuclear-armed states have expressed their support for nuclear disarmament but are not pursuing this goal. They argue that this process requires creating a suitable environment first. (Photo by Eduardo Munoz Alvarez, AP/NTB)

THE OBLIGATION TO

ELIMINATE NUCLEAR WEAPONS

Events in 2024 again showed that the conduct of all nuclear-armed states is incompatible with the Treaty on the Prohibition of Nuclear Weapons' (TPNW) obligation to eliminate nuclear weapons. While all nuclear-armed states have expressed their support for nuclear disarmament, they are not pursuing this goal. They argue that this process requires creating a suitable environment first.

In March 2024, the UN Security Council held a rare high-level meeting on nuclear disarmament and non-proliferation, which was chaired by Japan.[1] UN Secretary-General António Guterres stated at the meeting that 'There is one path—and one path only—that will vanquish this senseless and suicidal shadow, once and for all. We need disarmament now.' He also said that 'States possessing nuclear weapons are absent from the table of dialogue. Investments in the tools of war are outstripping investments in the tools of peace. Arms budgets are growing, while diplomacy and development budgets are shrinking.' He urged nuclear-armed states to act to implement existing disarmament commitments under the Treaty on the Non-proliferation of Nuclear Weapons (NPT), including reductions in the number of nuclear weapons 'led by the holders of the largest nuclear arsenals – the United States and the Russian Federation'.[2]

In the 'Pact for the Future' adopted by the 2024 UN Summit of the Future,[3] states reiterated their 'concern' about 'the state of nuclear disarmament' and decided to 'recommit to the goal of the total elimination of nuclear weapons' and to 'seek to accelerate the full and effective implementation of respective nuclear disarmament and non-proliferation obligations and commitments.'[4] However, the final consensus text was vague on specific commitments compared to earlier drafts that contained calls for more specific actions by nuclear-armed states.[5]

The only forum where nuclear-armed states continue to discuss issues related to nuclear disarmament is the P5 group of NPT nuclear weapon states. The United States has put forward a set of proposals designed to reduce nuclear risks for discussion by the group. Key among these are the formalisation of a missile launch notification regime and the establishment of dedicated crisis communication channels. While these initiatives can help reduce nuclear risks and can potentially create conditions for further progress, they do not directly contribute to nuclear disarmament.

Dismantlement rates

As shown in Table F on page 36, the global nuclear stockpile at the beginning of 2025 included approximately 12,331 nuclear warheads. This is a significant decrease from the peak of more than 70,000 weapons in the middle of the 1980s. Most of the reductions, however, were completed in the 1990s, when the United States dismantled about 1,400 weapons annually[6] and Russia was dismantling its weapons at a comparable rate. As shown in Figure 15 on page 38,

ARTICLE 4(1), (2), AND (6) – INTERPRETATION

- In accordance with Article 4(6) of the TPNW, the states parties are explicitly obligated to designate a 'competent international authority or authorities' to negotiate and verify the irreversible elimination of nuclear weapons programmes.
- The TPNW provides two pathways to the future adherence of nuclear-armed states: one for so-called destroy-and-join states ('Article 4(1) states') and a second for so-called join-and-destroy states ('Article 4(2) states').
- Article 4(1) obligates each nuclear-armed state that destroys its nuclear weapons and eliminates its nuclear-weapons programme before adhering to the TPNW, to cooperate with the 'competent international authority' that states parties will designate to verify nuclear disarmament, in order to ascertain that its nuclear-weapon programme has been irreversibly eliminated.
- Article 4(2) obligates those nuclear-armed states that decide to adhere to the Treaty before completing nuclear disarmament to immediately remove the weapons or devices from operational status, and to destroy them as soon as possible but not later than the deadline of ten years set by the First Meeting of States Parties in 2022. The process of destruction must be detailed in a legally-binding, time-bound plan that provides for the verified and irreversible elimination of that state party's nuclear-weapons programme, including elimination or irreversible conversion of all nuclear-weapons-related facilities. Such a state must submit a draft of the plan to the other states parties or to the competent international authority within 60 days of becoming a party. The plan must then be negotiated with this authority and submitted to the next meeting of states parties or review conference, whichever comes first, for approval.
- Article VI of the NPT requires that the states parties to the Treaty, including the five nuclear-weapon states parties 'pursue negotiations in good faith' on nuclear disarmament. The TPNW is one avenue by which any nuclear-armed state can effectively pursue nuclear disarmament.

1 S. Kuramitsu and D. Kimball, 'UN Security Council Holds Rare Disarmament Debate'. Arms Control Today. April 2024, at: https://bit.ly/4adRG8J; United Nations, 'Verbatim Record UN Security Council 9579th Meeting', UN doc. S/PV.9579, New York, 18 March 2024, at: https://bit.ly/3DROpzz
2 A. Guterres, 'Secretary-General's remarks to the Security Council – on Nuclear Disarmament and Non-Proliferation', 18 March 2024, New York, at: https://bit.ly/3DVRQW2
3 United Nations, 'Summit of the Future', 2024, at: https://bit.ly/4b0zGx3
4 Summit of the Future, 'Pact for the Future, Global Digital Compact and Declaration on Future Generations,' September 2024, at: https://bit.ly/3DVSliS
5 ICAN, 'Pact for the Future adopted, weak on nuclear disarmament', 23 September 2024, Geneva, at: https://bit.ly/42d2lOI
6 US Department of Energy, 'Transparency in the U.S. Nuclear Weapons Stockpile', 22 June 2024, at: https://bit.ly/40heyzr

the total number of nuclear weapons in the world is still slowly decreasing each year, but the reduction rate has slowed down significantly in recent years and is maintained entirely by the dismantlement of US and Russian decommissioned weapons.

Russia and the United States still have a considerable backlog of retired nuclear weapons. According to the most recent official data on the dismantlement rate, the United States eliminated about 200 weapons annually in the years preceding 2022. In 2002–24, however, the extent of dismantlement slowed down, with 122 warheads dismantled in 2022 and only 69 in 2023.[7] The Federation of American Scientists estimates that a similar number was dismantled also in 2024. The United States had 1,577 nuclear warheads awaiting dismantlement at the beginning of 2025.[8]

Russia has never published data on its nuclear weapon stockpile. According to some estimates, it was dismantling as many as 2,000 warheads a year in the early 1990s. It was further estimated that the net reduction rate in the Russian stockpile was about 200–300 warheads a year in the late 2000s.[9] The Federation of American Scientists estimates that Russia dismantled approximately 50 retired warheads in 2024, and that 1,150 weapons remained in its dismantling queue as of early 2025.[10]

The United Kingdom and France completed reductions of their nuclear arsenals in the 2000s. Neither state has made any additional commitment regarding reductions of their arsenals. The UK government in 2021 announced a significant increase to the upper limit of its warhead inventory, from 180 to 260 warheads.[11] As discussed on page 35, China is in the process of increasing the size of its nuclear stockpile. Russia, while continuing to dismantle retired warheads, appears to be increasing the number of weapons available for use. India, North Korea, and Pakistan are also believed to be adding weapons to their arsenals, albeit at a much lower rate. Since 2017, this has brought about a steady increase in the global number of nuclear warheads available for use, which is expected to continue.

All this suggests that the gradual decrease of the total number of nuclear weapons that was supported primarily by dismantling the Cold War arsenals in Russia and the United States could be reversed in the upcoming years.

Arms control

The system of arms control agreements that for a long time constrained the growth of nuclear arsenals and facilitated nuclear disarmament has come under considerable stress. Efforts to develop and reinforce agreements to control nuclear weapons continued to flounder in 2024. In June 2023, the United States had offered Russia and China to begin a discussion of nuclear risks and a post-2026 arms control framework without preconditions.[12] Russia formally rejected the offer in December 2023 and its Foreign Minister Sergey Lavrov announced this at a news conference in January 2024, linking any nuclear talks with a broader set of security issues.[13]

In February 2023, Russia had formally suspended its participation in New START, the US-Russian nuclear arms control treaty that limited the number of deployed strategic weapons and delivery vehicles.[14] The treaty, which entered into force in 2011, will expire on 5 February 2026. Since the treaty has been suspended and both parties stopped publishing the data on their strategic arsenals, the commitments to abide by the treaty limits cannot be verified. It appears that both parties followed their respective obligations in 2024 and are likely to continue to do so at least until the treaty formally expires. At the same time, prospects for reaching an agreement that would limit the size of nuclear arsenals after 5 February 2026 appear extremely remote.

China has not explicitly rejected the US offer for arms control discussions and in November 2023, the United States and China held a meeting that discussed 'issues related to arms control and non-proliferation'.[15] However, China suspended the dialogue in 2024, citing the differences over Taiwan. At the same time, China has made some steps that suggested a degree of openness and readiness to cooperate. For example, it notified the United States of an upcoming test of an ICBM that took place in September 2024, despite not responding earlier to the US proposal to conclude a formal launch notification agreement.

Nuclear disarmament verification

Even though the nuclear arms control and disarmament process has stalled, efforts to develop a framework for the verified elimination of nuclear weapons have continued. In 2023, the Group of Governmental Experts on nuclear disarmament verification released a consensus report that outlined principles that could guide the process.[16] Although

7 Ibid.
8 See Table D on page 36.
9 International Panel on Fissile Materials, 'Global Fissile Material Report 2007: Developing the Technical Basis for Policy Initiatives to Secure and Irreversibly Reduce Stocks of Nuclear Weapons and Fissile Materials', 2007, at: https://bit.ly/3VhO1zv at 62.
10 See Table D on page 36.
11 H. M. Kristensen and M. Korda, 'British Defense Review Ends Nuclear Reductions Era', Federation of American Scientists, 17 March 2021, at: https://bit.ly/4erCTbU
12 J. Sullivan, 'Remarks by National Security Advisor Jake Sullivan for the Arms Control Association (ACA) Annual Forum', The National Press Club, Washington, D.C., 2 June 2024, at: https://bit.ly/4fXOaAx
13 'Foreign Minister Sergey Lavrov's Statement and Answers to Media Questions during a News Conference on Russia's Foreign Policy Performance in 2023, Moscow, January 18, 2024', Ministry of Foreign Affairs of the Russian Federation, 18 January 2024, at: https://bit.ly/4aTJeKy
14 The decree signed by the President of Russia is at 'Федеральный закон от 28.02.2023 г. № 38-ФЗ', Президент России, 28 February 2023, at: https://bit.ly/3VdQZoJ
15 US Department of State, 'Assistant Secretary Mallory Stewart's Meeting with the People's Republic of China's (PRC) Ministry of Foreign Affairs Director-General of Arms Control Sun Xiaobo', 7 November 2023, at: https://bit.ly/45hvcRC; and Ministry of Foreign Affairs of the People's Republic of China, 'China and the United States Hold Consultations on Arms Control and Non-Proliferation', 8 November 2023, at: https://bit.ly/45foP10
16 'Final Report of the Group of Governmental Experts to Further Consider Nuclear Disarmament Verification Issues', 23 June 2023, at: https://bit.ly/3KH9P2t

the group did not examine nuclear disarmament in the TPNW context, it concluded that verification measures will be determined by specific obligations of a disarmament agreement. This conclusion is compatible with the understanding that TPNW verification arrangements can differ significantly from those of the disarmament agreements developed in an adversarial context.[17]

This aspect of TPNW verification was further explored in the report of the Scientific Advisory Group to the Second Meeting of States Parties to the TPNW (2MSP).[18] The report acknowledged the work on technical aspects of verification that has been done by nuclear weapon states, often in cooperation with non-nuclear weapon states. At the same time, it underscored the importance of developing approaches to verification that could take advantage of the unique nature of the TPNW. An adhering state has made a voluntary commitment to full elimination of its nuclear weapon programme and a high degree of cooperation with the verification process can therefore be expected.

The work on traditional verification approaches contributes to the framework for nuclear disarmament verification in several different ways. First, it develops tools and technologies that can potentially be used in the TPNW context. Then, it provides nuclear weapon states with an opportunity to be involved in a disarmament verification process and to work together with non-weapon states. Among the continuing multilateral initiatives in this area are the International Partnership on Nuclear Disarmament Verification (IPNDV), which in 2024 marked the tenth anniversary of its initiation.[19] Another multinational project that explored practical aspects of nuclear disarmament verification was the experiment conducted by the UN Institute for Disarmament Research (UNIDIR) that tested approaches and technologies that can verify the absence of nuclear weapons.[20]

A separate area of verification-related research that has received considerable attention is the irreversibility of nuclear disarmament. The attention to this issue was drawn by the initiative of the governments of Norway and the United Kingdom that was introduced at the 2022 NPT Review Conference.[21] So far, most of the work in this area was done in the context of the traditional arms control and non-proliferation approaches to verification.[22] At the same time, irreversibility is an important concept for the TPNW as well since the Treaty requires irreversible elimination of nuclear weapons and nuclear weapon programmes. Some of the work has already contributed to better understanding of irreversibility in the TPNW context.[23]

Informal working group on Article 4

The report of the Scientific Advisory Group presented at the 2MSP in December 2023 contained a discussion of some of the key issues that the elimination process under Article 4 of the TPNW will need to address. Most importantly, it considered the role of societal and institutional transformation that would accompany nuclear disarmament and the resulting change in the approach to verification. The report also addressed new disarmament verification tools and techniques, the relationship between disarmament and safeguards, and the question of nuclear weapon delivery systems. It emphasised the importance of learning from past disarmament and verification initiatives and processes, engaging existing organisations, such as the International Atomic Energy Agency (IAEA) and the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), and building capacity in the field of verification.[24]

To facilitate intersessional work, states parties at the 2MSP established an informal working group, chaired by Malaysia and New Zealand, which further discussed the implementation of Article 4 of the TPNW and the future designation of a competent international authority.[25] The Scientific Advisory Group also continued to explore these issues in preparation to the Third Meeting of States Parties to the TPNW (3MSP) in 2025. The work that has been done to date provides a solid foundation for the future studies. Despite the lack of progress on the elimination of nuclear weapons and the real danger of nuclear weapon states starting a new nuclear arms race, the work on the development of a framework for future nuclear disarmament continues. The research conducted thus far has shown that the TPNW offers a viable pathway toward the complete elimination of nuclear weapons.

17 S. Philippe and Z. Mian, 'The TPNW and nuclear disarmament verification: shifting the paradigm', Chap. 1 in P. Podvig (ed.), Verifying Disarmament in the Treaty on the Prohibition of Nuclear Weapons, UNIDIR, 2022, at: https://bit.ly/3z1MFRS
18 'Report of the Scientific Advisory Group on the Status and Developments Regarding Nuclear Weapons, Nuclear Weapon Risks, the Humanitarian Consequences of Nuclear Weapons, Nuclear Disarmament and Related Issues (Enhanced Version)', Second Meeting of States Parties to the TPNW, 27 October 2023, at: https://bit.ly/3RlNUBX, p. 30.
19 'Verification of Nuclear Disarmament. Insights from a Decade of the International Partnership for Nuclear Disarmament Verification', International Partnership for Nuclear Disarmament Verification, June 2024, at: https://bit.ly/4g0NMkJ
20 P. Podvig (ed.), Menzingen Verification Experiment: Verifying the Absence of Nuclear Weapons in the Field, UNIDIR, Geneva, 2023, at: https://bit.ly/3VycamC
21 'Irreversibility in the Context of the Treaty on the Non-Proliferation of Nuclear Weapons: Recommendations for the Tenth Review Conference of the Parties to the Treaty', Working Paper, Submitted by Norway and the United Kingdom, 8 November 2021, at: https://bit.ly/4cvhVYf
22 H. Elbahtimy, 'Developing Empirical Insights into Irreversibility in Nuclear Arms Control and Disarmament', *Journal for Peace and Nuclear Disarmament*, Vol. 7, No. 1 (2 January 2024), 1–7, at: https://bit.ly/4gWO8dA
23 N. Ritchie, 'Irreversibility and Nuclear Disarmament: Unmaking Nuclear Weapon Complexes', *Journal for Peace and Nuclear Disarmament*, Vol. 6, No. 2 (2023), 1–26, at: https://bit.ly/3VADnFA
24 'Report of the TPNW Scientific Advisory Group', 29–35.
25 'Report of the Second Meeting of States Parties to the TPNW', 2MSP, 13 December 2023, Annex II, at: https://bit.ly/4baLkG5

Police arrest an activist for attempting to dig a hole under the fence of Volkel Air Base in the Netherlands, 9 August 2023. The United States has stationed nuclear weapons at Volkel Air Base. It is believed that between 10 and 15 US nuclear bombs of the type B61 are located at the air base. (Photo by Milos Rozicka, Alamy Stock Photo/NTB)

THE OBLIGATION TO

REMOVE FOREIGN NUCLEAR WEAPONS

Within 90 days after becoming a state party to the Treaty on the Prohibition of Nuclear Weapons (TPNW), Belarus, Belgium, Germany, Italy, the Netherlands, Türkiye, and the United Kingdom would each be obliged to ensure the removal of any foreign nuclear weapons that they then host on their territory. The political opposition in Belarus continued in 2024 to take a strong stance against deployment of Russian nuclear weapons in their country. Previous progress towards the removal of the remaining US nuclear weapons deployed in Europe has currently stalled.

As discussed on pages 79-81, Belgium, Germany, Italy, the Netherlands, and Türkiye have a remaining total of approximately 100 US nuclear bombs stationed in US Air Force bases on their territories. In the United Kingdom, the return of US nuclear weapons, possibly on a short-term basis, has been expected for some time. In the case of Belarus, it claims to have Russian nuclear weapons deployed on its territory, but while nuclear-capable missiles have been confirmed to be there, it is not certain that Russia has indeed deployed nuclear warheads.

Nuclear weapons owned by either the United States, the Soviet Union and the United Kingdom are believed to have previously been hosted by and withdrawn from a total of at least 19 further states, in some cases even without their knowledge.[1]

Over the years, European policymakers have made several attempts to have the remaining nuclear weapons taken out of their respective territory. Numerous non-governmental organisations have advocated for removal in Belgium, Germany, Italy, and the Netherlands, while several political initiatives, including through parliamentary debates and motions, have also sought to achieve the removal of nuclear weapons. At the NATO summit in 2023, however, the allies collectively reaffirmed that NATO's deterrence posture 'relies on the United States' nuclear weapons forward-deployed in Europe and the capabilities and infrastructure provided by Allies concerned.[2] Interventions by NATO countries, including by Germany and Belgium in the context of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), have claimed the compatibility of nuclear sharing with the provisions of the NPT and their support for NATO's nuclear deterrence arrangements.[3]

Until 2022, public pressure calling for the United States to remove its nuclear weapons from Europe was growing, particularly following the adoption and entry into force of the Treaty on the Prohibition of Nuclear Weapons in 2017 and 2021 respectively. Polls then consistently showed clear support in four of the five NATO host countries—with the exception of Türkiye—for the withdrawal of nuclear weapons from their territory.[4] Since the Russian invasion of Ukraine, polling in Germany and the Netherlands indicated that support in these countries for the withdrawal of nuclear weapons has declined.[5]

ARTICLE 4(4) – INTERPRETATION

- Under Article 4(4), any state party with foreign nuclear weapons in its territory or in any other place under its jurisdiction or control is obligated to ensure their prompt removal as soon as possible but not later than a deadline to be determined by the First Meeting of States Parties.
- The First Meeting of States Parties in 2022 agreed upon a deadline of a maximum of 90 days for removal, which is a binding rule upon all states parties.
- Upon removal, the territorial state party is required to submit a declaration of full compliance to the Secretary-General of the United Nations.

1 Canada, Czechoslovakia, Cuba, Cyprus, Denmark (Greenland), France, East Germany and West Germany, Greece, Hungary, Iceland, Mongolia, Morocco, Philippines, Poland, South Korea, Singapore, Spain, and Taiwan. The figure does not include territories that during the relevant period were under the direct jurisdiction or administration of the nuclear-armed state that stationed the nuclear weapons there (Guam, Okinawa, and the Marshall Islands). H. M. Kristensen, 'Where the Bombs Are', Online article, Federation of American Scientists, 9 November 2006; M. Furmann and T. S. Sechser, 'Appendices for "Signalling Alliance Commitments"', 6 April 2014; R. S. Norris, W. M. Arkin, and W. Burr, 'Where they Were', Bulletin of the Atomic Scientists, Vol. 55, No. 6 (1999); E. N. Rózsa and A. Péczelli, 'Nuclear Attitudes in Central Europe', EU Non-Proliferation Consortium, No. 42 (2015).
2 NATO, 'Vilnius Summit Declaration', July 13, 2023, at: https://bit.ly/3CdxwPm
3 Belgium, 'Statement in the General Debate, Second Session of the Preparatory Committee for the 2026 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)', 2024, at: https://bit.ly/3DKzGX9; and Germany, '2nd NPT PrepCom 2024 – General Statement Germany', 2024, at: https://bit.ly/4gQcoh8.
4 See, e.g., ICAN, 'Polls: Public Opinion in EU Host States Firmly Opposes Nuclear Weapons', News release, 25 October 2020, at: https://bit.ly/3nVmEeN
5 M. Onderco, M. Smetana, and T. W. Etienne, 'Hawks in the making? European public views on nuclear weapons post-Ukraine', Global Policy, 2023, at: https://bit.ly/3WjyvV5

Belarus

With the adoption of a new constitution by public referendum in 2022, Belarus controversially voted to abolish the nuclear weapons-free status that the country had adopted after the previous removal of Soviet nuclear weapons from Belarusian territory.[6] The referendum, which was accompanied by a crackdown on civil society, was not recognised as legal by the Belarusian opposition, the United States, the European Union, and a number of other states.[7] The justification for the stationing of Russian nuclear weapons in Belarus has repeatedly been linked to alleged threats by the Belarusian opposition and NATO.[8] The Belarusian opposition has heavily criticised the transfer of nuclear weapons to Belarus. In 2023, exiled Belarusian opposition leader Svetlana Tikhanovskaya warned of the danger of transferring nuclear weapons from Russia into 'the hands of a crazy dictator' in Belarus. Tikhanovskaya stated, 'Belarus is our country and we don't want nuclear weapons'.[9]

In December 2024, Russia and Belarus signed a treaty in which Russia offered security guarantees to Belarus, including the possible use of Russian tactical nuclear weapons deployed to Belarus in response to any aggression. The leaders of the two countries also discussed deployment of the nuclear-capable Oreshnik intermediate-range ballistic missile (IRBM).[10] Tikhanovskaya condemned the security pact as part of Moscow's efforts to 'tighten control' over the country and said that 'The deployment of new weapons and using Belarus as a pawn in his imperial ambitions threatens us all.'[11]

The Netherlands

In the past, the Dutch parliament has been vocal in its support of the removal of the US nuclear weapons on its territory and has adopted several motions explicitly calling on the government to do so.[12] Since 2012, the Dutch parliament has voted forty-four times on nuclear-weapons-related motions, including calls for more transparency about the deployment of nuclear weapons in the Netherlands and motions to withdraw nuclear weapons.[13] However, as a public opinion poll in the Netherlands and Germany suggests, public support for withdrawal of US nuclear weapons has declined since the war in Ukraine,[14] although a majority is still in favour of removing nuclear weapons when such a removal is part of an arms control agreement between the United States and Russia.[15]

Belgium

The Belgian Senate in 2005 unanimously adopted a resolution calling for the removal of nuclear weapons from Belgian territory.[16] In 2010, two former prime ministers—Jean-Luc Dehaene and Guy Verhofstadt—together with former foreign minister Louis Michel and Willy Claes (a former NATO secretary general) pleaded for the removal of all nuclear bombs from Europe.[17] In 2017, Willy Claes together with former prime minister Yves Leterme reiterated the call to remove all nuclear weapons from Belgium.[18] Despite this long-standing and high-level opposition, a motion in the Belgian parliament to withdraw nuclear weapons from Belgian territory and sign the TPNW was rejected in a narrow majority vote in January 2020.[19]

Germany

In Germany, 2009 saw the governing coalition of CDU and FDP commit to withdrawing all US nuclear weapons still stationed in Germany. Then Foreign Minister, Guido Westerwelle, enthusiastically promoted the initiative for some time, but the United States responded negatively, and the initiative was quietly shelved the next year.[20] The national debate on nuclear sharing, has not subsided, however. The importance and purpose of stationing US weapons in Germany was called into question, particularly in the run-up to the 2021 federal elections. The debate even prompted NATO's Secretary-General Jens Stoltenberg to publish an opinion editorial in the German newspaper, *Frankfurter Allgemeine Zeitung*, reiterating the importance of Germany's support for nuclear sharing for transatlantic peace and security.[21] After the elections, in November 2021, Stoltenberg sought to put pressure on the coalition party negotiations, stating that he counted 'on Germany to remain committed to NATO's nuclear sharing. It is our ultimate security guarantee.' Stoltenberg also noted that if Germany opts out of nuclear sharing, other states in Eastern Europe could take over this role.[22]

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6 O. Karach, 'Nuclear weapons in Belarus: What we know', Online article, ICAN, 22 November 2024, at: https://bit.ly/3Z7Fhhu
7 D. Sabbagh, S. Jones, and J. Borger, 'Russia accused of taking Belarus "nuclear hostage" with deal to station missiles there', *The Guardian*, 26 March 2023, at: https://bit.ly/4fS9dnZ.
8 Reuters, 'Lukashenko talks up threats to Belarus to justify "nuclear deterrence"', 25 April 2024, at: https://bit.ly/4jf7n3i
9 'Russian nuclear weapons "in hands of Belarus dictator", warns opposition leader', *BBC*, 14 June 2023, at: https://bit.ly/4058AkY
10 'Putin signs security treaty with Belarus including possible use of nuclear weapons,' *Euronews*, 7 December 2024, at: https://bit.ly/4h76Lei
11 Ibid.
12 See all motions in the Dutch Parliament regarding nuclear disarmament here: Pax No Nukes 'Overview motions on nuclear disarmament adopted by the Dutch parliament since 2010', Last updated 29 November 2021, at: https://bit.ly/3tY0vjV
13 M. Onderco and R. Joosen, 'Nuclear Weapons in the Tweede Kamer: Analysis of Nuclear Motions in the Dutch House of Representatives in Times of Contestation', *Global Studies* Quarterly, Vol. 2, No. 3 (July 2022).
14 Onderco, Smetana and Etienne, 'Hawks in the making? European public views on nuclear weapons post-Ukraine'.
15 Ibid.
16 Nuclear Threat Initiative, 'Belgian Senate Calls for Removal of U.S. Nukes', 22 April 2005, at: https://bit.ly/2NH12BI
17 VRT NWS, 'Top politicians promote a nuclear-free Europe', 19 February 2010, at: https://bit.ly/4alEC16
18 'Haal die bommen weg, hier en in heel de wereld', *De Standaard*, 11 December 2017, at: https://bit.ly/4fXkT93
19 Belgian Chamber of Representatives, Plenary Session, 16 January 2020, at: https://bit.ly/3nX5GMV
20 M. Skjønsberg, 'NATO and US Armed Forces in Europe' ('Nato og amerikanske kjernevåpen i Europa'), Internasjonal Politikk, Vol. 75, No. 2 (2017), pp. 187–88.
21 DW, 'Germany: SPD call to withdraw US nuclear arms stokes debate', 2 May 2020, at: bit.ly/2PGWpqM; J. Stoltenberg, 'Germany's Support for Nuclear Sharing is Vital to Protect Peace and Freedom', NATO, 11 May 2020, at: https://bit.ly/3H6Duhk
22 J. Stoltenberg, 'Speech. NATO Secretary Jens Stoltenberg at the German Atlantic Association "NATO Talk" Conference 2021', NATO, 19 November 2021, at: https://bit.ly/3nYyWDg

The 2021 coalition agreement between SPD, the Green Party, and the Liberal Party then contained no plans for the removal of nuclear weapons from Germany, but a strong commitment to NATO and the importance of being part of 'strategic discussions and planning processes' within the alliance.[23] To underpin this commitment, the German government announced the purchase of F-35 combat aircraft in 2022 to secure Germany's long-term participation in nuclear sharing.[24]

These developments took place against the backdrop of a change in public opinion. Almost all surveys prior to 2022 showed a clear majority of Germans opposing the stationing of US nuclear weapons on German territory.[25] In 2010, a majority of 85 per cent supported the removal of nuclear weapons from Germany.[26] However, public opposition to nuclear sharing has decreased since the Russian invasion of Ukraine.[27] As is the case in the Netherlands, a majority of Germans are still in favour of removing nuclear weapons when such a removal is part of an arms control agreement between the United States and Russia.[28]

Italy

The Italian parliament in September 2017 passed a motion to explore 'the possibility of adhering to the legally binding [ban] treaty' but 'in a way compatible with [Italy's] NATO obligations and with the positioning of allied states.'[29] A similar resolution obliging the government to 'continue to assess ... possible measures to approach the contents of the TPNW' was adopted in May 2022 by the Foreign Affairs Committee of the Chamber of Deputies and reaffirmed in 2023.[30] While Italian civil society organizations have been very active in promoting nuclear disarmament and the TPNW,[31] the government has not taken any action to move closer to the Treaty and away from nuclear sharing commitments.

Türkiye

Türkiye is firm in its support for upholding current NATO nuclear sharing arrangements. There has been no perceptible support for removal of US nuclear weapons deployed on Turkish territory or for the TPNW within society or political parties. This is so, except for former Turkish defence minister, Hikmet Sami Türk, who signed the ICAN open letter in support of the TPNW in 2020.[32]

23 SPD, 'Embracing Progress. Coalition for Freedom, Justice and Sustainability. Coalition Agreement Between the SPD, the Green Party and the Liberal Party', 24 November 2021, at: https://bit.ly/3KH21g7
24 Bundersministerium der Verteidigung, 'Sondervermögen: Bundeswehr kann 35 F-35A für rund 8,3 Milliarden Euro kaufen', 12 December 2022, at: https://bit.ly/4akG43N
25 See, e.g., ICAN, 'Polls: Public Opinion in EU Host States Firmly Opposes Nuclear Weapons', 25 October 2020, at: https://bit.ly/3nVmEeN; Greenpeace, 'Nuclear Weapons in Europe: Survey Results in Six European Countries', 25 May 2008, at: https://bit.ly/4hdYogX
26 IPPNW, 'Meinungen zu Atomwaffen, forsa-Umfrage', 21 March 2016, at: https://bit.ly/4gP50
27 See, e.g., 'For the First Time, Majority in Favour of Keeping Nuclear Weapons', Tagesschau, 2 June 2022, at: https://bit.ly/3RJYqSq; see also Onderco, Smetana and Etienne, 'Hawks in the making? European public views on nuclear weapons post-Ukraine'.
28 Ibid.
29 Italian Parliament, High Chamber, 'Mozione 1-01699', [Motion 1-0169], at: https://bit.ly/3IAmXDH
30 Italian Chamber of Deputies, 'Resolution No. 7-00766 Boldrini: On Italy's Commitment to Nuclear Disarmament', 18 May 2022, at: https://bit.ly/3RHVO7r; Rete Pace Disarmo, 'Nuclear Weapons, House Foreign Affairs Committee Passes Resolution for Global Disarmament', 18 May 2022, at: https://bit.ly/3RIrxpa; Rete Pace Disarmo, 'With the Resolution passed in the Parliament, Italy has the opportunity to take concrete steps towards nuclear disarmament', July 13, 2023, at: https://bit.ly/45mNvEY
31 See, e.g., ICAN [@nuclearban], 'It's #SupportingSunday! A massive shoutout today to our Italian partner @senzatomica! Through the #ItaliaRipensaci campaign which they coordinate with @RetePaceDisarmo they have been raising awareness on the urgency to eliminate nuclear weapons all across Italy. (1/2)', 20 June 2021, at: https://bit.ly/3AIsipD
32 ICAN, '56 former leaders and ministers of US allies urge states to join the nuclear weapon ban treaty', 21 September 2020, at: https://bit.ly/334uV8U

By adopting national implementation measures a state party to a treaty makes its international obligations part of the law of the land. This does not guarantee a government's full compliance with the treaty, but domestic legislation and administrative directives can make an important contribution towards this goal. (Illustration photo by Christian Horz, Alamy Stock Photo/NTB

THE OBLIGATION TO

ADOPT NATIONAL IMPLEMENTATION MEASURES

No state party is known to have adopted new national implementing measures in its domestic law in 2024 to give effect to the core prohibitions of the Treaty on the Prohibition of Nuclear Weapons (TPNW). Only states parties Ireland and Niue have thus far adopted national legislation specific to the TPNW, while some states parties are in the process of developing such a law. Most other states parties, however, had in place existing legislation that addresses at least some of the obligations under the TPNW before adhering to the Treaty.

While national laws prohibiting nuclear weapons-related activities are present in many states parties to the TPNW, only two so far (Ireland and Niue – see below) have laws explicitly covering all the prohibitions in Article 1 of the treaty, applies these to all natural and legal persons under their jurisdiction, and defines the penal sanctions for violating these prohibitions.

Ireland and Niue have adopted national legislation specifically to implement the TPNW. Ireland adopted its Prohibition of Nuclear Weapons Act in 2019.[1] The list of offences in Section 2 of the Act reflects Article 1(1) of the TPNW and an offence may be committed by both an individual and a company.[2]

Niue adopted its Prohibition of Nuclear Weapons Act in 2021. The Act is explicitly aimed at giving effect to the TPNW. The law defines 'nuclear explosive device' as an explosive device 'whose harmful effects result primarily from uncontrolled nuclear chain reactions' and a nuclear weapon is a weaponised nuclear explosive device.[3] The prohibitions in Article 1 of the TPNW are effectively implemented in Section 6 of the Law, including the prohibitions on assistance or encouragement. Assistance is defined as aiding or abetting prohibited conduct, while encouraging pertains to urging, demanding, or inciting prohibited conduct where the person has influence over whether that conduct will actually occur.[4]

In the case of Viet Nam, an executive decree addressing all weapons of mass destruction (WMD) including nuclear weapons was adopted in 2019.[5] Under the decree, the State 'shall facilitate the development of initiatives to prevent the research, development, production, storage and use of weapons of mass destruction and strictly punish all acts of proliferation and financing of proliferation of weapons of mass destruction'.[6] The Ministry of National Defense is the National Focal Point for the prevention and suppression of the proliferation of WMD.[7]

Many states parties, especially those whose domestic legal order is monist in nature, have noted that ratified treaties become part of the law of the land. Others note that their existing criminal law effectively covers the prohibitions in Article 1 of the TPNW.

ARTICLE 5 – INTERPRETATION

- Article 5 of the TPNW obligates every state party to take 'the necessary measures' to implement its obligations under the Treaty.
- Paragraph 2 of Article 5 stipulates that the duty to implement the Treaty nationally includes the taking of 'all appropriate legal, administrative and other measures, including the imposition of penal sanctions, to prevent and suppress' any prohibited activity. It concerns any such prohibited activity whether it is undertaken by natural or legal persons under its jurisdiction or control or on territory under its jurisdiction or control.
- Appropriate criminal legislation should cover at the least all of the core prohibitions set forth in Article 1 of the Treaty.
- The International Committee of the Red Cross (ICRC) has developed and published a model law for common-law states which can serve as a valuable basis for states parties to the TPNW to draft and enact such legislation (at: http://bit.ly/3faEDXV).
- The CTBT and the CWC also require national implementation measures, but there is no such obligation in the NPT or the NWFZ treaties.

1 The Act, which was signed into law by the Irish president in December 2019, is entitled an 'Act to give effect to the Treaty on the Prohibition of Nuclear Weapons done at New York on 7 July 2017 and for those purposes to provide for offences relating to acts prohibited by that Treaty; and to provide for related matters'. The Act criminalises all the prohibitions in Article 1 of the TPNW, apart from testing, which was already outlawed under the Nuclear Test Ban Act 2008. See: https://bit.ly/40msxEf.
2 Section 6(1) of Ireland's Prohibition of Nuclear Weapons Act 2019 stipulates that where an offence under the Act is committed by a company ('body corporate') and where an officer of the company consented to or was guilty of wilful neglect, both the human and legal person is guilty of an offence.
3 Section 3(1), Niue Prohibition of Nuclear Weapons Act 2021, Act No. 353 of 2021.
4 Ibid.
5 Government of Viet Nam, Decree on Preventing and Countering Proliferation of Weapons of Mass Destruction, Decree No. 81/2019/ND-CP, Hanoi, 11 November 2019, unofficial translation available at: https://bit.ly/3CaxnMP
6 Art. 6(1), 2019 Decree on Preventing and Countering Proliferation of Weapons of Mass Destruction.
7 Art. 10(1), ibid.

Most non-nuclear-armed states are already today implementing most of the core prohibitions of the TPNW. As illustrated by Table K below, this is because they pursue nuclear-weapon-free defence postures and are states parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Comprehensive Nuclear-Test-Ban Treaty (CTBT), and the nuclear-weapon-free zone (NWFZ) treaties,[8] and because they have brought into force Comprehensive Safeguards Agreements (CSAs) and Additional Protocols (APs) with the International Atomic Energy Agency (IAEA). Typically, therefore, they already have in place appropriate national measures, including legislation that addresses most or at least some of the core obligations under the TPNW. There may, however, be gaps in a state's existing legislation, including incomplete prohibitions on various nuclear weapons-related activities (e.g. testing or assisting a prohibited activity) and lack of penal sanctions for legal persons or individuals under their jurisdiction.

Each state party is encouraged to develop detailed legislation either specific to the TPNW or which includes its prohibitions in a broader law. In particular, new national legislation should be adopted by each state party to the TPNW that does not yet have in place laws to criminalise all of the conducted prohibited by the Treaty and, where necessary, to implement its positive obligations.

Crucially, all states parties to the TPNW have to establish whether their existing national laws would make it illegal for a national or any other person under their jurisdiction or control to develop, test, produce, possess, control, transfer, or use nuclear weapons, or to assist any other person or entity to do so, and whether they could prosecute them. If the answer is a clear yes, they have the required national legislation. In most states, engaging in many of the activities prohibited by the TPNW would ordinarily be a crime even if not specifically outlawed, because the handling of dangerous substances (which would encompass nuclear material) is prohibited.[9]

Examples of existing legislation

The 1987 New Zealand Nuclear Free Zone, Disarmament, and Arms Control Act prohibits the manufacture, acquisition, possession, or taking control over any nuclear explosive device as well as the transport on land or inland waters or internal waters and deployment of any nuclear explosive device in the New Zealand Nuclear Free Zone.[10] New Zealand's 1999 Nuclear Test Ban Act prohibits any nuclear detonation, including for testing, consonant with the CTBT. The penalty for an offence is up to ten years' imprisonment.[11]

Austria's 1999 Federal Act for a Non-Nuclear Austria stipulates that: 'Nuclear weapons must not be manufactured, stored, transported, tested, or used in Austria. Facilities for stationing nuclear weapons must not be set up.'[12] Its criminal code (amended most recently in 2020) sanctions the manufacture, processing, development, importation into, export from, or transit through national territory, acquisition, possession, transfer, or procurement to another person of radiological or nuclear weapons. The penalty for these offences is one to ten years' imprisonment.[13] The law does not, however, criminalise assisting a prohibited activity in accordance with Article 1(1)(e) of the TPNW.

Table K: Nuclear weapons-related prohibitions, across treaties

8 Treaty of Tlatelolco (1967 Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean); Treaty of Rarotonga (1985 South Pacific Nuclear Free Zone Treaty); Treaty of Bangkok (1995 Treaty on the Southeast Asia Nuclear Weapon-Free Zone); Treaty of Pelindaba (1996 African Nuclear-Weapon-Free Zone Treaty); and Treaty of Semipalatinsk (2006 Treaty on a Nuclear-Weapon-Free Zone in Central Asia).

9 Many steps in the development, testing and manufacture of nuclear weapons can be undertaken without the direct handling of radioactive materials, and most forms of assistance would not necessarily involve their handling. As a consequence, many of the existing laws which were intended to keep nuclear (and other dangerous) materials out of the hands of terrorists fall short of the obligations set out in Article 5 of the TPNW.

10 Sections 4–6, 1987 New Zealand Nuclear Free Zone, Disarmament, and Arms Control Act.

11 S. 5, Nuclear Test Ban Act of 1999, at: https://bit.ly/3Ce6vvc

12 S. 1, Federal Constitutional Act for a Nonnuclear Austria, 1999.

13 S. 177a(1), Criminal Code of 1974 (as amended in 2020), text available at: https://bit.ly/40BsLZm

Mongolia adopted a Law on its nuclear-weapon-free status in 2000.[14] Article 4 of the Law prohibits any natural or legal person or any foreign state from involvement in the development, manufacture, acquisition, possession, or control over nuclear weapons, their stationing or transportation, or their testing or use anywhere on Mongolian territory.

A number of other states parties and signatories to the TPNW have criminal provisions in their domestic laws on terrorism that implement some of the prohibitions in the Treaty. TPNW signatory The Bahamas, for instance, incorporated the following provisions in its 2018 Anti-Terrorism Act:

'A person commits an offence who
(a) knowingly causes or attempts to cause a nuclear weapons explosion;
(b) develops or produces or participates in the development or production of a nuclear weapon;
(c) has a nuclear weapon in his possession;
(d) participates in the transfer of a nuclear weapon; or
(e) engages in military preparations or in preparation of a military nature intending to use or threaten to use a nuclear weapon."[15]

These offences occur wherever in the world they are committed, except if 'done in the course of an armed conflict in the defence of The Bahamas or for the purpose of preserving law and order in The Bahamas'. A similar law exists in state party Grenada from 2012.[16] Indonesia, which ratified the TPNW in September 2024, also contains provisions on nuclear material in its terrorism legislation. Where a person is engaged in an unlawful importation of nuclear material there is no need to prove an intent to engage in terrorism.[17]

National law under development

In Mexico, existing provisions of the criminal law largely address the prohibitions established in the TPNW, but the government said in 2022 that it was elaborating a comprehensive 'Non-proliferation Law', which will include complementary provisions on the implementation of the TPNW.[18] As of the end of 2024, however, the law had not been adopted.

Saint Kitts and Nevis informed the Nuclear Weapons Ban Monitor in 2021 that it intends to adopt specific implementing legislation on the TPNW.[19] Currently, many of the Treaty's prohibitions are effectively covered by the nation's 2002 Anti-Terrorism Act.[20] But the new legislation will also cover the TPNW's positive obligations, which are not addressed by existing laws in force.[21] No such law had been adopted as of the end of 2024.

The Gambia has also stated that it intends to take measures to give effect to the TPNW at domestic level. The Gambia already has 'a self-imposed moratorium on the development, production, use, transfer of nuclear material (e.g. uranium) and provision of assistance to the development, production, transfer or use of nuclear weapons or their key components'.[22]

Administrative measures

Beyond the adoption of national legislation, other measures, including of an administrative nature, need to be taken to implement the TPNW. Clear instructions should for instance be given to a state party's diplomats to promote adherence to the Treaty among other states. Preparation may also be needed within government for how to respond to requests for international cooperation and assistance from other states parties. In particular, clear instructions should be given to the administrators of the national health system to ensure the provision of assistance to any victims of nuclear-weapons use or testing who are resident in each state party. For some states, there may also be a need for national measures to enable environmental remediation of affected land.

Algeria, which had signed but not yet ratified the TPNW at the time of writing, issued a prime ministerial decree in May 2021 that created and mandated a National Agency for the rehabilitation of the former French nuclear test sites in the south of Algeria. The Agency is empowered to contract and manage rehabilitation works and to seek national and international assistance for these operations.[23]

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14 Law of Mongolia on its nuclear-weapon-free status, adopted on 3 February 2000. Text available at: https://bit.ly/42jLB8Q
15 S. 8(1), Bahamas 2018 Anti-Terrorism Act. The Act was amended in 2019 to extend the prohibition on use to use 'or proliferation'. (S. 5, 2019 Anti-Terrorism (Amendment) Act.) Unusually, the Act defines a nuclear weapon as a weapon that contains nuclear material as defined in Article 1(a) of the 1979 Convention on the Physical Protection of Nuclear Material. Therein, nuclear material 'means plutonium except that with isotopic concentration exceeding 60% in plutonium-238; uranium-233; uranium enriched in the isotope 235 or 233; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue; any material containing one or more of the foregoing'. This definition would include a radiological dispersion device as well as a nuclear weapon.
16 11 S. 6(1), Grenada 2012 Terrorism Act. The Act further stipulates that 'a person participates in the development or production of a nuclear weapon if he does any act which (a) facilitates the development by another of the capability to produce or use a nuclear weapon; or (b) facilitates the making by another of a nuclear weapon knowing or having reason to believe that his act has or will have that effect.' S. 6(2), 2012 Terrorism Act.
17 Art. 10(A)(2), Law No. 5 of 2018 on Amendment to Law No. 15 of 2003 on Stipulation of Government Regulation in Lieu of Law No. 1 of 2002 on Eradication of Criminal Acts of Terrorism to become a Law.
18 Email to Grethe Lauglo Østern from María Antonieta Jáquez Huacuja, Coordinator for disarmament, non-proliferation and arms control, Mexican Ministry of Foreign Affairs, 18 February 2022.
19 Attachment to email to the Nuclear Weapons Ban Monitor from Michael Penny, Senior Foreign Service Officer, Security and Legal Matters, Ministry of Foreign Affairs and Aviation of Saint Kitts and Nevis, Basseterre, 13 November 2021, para. 2.
20 Saint Christopher and Nevis 2002 Anti-Terrorism Act (Act No. 21 of 2002).
21 Attachment to email to the Ban Monitor from Michael Penny, Ministry of Foreign Affairs and Aviation of Saint Kitts and Nevis, 13 November 2021, para. 8.
22 Response to Nuclear Weapons Ban Monitor Questionnaire by The Gambia, 1 December 2021, paras. 1 and 2.
23 Decree No. 21-243 of 31 May 2021 on the creation, organisation, and functioning of the National Agency for the Rehabilitation of the Former French Nuclear Test Sites in the South of Algeria.

Angelo Tehuira-Hioe, 64, holds a photo of a mushroom cloud from a nuclear bomb test in Mururoa near his home in Hao, French Polynesia, on 30 April 2024. Tehuira-Hioe worked in Mururoa during nuclear testing and has had a neuroendocrine tumor. (Photo by Adam Ferguson/The New York Times/NTB)

THE OBLIGATION TO

ASSIST VICTIMS AND REMEDIATE AFFECTED TERRITORY

Although concrete progress has been slow to occur, states parties and civil society again met frequently in 2024 to advance implementation of the obligations in Article 6 of the Treaty on the prohibition of nuclear weapons' (TPNW) obligations to provide assistance to individuals affected by nuclear-weapons use and testing and to remediate contaminated environments. The informal working group on victim assistance, environmental remediation, and international cooperation and assistance convened five times in 2024.

From 1945 to 2017, more than 2,000 nuclear weapons were used or tested on the territories of what is today 16 states, leaving a devastating and lasting legacy. The TPNW is the first international legal instrument that seeks to address the harm caused to people and places by decades of nuclear weapons use and testing.

Decisions at TPNW 2MSP

At the TPNW's Second Meeting of States Parties in November–December 2023 (2MSP), states parties reaffirmed their support for addressing the harms of nuclear weapons use and testing.[1] They also decided to extend the informal working group on victim assistance, environmental remediation, and international cooperation and assistance created at the First Meeting of States Parties in 2022 (1MSP) into the next intersessional period through to the Third Meeting of States Parties during the week of 3 March 2025 (3MSP). The working group is co-chaired by two TPNW states parties where nuclear weapons were tested: Kazakhstan and Kiribati.

The 2MSP also adopted, on a provisional basis and for voluntary use by the states parties, a reporting format and reporting guidelines on victim assistance, environmental remediation, and international cooperation and assistance. It was recommended that the states parties continue to review the reporting format and guidelines with a view to further improve them. Another decision concerned the creation of an international trust fund for victim assistance and environmental remediation. (See page 107)

Informal working group consultations in 2024

The informal working group on Articles 6 and 7 convened on 21 February, 25 March, 24 April, 30 May, and 26 September. At the last of these meetings, the Co-Chairs of the working group convened a special event focused on perspectives from communities from the Pacific regarding the prospects for an international trust fund. The representatives from the region spoke about ongoing harm from nuclear detonations, the ongoing challenges for their own families and communities, and the lack of adequate recognition and assistance.

Specific discussions concerned the need to address health problems, including mental health; barriers to assistance, as well as logistical challenges relating to travel and language; needs for research on the genetic effects of irradiation; needs for research on the safety of food and water supply; and how traditional practices can be incorporated into solutions.[2]

Adressing the nuclear legacy in other forums

UN General Assembly Resolution 78/240 requested the UN Secretary-General to produce a report of Member States' views and proposals regarding victim assistance and environmental assessment and remediation.[3] This report was submitted in July 2024, annexing information provided by 15 UN Member States, including both parties and non-parties to the TPNW: Austria, Burkina Faso, Canada, France, Iran, Japan, Kazakhstan, Kiribati, the Marshall Islands, Mexico, New Zealand, Portugal, Switzerland, the United Kingdom, and the United States.[4] The Secretary-General noted that the most recent update of the UN's 'comprehensive study on nuclear weapons, including the effects of nuclear weapons and consequences of nuclear war', which was carried out under a mandate from the General Assembly, had been produced in 1990.[5] He said that states 'should consider, in the light of recent developments and given the strong interest in the subject, the potential benefits of a further update to the comprehensive study'.[6]

Kazakhstan reported in 2024 that a total of more than 1.1 million citizens had received 'one-time cash compensation'.[7] Persons with disabilities associated with radiation exposure during nuclear tests and their consequences are entitled

1 Revised draft declaration of the 2MSP: `Our commitment to upholding the prohibition of nuclear weapons and averting their catastrophic consequences' TPNW doc. TPNW/MSP/2023/CRP.4/Rev.1, at: https://bit.ly/3VFH2St
2 ICAN, 'Article 6 & 7 Informal Working Group Meetings', accessed 28 November 2024, at: https://bit.ly/4eMm8Hr
3 UN General Assembly Resolution 78/240, adopted on 23 December 2023 by 161 votes to 4 with 6 abstentions, operative para. 4.
4 'Addressing the legacy of nuclear weapons: providing victim assistance and environmental remediation to Member States affected by the use or testing of nuclear weapons', Report of the Secretary-General, UN doc. A/79/91, 23 July 2024, at: https://bit.ly/3Phvq44
5 UN doc. A/45/373.
6 'Addressing the legacy of nuclear weapons: providing victim assistance and environmental remediation to Member States affected by the use or testing of nuclear weapons', Report of the Secretary-General, UN doc. A/79/91, para. 30.
7 Report of Kazakhstan pursuant to operative paragraph 4 of UN General Assembly Resolution 78/240, 2024, para. 43.

to monthly disability allowances. Recipients are divided into three groups (severe disability, less severe disability, and moderate disability) and entitled to monthly payments of differing amounts. The value of the payments is linked to minimum living wage and reviewed annually. Family members of those who died as a result of radiation-related diseases or consequences of nuclear tests are also entitled to allowances.[8]

In early October 2024, the UN Human Rights Council discussed a report that the Office of the UN High Commissioner for Human Rights (OHCHR) had published a few days earlier – 'Addressing the challenges and barriers to the full realization and enjoyment of the human rights of the people of the Marshall Islands, stemming from the State's nuclear legacy'. The OHCHR report outlines the human rights impacts of nuclear weapons testing in the Islands. It recommended a transitional justice approach that, among other measures, would seek to provide 'adequate compensation for economically assessable damage, moral damages and loss of earnings, property and economic opportunities'.[9]

ARTICLE 6 – INTERPRETATION

- To address the ongoing suffering inflicted by the use and testing of nuclear weapons, Article 6(1) of the TPNW obligates each state party to provide 'adequate' assistance to individuals under its jurisdiction who are affected by the use or testing of nuclear weapons. Article 6(2) obligates states parties to take 'necessary and appropriate measures' towards the remediation of any areas in territory under their jurisdiction or control that have been contaminated as a result of activities related to the testing or use of nuclear weapons or other nuclear explosive devices.
- Article 6 should be read in tandem with Article 7 which requires all states parties to cooperate on implementation of the Treaty, and all states parties in a position to do so to 'provide technical, material and financial assistance' to affected states parties, which will help them fulfil their victim assistance and environmental remediation obligations.

ARTICLE 6(1) – VICTIM ASSISTANCE

- It is not required that the harm be caused by the state under whose jurisdiction they fall or that it occurred within that territory.
- Assistance includes, but is not limited to, medical care, rehabilitation, and psychological support, as well as support for social and economic inclusion.
- Assistance under Article 6(1) must be provided in accordance with applicable international human rights and humanitarian law. The paragraph requires that assistance in all cases must be age- and gender-sensitive and provided to all on the basis of need 'without discrimination'. The duty of non-discrimination ensures that states parties do not adversely distinguish among recipients based on the basis of sex, race, religion, sexual orientation, disability, political opinion, or other status identified in international human rights law. (See: Art. 2(1), International Covenant on Civil and Political Rights, and Art. 5(2), Convention on the Rights of Persons with Disabilities, as well as the disarmament law precedent in Art. 5(2)(e), Convention on Cluster Munitions.)
- Because addressing the human impacts of nuclear weapons is a complex and long-term humanitarian task, the TPNW facilitates the process by creating a framework of shared responsibility for victim assistance (as well as environmental remediation, discussed in the next section). The framework enables those who are willing to start addressing these issues to act together now. Affected states parties bear the primary responsibility for implementation as this protects their sovereignty and follows the precedent of international human rights law and humanitarian disarmament law. But other states parties in a position to do so are required to provide international cooperation and assistance to help affected states parties meet their victim assistance (and environmental remediation) obligations.
- To make victim assistance more manageable, Article 6(1) can also be understood to allow affected states parties to realise some of their obligations, particularly those related to economic, social, and cultural rights, progressively. International human rights law requires a state to take steps to achieve those rights 'to the maximum of its available resources', while recognising that full realisation may be a gradual process. (See: Art. 2(1), International Covenant on Economic, Social and Cultural Rights.)

ARTICLE 6(2) - ENVIRONMENTAL REMEDIATION

- Given that nuclear fallout causes significant levels of contamination that spread across time and space, the TPNW recognises that environmental remediation is a long-term commitment. It is typically difficult, and often impossible, to return areas affected by nuclear weapons to their pre-detonation condition. Accordingly, Article 6(2) stipulates that affected states parties must take 'necessary and appropriate measures towards the environmental remediation of [contaminated] areas'. Although they may never achieve complete remediation, they must work in good faith towards that goal.
- Certain interim activities, such as risk education, marking of contaminated areas, and national planning, can be accomplished in the near term. An essential step in each case is for a state party to conduct an environmental remediation needs assessment.

ARTICLE 6(3)

- Article 6(3) makes clear that the TPNW's victim assistance and environmental remediation obligations do not preclude affected states parties or individuals from seeking redress or assistance through other means, such as judicial measures or bilateral treaties with states not party.

8 Ibid., paras. 46 and 47.
9 'Addressing the challenges and barriers to the full realization and enjoyment of the human rights of the people of the Marshall Islands, stemming from the State's nuclear legacy', Report, OHCHR, UN doc. A/HRC/57/77, 24 September 2024, para. 55.

On 10 October 2024, the Human Rights Council adopted Resolution 57/26: 'Technical assistance and capacity-building to address the human rights implications of the nuclear legacy in the Marshall Islands' without a vote. The resolution urged 'States, all relevant United Nations agencies, as one United Nations, and other stakeholders to support the Government of the Marshall Islands in its efforts to improve the health of its people and environment'. It asked OHCHR to provide 'technical assistance and capacity-building to the National Nuclear Commission of the Marshall Islands in advancing its national strategy for nuclear justice'.[10]

Environmental remediation

In both Kazakhstan and the United States, work was ongoing in 2024 towards environmental remediation. No new environmental remediation programmes began in the course of the year.

In May, for instance, the UK government told UN Member States simply that it 'considers its remediation efforts on Kiritimati to have been completed'.[11]

The OHCHR report on the situation in the Marshall Islands issued in September urged the United States to: 'Assist, upon the invitation of the Government of the Marshall Islands, in improving local capacity to respect, protect and fulfil all human rights affected by the nuclear legacy and implementing the nuclear justice strategy, including through monitoring, repairing and remediating all contaminated sites in the Marshall Islands.'[12]

The call for a symposium on victim assistance and environmental remediation

In May 2024, Kiribati told UN Member States that a common theme across all interviews conducted with test survivors is 'the absence of adequate assistance or compensation from the States responsible for the nuclear tests. Despite the profound health impacts and environmental degradation, none of the interviewees reported receiving any form of international support from these States. This lack of assistance exacerbates their suffering and leaves them struggling to manage the severe health issues caused by the nuclear fallout'.[13] As a result of the legacy of nuclear tests, Kiribati called on the international community to convene a symposium on victim assistance and environmental remediation in New York. 'This symposium could provide a forum, where survivors and affected States can share their testimonies on the humanitarian and environmental impacts of nuclear weapons and their requests for the international community to provide critical support.'[14]

10 Human Rights Council Resolution 57/26; adopted without a vote on 10 October 2024, at: https://bit.ly/3Z1TplY operative paras. 2 and 3.
11 Document submitted by the United Kingdom on the Secretary General's Report on A/RES/78/240, 31 May 2024, at: https://bit.ly/3Xaen7F 1.
12 'Addressing the challenges and barriers to the full realization and enjoyment of the human rights of the people of the Marshall Islands, stemming from the State's nuclear legacy', Report, OHCHR, para. 74(b)(iv).
13 The Republic of Kiribati's Submission in Accordance with UN General Assembly Resolution 78/240 entitled Addressing the Legacy of Nuclear Weapons, 31 May 2024, at: https://bit.ly/3XpkplY 5.
14 Ibid., 6.

A photograph, taken from a drone on 16 September 2022, shows the 'Atomic Lake' at the former Semipalatinsk nuclear test site in Kazakhstan. Semipalatinsk was once the Soviet Union's primary test area for nuclear weapons. (Photo by Kyodo/NTB)

THE OBLIGATION TO

COOPERATE WITH AND ASSIST OTHER STATES PARTIES

At the Second Meeting of States Parties to the TPNW (2MSP) in December 2023, states parties decided to submit a report to the Third Meeting of States Parties (3MSP) in March 2025 'with recommendations related to the feasibility of, and possible guidelines for, establishing an international trust fund for victim assistance and environmental remediation, with the aim of examining the establishment of such a trust fund at the third Meeting of States Parties as a priority.' As noted in the preceding section, in 2024 the informal working group on Articles 6 and 7 convened on 21 February, 25 March, 24 April, 30 May, and 26 September to discuss, among other issues, cooperation and assistance.

At the meeting of 30 May, the Co-Chairs brought together three representatives of Hibakusha and second-generation survivors of the atomic bombings of Hiroshima and Nagasaki to discuss the proposed international trust fund. The survivors offered recommendations to guide states parties towards the establishment of a fund that would have a survivor-centred approach to victim assistance and environmental remediation. These recommendations included the importance of assistance to meet the lifelong harm that nuclear weapons cause and to be inclusive of all types of harm: medical, psychological, social, economic, intergenerational, and others, and to not limit assistance by geography or time in ways that deny some survivors access.[1] On 26 September, the Co-Chairs convened a further special event focused on perspectives on the fund from communities from the Pacific.[2]

The UN Secretary-General supported the establishment of a trust fund on the basis that such a fund could strengthen ongoing efforts to provide financial and technical support to states and populations in need of assistance and 'provide a framework to systematize requests related to existing needs and available financial and technical support'. Such a fund, he stated, 'would be consistent with practice in other fields, such as those related to human rights and the environment.' He called for the United Nations and its forums to 'remain central to the discussions on victim assistance and environmental remediation, including on the establishment of future mechanisms for international cooperation and assistance'.[3]

The UN General Assembly

In the UN General Assembly, the historic resolution 'Addressing the legacy of nuclear weapons: providing victim assistance and environmental remediation to Member States affected by the use or testing of nuclear weapons' was tabled for the second year in a row and once again under the leadership of Kiribati and Kazakhstan.[4] The draft was approved by the General Assembly by 174 votes to 4 (North Korea, France, the Russian Federation, and the

ARTICLE 7 – INTERPRETATION

- The obligations in the TPNW's Article 6 to assist victims and remediate the environment should be read in conjunction with Article 7 of the Treaty.
- Article 7(1) obligates each state party to the TPNW to cooperate with other states parties to 'facilitate the implementation' of the Treaty, and Article 7(2) grants all states parties 'the right to seek and receive assistance, where feasible'. In addition, under paragraph 3 of Article 7 each state party 'in a position to do so' is required to provide technical, material, and financial assistance to states parties affected by nuclear-weapon use or testing.
- Article 7(6) of the TPNW provides that any state party that has used or tested nuclear weapons or any other nuclear explosive devices 'shall have a responsibility to provide adequate assistance' to affected states parties for victim assistance and environmental remediation. This responsibility is without prejudice to any other duty or obligation the state may have under international law. This provision was especially important to affected states during the drafting of the Treaty; they argued that user and testing states should be both legally and morally responsible for their actions.
- International and non-governmental organisations also have a role to play. As referenced in Article 7(5) of the TPNW, assistance may be provided through the United Nations, the International Red Cross and Red Crescent Movement, civil society groups, or other organisations.
- While most of Article 7 is directed at supporting victim assistance and environmental remediation, assistance can also be provided in relation to other obligations of the Treaty, such as the development of national implementation legislation or destruction of nuclear-weapons stockpiles.

1 ICAN, 'Article 6 & 7 Informal Working Group Meetings', accessed 28 November 2024, at: https://bit.ly/4eMm8Hr
2 Ibid.
3 'Addressing the legacy of nuclear weapons: providing victim assistance and environmental remediation to Member States affected by the use or testing of nuclear weapons', Report of the Secretary-General, UN doc. A/79/91, paras. 31–32.
4 UN doc. A/C.1/79/L.74.

United Kingdom), with 6 abstentions (China, India, Israel, Pakistan, Poland, and the United States).[5] By the terms of the resolution, the Assembly urges Member States that have used or tested nuclear weapons or any other nuclear explosive devices, to share, as appropriate, technical and scientific information regarding the humanitarian and environmental consequences of such use and testing with affected Member States. It also calls on Member States to contribute technical and financial assistance. Moreover, the resolution calls for the UN Secretary-General to convene an international meeting on victim assistance and environmental remediation in 2026.[6]

In explaining its opposition to the draft resolution, France declared that the draft did not sufficiently recognise the efforts already undertaken. The resolution also refers to the legal regime created by the TPNW, which France does not recognise and which it considers to be incompatible with the NPT. France declared that it was 'not unaware' of the consequences of nuclear tests, saying it would 'continue to fully invest in assistance to victims'.[7]

Other states not party to the TPNW were positive in their support for victim assistance and environmental remediation. Australia, for instance, submitted a document in relation to UN General Assembly Resolution 78/240 in which it expected that UN Member States 'will continue to discuss victim assistance and environmental remediation within the context of other regional and international forums'. Australia also acknowledged 'the significant work' on these issues that has taken place 'bilaterally with affected states'.[8]

As a nation that had experienced the impact of nuclear weapons testing, Australia shared concerns, 'especially among Pacific Island Forum Members', over the legacy of nuclear weapons testing. It pledged to share its technical and scientific expertise in victim assistance and environmental remediation with other affected countries. Australia noted that it has the ability 'to conduct radiological analyses, using both field instrumentation for immediate feedback and detailed laboratory evaluations, to enhance the outcomes during assessments, remediation, and post-closure assurance, especially for long-lived radionuclide contamination'.[9]

A side event during the First Committee meetings took place in cooperation with the International Committee of the Red Cross (ICRC), Kazakhstan, Kiribati, Nuclear Age Peace Foundation, and Reverse the Trend. Entitled 'Advancing nuclear justice through victim assistance and environmental remediation', the event featured a representative of the Office of the UN High Commissioner on Human Rights who emphasised the urgency and necessity of addressing the harms inflicted in the past. Discussions on this topic were continuing in the lead up to the 3MSP in March 2025.[10]

Discussions in other forums

The second Preparatory Committee of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which was held over two weeks in July–August 2024, did not result in the text of a consensus outcome document. At the Preparatory Committee, the delegations of Kiribati and Kazakhstan along with the Marshall Islands submitted a joint working paper that proposed that nuclear justice discussions should also lead to the development of recommendations on victim assistance and environmental remediation at the NPT Review Conference in 2026.[11]

In August, the Government of Kazakhstan invited representatives of the nuclear-weapon-free zones to Astana to meet to discuss collaboration among the zones.[12]

International support

While the developments described above are important, there is still little evidence of tangible international support for victim assistance or environmental remediation, whether by states parties or non-parties to the TPNW. International support enhances the ability of affected states to take meaningful ownership of their own situation and build capacity to address it. The Nuclear Weapons Ban Monitor encourages affected states parties to the TPNW to submit voluntary reports to 3MSP in 2025 to provide information on their needs and donor states to report on international assistance they provide in return.

Assistance can come in a variety of forms. For example, donor states parties can provide technical support in the form of medical, scientific, or environmental expertise or implementation experience from other frameworks; material support, such as health care or remediation equipment; or financial support to fund affected states' victim assistance and environmental remediation programmes. Assistance can also come in the form of the release of official information and documents regarding nuclear testing and fallout monitoring.

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5 Vote Name List, at: https://bit.ly/4guofBj
6 UN, 'As Conflicts Rage across Regions, Cooperation Vital for Enduring Peace, Disarmament, Non-Proliferation, First Committee Told as Session Closes', Press release, UN doc. GA/DIS/3759, 8 November 2024, at: https://bit.ly/3OwaCp4
7 Ibid.
8 Australia's Submission to the United Nations Secretary-General's Report on Addressing the Legacy of Nuclear Weapons: Providing Victim Assistance and Environmental Remediation to Member States Affected by the Use or Testing of Nuclear Weapons, July 2024, at: https://bit.ly/4e8jigc para. 2.
9 Ibid., paras. 4 and 5.
10 ICAN, '2024 UNGA First Committee: a tense month of deliberation', 7 November 2024, at: https://bit.ly/3Ov3fhO
11 'Addressing the legacy of nuclear weapons', Working paper submitted by Kazakhstan, Kiribati and the Marshall Islands, doc. NPT/CONF.2026/PC.II/WP.15, 3 June 2024, at: https://bit.ly/4g3YFCG
12 ICAN, Policy Newsletter #22, October 2024, at: https://bit.ly/3ZcUcXu

Other treaties

Significant evidence exists in other disarmament treaties of the effectiveness of an obligation to cooperate and assist. Comparable provisions in the Anti-Personnel Mine Ban Convention (APMBC) and the Convention on Cluster Munitions (CCM), for example, have generated extensive international assistance from both states parties and donors outside of the treaties to so-called mine action (clearance of landmines, cluster munition remnants and other explosive remnants of war, risk education, victim assistance, and capacity building.

Data recorded by the Landmine and Cluster Munition Monitor show that over the five year period 2019–2023, international support to mine action totalled US$3.3 billion, averaging some $653 million per year. Support from APMBC states parties accounted for almost half (49%) of all international funding provided in 2019–2023, with a combined contribution of $1.6 billion. The US, which is not party to either the APMBC or the CMC, contributed US$1.2 billion, representing 37% of all international support during the five-year period. Together with the EU ($396.3 million) and Germany ($316.8 million), these three donors contributed $1.9 billion, or more than half of total international support (58%). Two other donors—Japan and Norway—contributed more than $200 million each; while Canada, Denmark, the Netherlands, Switzerland, and the United Kingdom (UK) ranked among the top 10 mine action donors during the five-year period.[13]

While donor funding is used for national activities, implementation is often carried out by an array of partner institutions, NGOs, trust funds, and UN agencies.

13 International Campaign to Ban Landmines, 'Landmine Monitor 2024', at: https://bit.ly/3VVNEvv

Mackenzie Knight photographed as she took part in a rally in front of the United Nations during the Second Meeting of States Parties to the TPNW on 27 November-1 December 2023. (Photo by Erik McGregor/Sipa USA/Alamy Live News/NTB)

THE OBLIGATION TO

PROMOTE UNIVERSAL ADHERENCE TO THE TREATY

States parties and signatories to the Treaty on the Prohibition of Nuclear Weapons (TPNW) continued to pursue universalisation of the Treaty as a priority in 2024. They took a broad range of actions during the year to implement the obligation under Article 12 of the TPNW to encourage further states to sign, ratify, or accede to the Treaty, 'with the goal of universal adherence'. In particular, they issued a joint appeal to all states that have not yet joined the Treaty to do so without delay.

'We urge all states that have not yet done so to join the Treaty on the Prohibition of Nuclear Weapons without delay and without preconditions. We appeal to all states to engage cooperatively with the Treaty and work with us in support of our shared goal of a world free of nuclear weapons. We encourage all states to attend the Third Meeting of TPNW States Parties in March 2025.' So said the joint statement that was delivered on behalf of the TPNW's states parties and signatories at the 2024 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) Preparatory Committee meeting in Geneva. In October, they delivered the same message at First Committee of the 79th UN General Assembly.[1] Philemon Yang, the Assembly President, also called on all states to accede to the TPNW.[2]

At the General Assembly, 57 states parties, 11 signatories, and 8 non-signatories (Afghanistan, Eritrea, Eswatini, Gabon, Guinea, Senegal, Tunisia, and Turkmenistan) co-sponsored the annual resolution on the TPNW, which called upon 'all States that have not yet done so to sign, ratify, accept, approve or accede to the Treaty at the earliest possible date'. It also urged states 'in a position to do so to promote adherence to the Treaty and its norms and underlying rationale through bilateral, subregional, regional and multilateral contacts, outreach and other means'.[3] The resolution was adopted in December with the support of 127 states[4] – two-thirds of the UN membership.

Regional groupings also appealed for TPNW universalisation. In the First Committee, the African Group, which alone represents more than one in four of all UN membership, urged 'all members of the international community, especially nuclear-weapon States and those under the so-called "nuclear umbrella", to seize the opportunity to sign and ratify the Treaty at an early date'.[5] The Caribbean Community, with 14 UN member states, urged 'all States to engage constructively with this vital legal instrument'.[6]

Vienna Action Plan

In fulfilling their obligations under Article 12 of the TPNW in 2024, states parties were guided by the Vienna Action Plan of 2022, which listed 14 actions to advance universalisation, including diplomatic démarches and outreach visits to the capitals of non-parties and technical support for states to complete their ratification processes.

The informal working group on universalisation established at the First Meeting of States Parties in 2022 continued to play an important role in facilitating action on universalisation. Most notably, the group's co-chairs, South Africa and Uruguay, coordinated a joint TPNW signing and ratification ceremony in the margins of the high-level segment of the UN General Assembly in September 2024, at which three states deposited their instruments of ratification: Indonesia, Sierra Leone, and the Solomon Islands.[7] (The Solomon Islands had also signed the Treaty on this occasion.)

ARTICLE 12 – INTERPRETATION

- This provision obligates each state party to encourage states not party to sign, ratify, or accede to the TPNW, 'with the goal of universal adherence'.
- The manner and frequency of the actions to be taken are not set out in the provision and are therefore left to the discretion of the state party. That said, any state party that sought to discourage adherence to the TPNW by a state not party would be in violation of this obligation.

1 Statements by the TPNW states parties and signatories to the NPT Preparatory Committee, Geneva, 22 July 2024, and the First Committee of the UN General Assembly, New York, 18 October 2024, at: https://bit.ly/3VsW2CO; https://bit.ly/4f6Lmk0
2 UN Web TV, Philemon Yang (PGA) at First Committee, 3rd plenary meeting - General Assembly, 79th session, 8 October 2024, at: https://bit.ly/4j0rRge
3 General and complete disarmament. Report of the First Committee', A/78/408, http://bit.ly/3BTCOzA
4 UN General Assembly Resolution A/RES/79/38, at: https://bit.ly/4g00L6c; and https://bit.ly/4grF27E.
5 African Group statement during the thematic debate on nuclear weapons, New York, 18 October 2024, at: https://bit.ly/3D8nX4B
6 Caribbean Community statement during the general debate, New York, 9 October 2024, at: https://bit.ly/4imh27T
7 The ceremony was co-organised with the International Campaign to Abolish Nuclear Weapons (ICAN) and the International Committee of the Red Cross (ICRC). See 'Indonesia, Sierra Leone and Solomon Islands ratify Treaty on the Prohibition of Nuclear Weapons', ICAN website, 24 September 2024: https://bit.ly/4in0xsj. In addition to the actions taken at the high-level ceremony in September, Sao Tome and Príncipe deposited its instrument of ratification on 15 January 2024.

Speaking at the event, Ambassador Martin Vidal of Uruguay applauded the new states parties for making the 'big decision' to join the TPNW and reiterated his country's commitment to promoting adherence to the Treaty, in the hope of achieving a world without nuclear weapons.

African Conference

Another highlight in the field of universalisation in 2024 was the African Conference on the Universalisation and Implementation of the TPNW, held in Addis Ababa, Ethiopia, in September. Thirty-one African Union member states participated,[8] of which 22 had not yet ratified or acceded to the Treaty. The conference was organised jointly by South Africa, the International Campaign to Abolish Nuclear Weapons, and the International Committee of the Red Cross, with financial support from Austria.

In his opening remarks, Ambassador Xolisa Makaya of South Africa said: 'Today, this Treaty could not be more relevant given the dire state of the multilateral nuclear disarmament regime. The universalisation of the TPNW, its norms and fundamental tenets is therefore vital.'[9] Ambassador Bankole Adeoye, the African Union Commissioner for Political Affairs, Peace and Security, also addressed the conference: 'The African Union Commission remains committed to supporting [AU] member States in the universalisation of the TPNW.'[10]

Several other meetings were held in 2024 to highlight 'the value of the Treaty and the political, legal and practical importance of signature and ratification', in line with Action 3 of the Vienna Action Plan. For example, Kazakhstan hosted meetings in Geneva and its capital, Astana, to encourage other Central Asian states to join;[11] Thailand and New Zealand hosted a meeting in Geneva with states from across the Asia-Pacific region;[12] South Africa hosted meetings in Geneva and New York with African states;[13] and Djibouti's Permanent Mission to the UN in New York brought together members of the eight-nation Intergovernmental Authority on Development (IGAD) to discuss TPNW universalisation.

National statements

Many states parties and signatories seized other opportunities in 2024 to call for TPNW universalisation. They raised it, for example, in the context of the negotiations for the Pact for the Future; in their national statements at the UN Security Council ministerial meeting on nuclear disarmament and non-proliferation in March;[14] at the NPT Preparatory Committee session in Geneva in July; during the high-level event to commemorate the International Day for the Total Elimination of Nuclear Weapons in September; and in the First Committee of the General Assembly in October. (See the state profiles on www.banmonitor.org for details.)

Some states parties also continued to use the UN Human Rights Committee's Universal Periodic Review process to make formal recommendations to certain states to sign and ratify the TPNW.[15] Others, including Cuba and Indonesia, used social media to convey their commitment to the Treaty's universalisation at a high level of government.[16]

8 Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, the Congo, Djibouti, Eritrea, Ethiopia, the Gambia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Morocco, Mozambique, Namibia, Nigeria, Senegal, South Africa, Tanzania, Togo, Tunisia, Zambia, and Zimbabwe.
9 Opening remarks on 6 September 2024, at: https://bit.ly/4gowNcD
10 Statement on 6 September 2024, at: https://bit.ly/3VsRBI0
11 Meeting with Central Asian States, Geneva, 31 July 2024, at: https://bit.ly/41s8571
12 Meeting with Asia–Pacific States, Geneva, 23 July 2024, at: https://bit.ly/4gp7CXu
13 Meeting with African States, Geneva, 25 July 2024, at: https://bit.ly/3D0ypuH
14 See 'UN Security Council Members Respond to Inaction on Nuclear Disarmament with Support for TPNW', ICAN website, 20 March 2024, at: https://bit.ly/3ZrRtcN
15 The states parties that made recommendations in 2024 with respect to the TPNW included Costa Rica, Samoa, and Timor-Leste.
16 Post on 'X' by the Indonesian foreign minister, 25 September 2024, at: https://bit.ly/3ZImQBg; post on 'X' by the Cuban foreign minister, 22 January 2024, at: https://bit.ly/4ivrEkK

THE TEXT OF THE TPNW

Treaty on the Prohibition of Nuclear Weapons

The States Parties to this Treaty,

Determined to contribute to the realization of the purposes and principles of the Charter of the United Nations,

Deeply concerned about the catastrophic humanitarian consequences that would result from any use of nuclear weapons, and recognizing the consequent need to completely eliminate such weapons, which remains the only way to guarantee that nuclear weapons are never used again under any circumstances,

Mindful of the risks posed by the continued existence of nuclear weapons, including from any nuclear-weapon detonation by accident, miscalculation or design, and emphasizing that these risks concern the security of all humanity, and that all States share the responsibility to prevent any use of nuclear weapons,

Cognizant that the catastrophic consequences of nuclear weapons cannot be adequately addressed, transcend national borders, pose grave implications for human survival, the environment, socioeconomic development, the global economy, food security and the health of current and future generations, and have a disproportionate impact on women and girls, including as a result of ionizing radiation,

Acknowledging the ethical imperatives for nuclear disarmament and the urgency of achieving and maintaining a nuclear-weapon-free world, which is a global public good of the highest order, serving both national and collective security interests,

Mindful of the unacceptable suffering of and harm caused to the victims of the use of nuclear weapons (hibakusha), as well as of those affected by the testing of nuclear weapons,

Recognizing the disproportionate impact of nuclear-weapon activities on indigenous peoples,

Reaffirming the need for all States at all times to comply with applicable international law, including international humanitarian law and international human rights law,

Basing themselves on the principles and rules of international humanitarian law, in particular the principle that the right of parties to an armed conflict to choose methods or means of warfare is not unlimited, the rule of distinction, the prohibition against indiscriminate attacks, the rules on proportionality and precautions in attack, the prohibition on the use of weapons of a nature to cause superfluous injury or unnecessary suffering, and the rules for the protection of the natural environment,

Considering that any use of nuclear weapons would be contrary to the rules of international law applicable in armed conflict, in particular the principles and rules of international humanitarian law,

Reaffirming that any use of nuclear weapons would also be abhorrent to the principles of humanity and the dictates of public conscience,

Recalling that, in accordance with the Charter of the United Nations, States must refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the Purposes of the United Nations, and that the establishment and maintenance of international peace and security are to be promoted with the least diversion for armaments of the world's human and economic resources,

Recalling also the first resolution of the General Assembly of the United Nations, adopted on 24 January 1946, and subsequent resolutions which call for the elimination of nuclear weapons,

Concerned by the slow pace of nuclear disarmament, the continued reliance on nuclear weapons in military and security concepts, doctrines and policies, and the waste of economic and human resources on programmes for the production, maintenance and modernization of nuclear weapons,

Recognizing that a legally binding prohibition of nuclear weapons constitutes an important contribution towards the achievement and maintenance of a world free of nuclear weapons, including the irreversible, verifiable and transparent elimination of nuclear weapons, and determined to act towards that end,

Determined to act with a view to achieving effective progress towards general and complete disarmament under strict and effective international control,

Reaffirming that there exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control,

Reaffirming also that the full and effective implementation of the Treaty on the Non-Proliferation of Nuclear Weapons, which serves as the cornerstone of the nuclear disarmament and non-proliferation regime, has a vital role to play in promoting international peace and security,

Recognizing the vital importance of the Comprehensive Nuclear-Test-Ban Treaty and its verification regime as a core element of the nuclear disarmament and non-proliferation regime,

Reaffirming the conviction that the establishment of the internationally recognized nuclear-weapon-free zones on the basis of arrangements freely arrived at among the States of the region concerned enhances global and regional peace and security, strengthens the nuclear non-proliferation regime and contributes towards realizing the objective of nuclear disarmament,

Emphasizing that nothing in this Treaty shall be interpreted as affecting the inalienable right of its States Parties to develop research, production and use of nuclear energy for peaceful purposes without discrimination,

Recognizing that the equal, full and effective participation of both women and men is an essential factor for the promotion and attainment of sustainable peace and security, and committed to supporting and strengthening the effective participation of women in nuclear disarmament,

Recognizing also the importance of peace and disarmament education in all its aspects and of raising awareness of the risks and consequences of nuclear weapons for current and future generations, and committed to the dissemination of the principles and norms of this Treaty,

Stressing the role of public conscience in the furthering of the principles of humanity as evidenced by the call for the total elimination of nuclear weapons, and recognizing the efforts to that end undertaken by the United Nations, the International Red Cross and Red Crescent Movement, other international and regional organizations, non-governmental organizations, religious leaders, parliamentarians, academics and the hibakusha,

Have agreed as follows:

ARTICLE 1
PROHIBITIONS

1. Each State Party undertakes never under any circumstances to:
   (a) Develop, test, produce, manufacture, otherwise acquire, possess or stockpile nuclear weapons or other nuclear explosive devices;
   (b) Transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly or indirectly;
   (c) Receive the transfer of or control over nuclear weapons or other nuclear explosive devices directly or indirectly;
   (d) Use or threaten to use nuclear weapons or other nuclear explosive devices;
   (e) Assist, encourage or induce, in any way, anyone to engage in any activity prohibited to a State Party under this Treaty;
   (f) Seek or receive any assistance, in any way, from anyone to engage in any activity prohibited to a State Party under this Treaty;
   (g) Allow any stationing, installation or deployment of any nuclear weapons or other nuclear explosive devices in its territory or at any place under its jurisdiction or control.

ARTICLE 2
DECLARATIONS

1. Each State Party shall submit to the Secretary-General of the United Nations, not later than 30 days after this Treaty enters into force for that State Party, a declaration in which it shall:
   (a) Declare whether it owned, possessed or controlled nuclear weapons or nuclear explosive devices and eliminated its nuclear-weapon programme, including the elimination or irreversible conversion of all nuclear-weapons-related facilities, prior to the entry into force of this Treaty for that State Party;
   (b) Notwithstanding Article 1 (a), declare whether it owns, possesses or controls any nuclear weapons or other nuclear explosive devices;
   (c) Notwithstanding Article 1 (g), declare whether there are any nuclear weapons or other nuclear explosive devices in its territory or in any place under its jurisdiction or control that are owned, possessed or controlled by another State.
2. The Secretary-General of the United Nations shall transmit all such declarations received to the States Parties.

ARTICLE 3
SAFEGUARDS

1. Each State Party to which Article 4, paragraph 1 or 2, does not apply shall, at a minimum, maintain its International Atomic Energy Agency safeguards obligations in force at the time of entry into force of this Treaty, without prejudice to any additional relevant instruments that it may adopt in the future.
2. Each State Party to which Article 4, paragraph 1 or 2, does not apply that has not yet done so shall conclude with the International Atomic Energy Agency and bring into force a comprehensive safeguards agreement (INFCIRC/153 (Corrected)). Negotiation of such agreement shall commence within 180 days from the entry into force of this Treaty for that State Party. The agreement shall enter into force no later than 18 months from the entry into force of this Treaty for that State Party. Each State Party shall thereafter maintain such obligations, without prejudice to any additional relevant instruments that it may adopt in the future.

ARTICLE 4
TOWARDS THE TOTAL ELIMINATION OF NUCLEAR WEAPONS

1. Each State Party that after 7 July 2017 owned, possessed or controlled nuclear weapons or other nuclear explosive devices and eliminated its nuclear-weapon programme, including the elimination or irreversible conversion of all nuclear-weapons-related facilities, prior to the entry into force of this Treaty for it, shall cooperate with the competent international authority designated pursuant to paragraph 6 of this Article for the purpose of verifying the irreversible elimination of its nuclear-weapon programme. The competent international authority shall report to the States Parties. Such a State Party shall conclude a safeguards agreement with the International Atomic Energy Agency sufficient to provide credible assurance of the non-diversion of declared nuclear material from peaceful nuclear activities and of the absence of undeclared nuclear material or activities in that State Party as a whole. Negotiation of such agreement shall commence within 180 days from the entry into force of this Treaty for that State Party. The agreement shall enter into force no later than 18 months from the entry into force of this Treaty for that State Party. That State Party shall thereafter, at a minimum, maintain these safeguards obligations, without prejudice to any additional relevant instruments that it may adopt in the future.
2. Notwithstanding Article 1 (a), each State Party that owns, possesses or controls nuclear weapons or other nuclear explosive devices shall immediately remove them from operational status, and destroy them as soon as possible but not later than a deadline to be determined by the first meeting of States Parties, in accordance with a legally binding, time-bound plan for the verified and irreversible elimination of that State Party's nuclear-weapon programme, including the elimination or irreversible conversion of all nuclear-weapons-related facilities. The State Party, no later than 60 days after the entry into force of this Treaty for that State Party, shall submit this plan to the States Parties or to a competent international authority designated by the States Parties. The plan shall then be negotiated with the competent international authority, which shall submit it to the subsequent meeting of States Parties or review conference, whichever comes first, for approval in accordance with its rules of procedure.
3. A State Party to which paragraph 2 above applies shall conclude a safeguards agreement with the International Atomic Energy Agency sufficient to provide credible assurance of the non-diversion of declared nuclear material from peaceful nuclear activities and of the absence of undeclared nuclear material or activities in the State as a whole. Negotiation of such agreement shall commence no later than the date upon which implementation of the plan referred to in paragraph 2 is completed. The agreement shall enter into force no later than 18 months after the date of initiation of negotiations. That State Party shall thereafter, at a minimum, maintain these safeguards obligations, without prejudice to any additional relevant instruments that it may adopt in the future. Following the entry into force of the agreement referred to in this paragraph, the State Party shall submit to the Secretary-General of the United Nations a final declaration that it has fulfilled its obligations under this Article.
4. Notwithstanding Article 1 (b) and (g), each State Party that has any nuclear weapons or other nuclear explosive devices in its territory or in any place under its jurisdiction or control that are owned, possessed or controlled by another State shall ensure the prompt removal of such weapons, as soon as possible but not later than a deadline to be determined by the first meeting of States Parties. Upon the removal of such weapons or other explosive devices, that State Party shall submit to the Secretary-General of the United Nations a declaration that it has fulfilled its obligations under this Article.
5. Each State Party to which this Article applies shall submit a report to each meeting of States Parties and each review conference on the progress made towards the implementation of its obligations under this Article, until such time as they are fulfilled.
6. The States Parties shall designate a competent international authority or authorities to negotiate and verify the irreversible elimination of nuclear-weapons programmes, including the elimination or irreversible conversion of all nuclear-weapons-related facilities in accordance with paragraphs 1, 2 and 3 of this Article. In the event that such a designation has not been made prior to the entry into force of this Treaty for a State

Party to which paragraph 1 or 2 of this Article applies, the Secretary-General of the United Nations shall convene an extraordinary meeting of States Parties to take any decisions that may be required.

ARTICLE 5
NATIONAL IMPLEMENTATION

1. Each State Party shall adopt the necessary measures to implement its obligations under this Treaty.
2. Each State Party shall take all appropriate legal, administrative and other measures, including the imposition of penal sanctions, to prevent and suppress any activity prohibited to a State Party under this Treaty undertaken by persons or on territory under its jurisdiction or control.

ARTICLE 6
VICTIM ASSISTANCE AND ENVIRONMENTAL REMEDIATION

1. Each State Party shall, with respect to individuals under its jurisdiction who are affected by the use or testing of nuclear weapons, in accordance with applicable international humanitarian and human rights law, adequately provide age- and gender-sensitive assistance, without discrimination, including medical care, rehabilitation and psychological support, as well as provide for their social and economic inclusion.
2. Each State Party, with respect to areas under its jurisdiction or control contaminated as a result of activities related to the testing or use of nuclear weapons or other nuclear explosive devices, shall take necessary and appropriate measures towards the environmental remediation of areas so contaminated.
3. The obligations under paragraphs 1 and 2 above shall be without prejudice to the duties and obligations of any other States under international law or bilateral agreements.

ARTICLE 7
INTERNATIONAL COOPERATION AND ASSISTANCE

1. Each State Party shall cooperate with other States Parties to facilitate the implementation of this Treaty.
2. In fulfilling its obligations under this Treaty, each State Party shall have the right to seek and receive assistance, where feasible, from other States Parties.
3. Each State Party in a position to do so shall provide technical, material and financial assistance to States Parties affected by nuclear-weapons use or testing, to further the implementation of this Treaty.
4. Each State Party in a position to do so shall provide assistance for the victims of the use or testing of nuclear weapons or other nuclear explosive devices.
5. Assistance under this Article may be provided, inter alia, through the United Nations system, international, regional or national organizations or institutions, non-governmental organizations or institutions, the International Committee of the Red Cross, the International Federation of Red Cross and Red Crescent S ocieties, or national Red Cross and Red Crescent Societies, or on a bilateral basis.
6. Without prejudice to any other duty or obligation that it may have under international law, a State Party that has used or tested nuclear weapons or any other nuclear explosive devices shall have a responsibility to provide adequate assistance to affected States Parties, for the purpose of victim assistance and environmental remediation.

ARTICLE 8
MEETING OF STATES PARTIES

1. The States Parties shall meet regularly in order to consider and, where necessary, take decisions in respect of any matter with regard to the application or implementation of this Treaty, in accordance with its relevant provisions, and on further measures for nuclear disarmament, including:
   (a) The implementation and status of this Treaty;
   (b) Measures for the verified, time-bound and irreversible elimination of nuclear-weapon programmes, including additional protocols to this Treaty;
   (c) Any other matters pursuant to and consistent with the provisions of this Treaty.
2. The first meeting of States Parties shall be convened by the Secretary-General of the United Nations within one year of the entry into force of this Treaty. Further meetings of States Parties shall be convened by the Secretary-General of the United Nations on a biennial basis, unless otherwise agreed by the States Parties. The meeting of States Parties shall adopt its rules of procedure at its first session. Pending their adoption, the rules of procedure of the United Nations conference to negotiate a legally binding instrument to prohibit nuclear weapons, leading towards their total elimination, shall apply.
3. Extraordinary meetings of States Parties shall be convened, as may be deemed necessary, by the Secretary-General of the United Nations, at the written request of any State Party provided that this request is supported by at least one third of the States Parties.
4. After a period of five years following the entry into force of this Treaty, the Secretary-General of the United Nations shall convene a conference to review the operation of the Treaty and the progress in achieving the purposes of the Treaty. The Secretary-General of the United Nations shall convene further review conferences at intervals of six years with the same objective, unless otherwise agreed by the States Parties.
5. States not party to this Treaty, as well as the relevant entities of the United Nations system, other relevant international organizations or institutions, regional organizations, the International Committee of the Red Cross, the International Federation of Red Cross and Red Crescent Societies and relevant non-governmental organizations, shall be invited to attend the meetings of States Parties and the review conferences as observers.

ARTICLE 9
COSTS

1. The costs of the meetings of States Parties, the review conferences and the extraordinary meetings of States Parties shall be borne by the States Parties and States not party to this Treaty participating therein as observers, in accordance with the United Nations scale of assessment adjusted appropriately.
2. The costs incurred by the Secretary-General of the United Nations in the circulation of declarations under Article 2, reports under Article 4 and proposed amendments under Article 10 of this Treaty shall be borne by the States Parties in accordance with the United Nations scale of assessment adjusted appropriately.
3. The cost related to the implementation of verification measures required under Article 4 as well as the costs related to the destruction of nuclear weapons or other nuclear explosive devices, and the elimination of nuclear-weapon programmes, including the elimination or conversion of all nuclear-weapons-related facilities, should be borne by the States Parties to which they apply.

ARTICLE 10
AMENDMENTS

1. At any time after the entry into force of this Treaty, any State Party may propose amendments to the Treaty. The text of a proposed amendment shall be communicated to the Secretary-General of the United Nations, who shall circulate it to all States Parties and shall seek their views on whether to consider the proposal. If a majority of the States Parties notify the Secretary-General of the United Nations no later than 90 days after its circulation that they support further consideration of the proposal, the proposal shall be considered at the next meeting of States Parties or review conference, whichever comes first.
2. A meeting of States Parties or a review conference may agree upon amendments which shall be adopted by a positive vote of a majority of two thirds of the States Parties. The Depositary shall communicate any adopted amendment to all States Parties.

3. The amendment shall enter into force for each State Party that deposits its instrument of ratification or acceptance of the amendment 90 days following the deposit of such instruments of ratification or acceptance by a majority of the States Parties at the time of adoption. Thereafter, it shall enter into force for any other State Party 90 days following the deposit of its instrument of ratification or acceptance of the amendment.

ARTICLE 11
SETTLEMENT OF DISPUTES

1. When a dispute arises between two or more States Parties relating to the interpretation or application of this Treaty, the parties concerned shall consult together with a view to the settlement of the dispute by negotiation or by other peaceful means of the parties' choice in accordance with Article 33 of the Charter of the United Nations.
2. The meeting of States Parties may contribute to the settlement of the dispute, including by offering its good offices, calling upon the States Parties concerned to start the settlement procedure of their choice and recommending a time limit for any agreed procedure, in accordance with the relevant provisions of this Treaty and the Charter of the United Nations.

ARTICLE 12
UNIVERSALITY

Each State Party shall encourage States not party to this Treaty to sign, ratify, accept, approve or accede to the Treaty, with the goal of universal adherence of all States to the Treaty.

ARTICLE 13
SIGNATURE

This Treaty shall be open for signature to all States at United Nations Headquarters in New York as from 20 September 2017.

ARTICLE 14
RATIFICATION, ACCEPTANCE, APPROVAL OR ACCESSION

This Treaty shall be subject to ratification, acceptance or approval by signatory States. The Treaty shall be open for accession.

ARTICLE 15
ENTRY INTO FORCE

1. This Treaty shall enter into force 90 days after the fiftieth instrument of ratification, acceptance, approval or accession has been deposited.
2. For any State that deposits its instrument of ratification, acceptance, approval or accession after the date of the deposit of the fiftieth instrument of ratification, acceptance, approval or accession, this Treaty shall enter into force 90 days after the date on which that State has deposited its instrument of ratification, acceptance, approval or accession.

ARTICLE 16
RESERVATIONS

The Articles of this Treaty shall not be subject to reservations.

ARTICLE 17
DURATION AND WITHDRAWAL

1. This Treaty shall be of unlimited duration.
2. Each State Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of the Treaty have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to the Depositary. Such notice shall include a statement of the extraordinary events that it regards as having jeopardized its supreme interests.
3. Such withdrawal shall only take effect 12 months after the date of the receipt of the notification of withdrawal by the Depositary. If, however, on the expiry of that 12-month period, the withdrawing State Party is a party to an armed conflict, the State Party shall continue to be bound by the obligations of this Treaty and of any additional protocols until it is no longer party to an armed conflict.

ARTICLE 18
RELATIONSHIP WITH OTHER AGREEMENTS

The implementation of this Treaty shall not prejudice obligations undertaken by States Parties with regard to existing international agreements, to which they are party, where those obligations are consistent with the Treaty.

ARTICLE 19
DEPOSITARY

The Secretary-General of the United Nations is hereby designated as the Depositary of this Treaty.

ARTICLE 20
AUTHENTIC TEXTS

The Arabic, Chinese, English, French, Russian and Spanish texts of this Treaty shall be equally authentic.

DONE at New York, this seventh day of July, two thousand and seventeen.

ABBREVIATIONS AND ACRONYMS

1MSP	First Meeting of States Parties to the TPNW
2MSP	Second Meeting of States Parties to the TPNW
3MSP	Third Meeting of States Parties to the TPNW
ALBM	Air-launched ballistic missile
ALCM	Air-launched cruise missile
ASCM	Anti-ship cruise missile
AP	Additional Protocol
APMBC	Anti-Personnel Mine Ban Convention
BWC	Biological Weapons Convention
CARICOM	Caribbean Community
CSA	Comprehensive Safeguards Agreement
CCM	Convention on Cluster Munitions
CSNO	Conventional support to nuclear operations
CSTO	Collective Security Treaty Organization
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
CWC	Chemical Weapons Convention
DCA	Dual-capable aircraft
DPRK	Democratic People's Republic of Korea (North Korea)
DR Congo	Democratic Republic of the Congo
FAS	Federation of American Scientists
GLCM	Ground-launched cruise missile
HEU	Highly enriched uranium
IAEA	International Atomic Energy Agency
ICAN	International Campaign to Abolish Nuclear Weapons
ICBM	Intercontinental ballistic missile
ICRC	International Committee of the Red Cross
IGAD	Intergovernmental Authority on Development
ILPI	International Law and Policy Institute
INFCIRC	Information Circular
IPFM	International Panel on Fissile Materials
IRBM	Intermediate-range ballistic missile
ISR	Intelligence, surveillance, and reconnaissance
JCPOA	Joint Comprehensive Plan of Action
kg	Kilogram
kt	Kilotons
LACM	Land-attack cruise missile
Lao PDR	Lao People's Democratic Republic
MIRV	Multiple independently targetable re-entry vehicle
MRBM	Medium-range ballistic missile
Mt	Megatons
NAM	Non-Aligned Movement
NATO	North Atlantic Treaty Organization
NPG	Nuclear Planning Group
NNSA	National Nuclear Security Administration (United States)
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NWFZ	Nuclear-weapon-free zone
OPIR	Overhead Persistent Infra-Red
P5	Power 5 (the five permanent, and nuclear- armed, members of the United Nations Security Council: China, France, Russia, United Kingdom, and the United States)
Pu	Plutonium
ROK	Republic of Korea (South Korea)
SAM	Surface-to-air missile
SLBM	Submarine-launched ballistic missile
SLCM	Submarine-launched cruise missile
SQP	Small Quantities Protocol
SRBM	Short-range ballistic missile
SSB	Submersible ship, ballistic missile
SSBN	Submersible ship, ballistic missile, nuclear-powered
SSGN	Submersible ship, guided missile, nuclear-powered
START	Strategic Arms Reduction Treaty
TNT	Trinitrotoluene
TPNW	Treaty on the Prohibition of Nuclear Weapons
UK	United Kingdom
UN	United Nations
UNODA	United Nations Office for Disarmament Affairs
US	United States
Wh	Warheads
WMD	Weapon of mass destruction

NUCLEAR WEAPONS BAN MONITOR 2024

TRACKING PROGRESS TOWARDS A WORLD WITHOUT NUCLEAR WEAPONS

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